



Research paper

Parents' history of childhood interpersonal trauma and postpartum depressive symptoms: The moderating role of mindfulness

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ABSTRACT

Postpartum depression is the most commonly reported mental health issue among parents welcoming a new child, with long-term impacts on the well-being of their family. Survivors of childhood interpersonal trauma (CIT) appear to be more vulnerable with higher rates of postpartum depressive symptoms. Yet, studies are needed on protective mechanism that can buffer the link between CIT and postpartum depressive symptoms, to identify factors that can promote resilience in CIT survivors as they navigate this demanding period. Studies also need to include both parents to adopt a comprehensive dyadic perspective. This study examined the moderating role of mindfulness, a protective mechanism documented as key for both postpartum mental health and trauma processing, in the association between CIT and postpartum depressive symptoms in parental couples. A randomly selected sample of 843 couples who recently welcomed a new child completed self-reported measures of CIT, dispositional mindfulness and postpartum depression. Path analyses showed that more experience of CIT was associated with higher levels of postpartum depression, but this association was weaker in parents with higher dispositional mindfulness. Exploration of mindfulness facets yielded that higher disposition to act with awareness and observation acted as specific buffers, for fathers and mothers respectively. In addition, more CIT reported by one parent was linked with their partner's higher depressive symptoms. These findings shed light on the protective role of mindfulness during the postpartum period to protect against postpartum depression in parents who are CIT survivors and their partners.

Although considered a source of happiness for many, the birth of a child is a life-changing event that can be accompanied by many challenges, including symptoms of postpartum depression (SPD). SPD refers to symptoms of depression occurring within the first 12 months following childbirth (Gaynes et al., 2005) and include depressed mood and anhedonia, sadness, guilt, agitation, and anxiety (American Psychiatric Association, 2013; Cox et al., 1996; Smith-Nielsen et al., 2018). Differences between mothers and fathers have been documented in past studies (see Kim and Swain, 2007; O'Brien et al., 2017), highlighting that fathers tend to report more symptoms of irritability, indecisiveness, ambivalence, emotional inhibition (Baldoni and Giannotti, 2020), and feelings of grief toward their life preceding the child's birth (Berg and Ahmed, 2016). Perceived stress tends to lower dyadic satisfaction in fathers, but not in mothers, which in turn was found to be related to a higher level of depression (Mangialavori et al., 2021). Such data highlight the importance of studying both mothers and fathers, as their realities surrounding SPD

might be gender-specific and interdependent.

Postpartum depression is the most commonly reported mental health issue among parents welcoming a new child, with a prevalence of 17 % among mothers and 8.8 % in fathers (Rao et al., 2020; Shorey et al., 2018). Even though SPD are receiving increasing public attention, they have long been shrouded in stigma, with parents experiencing shame and guilt rather than the expected rewarding connection with their newborn and appreciation of their parental role (Johansson et al., 2020).

SPD are related to multiple negative implications for both parents and the family, including increased parenting stress in mothers and fathers (Yim et al., 2015), decreased parents' sense of parental competence (Shorey et al., 2015), and decreased marital satisfaction and intimacy (Matus et al., 2016). Fathers' depressive symptoms are also linked to lower support provided to their partner during the first postpartum year (Kim and Swain, 2007). SPD have also been shown to increase the odds of negative interactions with the child by limiting

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availability and sensitivity to the child's needs (Lyons-Ruth et al., 2000) and increasing the risk of child neglect or abuse (e.g., screaming, corporal punishment) (Plant et al., 2015). In return, newborns of depressed parents tend to exhibit poorer developmental trajectories (e.g., fine motor skills, language) and problem behaviors during early and middle childhood (Oh et al., 2020; Park et al., 2018). This corpus of empirical data highlights the crucial relevance of studying SPD and its risk and protective factors, as early as possible in the postpartum period. In this regard, childhood interpersonal trauma (CIT) appears to be a key factor related to higher SPD (e.g., Gelaye et al., 2016), given its long-lasting consequences that tend to be exacerbated during periods of significant stress (e.g., birth of a new child). With its potential for promoting better adaptation and mood regulation in CIT survivors (Earley et al., 2014), mindfulness could significantly moderate the link between CIT and SPD.

1. CIT and SPD

CIT, which includes psychological, physical or sexual abuse, psychological or physical neglect, bullying and witnessing interparental violence before age 18 (Dugal et al., 2021; Godbout et al., 2020; Rassart et al., 2022), is an endemic social issue, with at least 30 % of adults reporting more than one experience of CIT (Afifi et al., 2014; Hughes et al., 2017). CIT rarely occurs in isolation and experiencing one type increases the risk to experience other types of CIT, resulting in cumulative CIT (i.e., two or more forms of trauma; Bolduc et al., 2018; Briere et al., 2010). In return, cumulative CIT is associated with more severe and persistent symptomatology in adulthood (Hodges et al., 2013; Hughes et al., 2017).

The bulk of prior research highlights that mothers with past CIT experiences are more at risk of experiencing SPD (e.g., Choi et al., 2019; McDonnell and Valentino, 2016; Nagl et al., 2017; Skjothaug et al., 2014). This risk is 3.6 times higher during the first four months and 8.4 times higher at 8 months postpartum in comparison with mothers without a history of CIT (Records and Rice, 2009). However, this association between CIT and SPD has not been systematically observed (De Venter et al., 2016). Studying factors that moderate these associations can help to better understand why certain survivors experience increased SPD and guide intervention.

Empirical studies to date have mainly used an individual perspective with a focus on maternal postpartum depression and very few studies have included fathers (i.e., only one, Skjothaug et al., 2014). However, a growing body of research demonstrates that CIT may not only have profound implications for the victims themselves, but also for their partners (e.g., Vaillancourt-Morel et al., 2019). Moreover, one parent's SPD is the most significant risk factor for their partner's increased symptoms (Neri et al., 2020), emphasizing the need to examine reciprocal influences among co-parents to understand their SPD. Investigating both parents' functioning could be key in increasing understanding of the links between CIT and SPD in the parental couple. In addition to the lack of studies involving couples, empirical work on protective factors that can buffer the negative effects of CIT on SPD remains elusive and dispositional mindfulness stands out as a potential protective factor.

2. CIT and SPD: the protective role of mindfulness

Mindfulness is defined as the awareness that emerges through paying attention on purpose and non-judgmentally to the unfolding of experience moment by moment (Kabat-Zinn, 2003). Dispositional mindfulness refers to a stable characteristic (Karremans et al., 2015; Stevenson et al., 2017) and can be operationalized as a multifaceted construct including five facets (Baer et al., 2006): (1) *describing* (identifying and labeling inner experiences, including thoughts and feelings), (2) *non-judging* (accepting inner experiences without judgment), (3) *non-reactivity* (allowing inner experiences to come and go without getting caught up in

them), (4) *observing* (noticing one's inner experiences), and (5) *acting with awareness* (focusing on what is happening in the here and now).

After the birth of a new child, parents face important demands to regulate their behavior according to their newborn's needs as well as their own affect (e.g., fear, frustration, stress) (Barros et al., 2015). Lower dispositional mindfulness might bring parents who are survivors of CIT and often experience high levels of distress balancing personal resources and the demands of their child (Hugill et al., 2017), to use avoidant coping strategies (e.g., emotional numbing, removing themselves from stressful situations with the child, Godbout and Hébert, 2016; Kistin et al., 2014; Wilson et al., 2017) potentially explaining their increased SPD (Choi et al., 2017). Non-mindful and avoidant strategies might provide temporary relief but tend to entrap individuals in a cycle of avoidance and suffering that has been conceptualized as a *pain paradox* (Briere, 2015). On the contrary, increased dispositional mindfulness could help navigate the challenges of parenthood by facilitating self-regulation, providing internal space (i.e., feeling less overwhelmed in their parental role), lowering the use of avoidance coping strategies, and experiencing fewer SPD. The present-centred, non-judgemental, and non-reactive components of dispositional mindfulness could help buffer the feelings of worry, guilt and agitation that are typical of SPD (Smith-Nielsen et al., 2018) and for which CIT survivors are more at-risk (Choi et al., 2017). The observing and describing components of dispositional mindfulness could help survivors notice not only the child's needs, but their own needs during the postpartum period, facilitating the implementation of measures that may prevent SPD (e.g., asking for support, clinical help).

Empirical data support that dispositional mindfulness is linked to poorer mental health outcomes in survivors, including depressive symptoms (Bolduc et al., 2018; Earley et al., 2014; Williams et al., 2014). Bolduc et al. (2018) revealed an association between cumulative CIT and depressive symptoms in patients with relational difficulties, through lower dispositional mindfulness and higher dissociation, explaining 38.2 % of the variance in depression. A study carried out with over 3000 mothers indicated that more CIT, along with lower dispositional mindfulness, and higher levels of rumination and neuroticism, were characteristic of the mothers reporting higher distress (Sun et al., 2020). Studies also showed that lower scores on four facets (i.e., *acting with awareness*, *describing*, *non-judging* and *non-reactivity*) were related to higher depressive symptoms (Asensio-Martínez et al., 2019; de Bruin et al., 2012). A study carried out with 43 patients with a history of depression found that dispositional mindfulness moderated the relationship between CIT and the number of months patients presented depressive symptoms (Beshai and Parmar, 2018). Moreover, CIT was shown to be related to higher depression in adulthood, but this association was attenuated among individuals with higher levels of *acting with awareness* (McKeen et al., 2021).

Overall, the postpartum period is particularly important to examine as it may increase vulnerability to the interplay of CIT, mindfulness, and SPD, being one of the most at-risk life periods for depressive symptoms in CIT survivors (Christie et al., 2018). Dispositional mindfulness could help explain why some survivors come to experience increased SPD, but this postulate remains to be tested empirically. Moreover, studies examining SPD need to include both parents, given that the majority of studies included only mothers which neglect the mutual influences between co-parents background (i.e., CIT), disposition (i.e., mindfulness) and health outcomes (SPD).

3. Objectives and hypotheses

Using data from a large-scale study of couples with an infant, this study addressed gaps in the knowledge by examining whether dispositional mindfulness mitigates the association between CIT and parents' SPD. Importantly, this study exploits data from both parents by using the 'Actor-Partner Interdependence Model' (APIM; Kenny et al., 2006) dyadic approach to examine potential interdependence between parents

on their CIT, dispositional mindfulness and SPD. It was expected that one parent’s level of CIT would be positively linked to their own SPD (*actor* effect; H1a) and to their partner’s SPD (*partner* effect; H1b). Second, we hypothesized that one parent’s *actor* and *partner* links would be significantly moderated by their own level of dispositional mindfulness; a higher level of dispositional mindfulness in one parent would decrease the association between their own CIT and their own SPD (H2a), and their partner’s SPD (H2b). This study also aimed to examine the specific role of each mindfulness facet.

4. Method

4.1. Participants

The sample consisted of 843 different-gender couples (i.e., 843 mothers and 843 fathers). Inclusion criteria included: 1) be parents of an infant (aged 0 to 12 months); 2) be 18 years or older; 3) be in a couple relationship with the other parent; 4) be fluent in written and spoken French or English; 5) one of the parents had to have carried the child; and 6) both parents had to agree to participate in the study. For socio-demographic information on participants, see Table 1.

4.2. Procedure

Parents who recently had a new child were recruited through a collaboration with the regional parental insurance plan and the authorization of the *Commission d’Accès à l’Information*. Contact details (i.e., names, phone numbers, and email addresses) from parents across the province of Quebec were randomly selected and transmitted to the research team. Research assistants contacted both parents via email and

phone to verify their eligibility (inclusion criteria) and invite them to participate in the study (55 % of invited parental couples participated in the study). The study was described as a confidential online survey on the psychological and relational well-being of parental couples. Using a personalized numerical code, parents were invited to individually complete an online questionnaire hosted on the Qualtrics platform. Participation required approximately 40 min. A financial compensation of 40\$ (20\$ per parent) was offered. The study was approved by the researchers’ institutional research ethics committee.

4.3. Measures

Childhood Interpersonal Trauma was assessed using the Childhood Cumulative Trauma Questionnaire (CCTQ; Godbout et al., 2017). This scale demonstrated good psychometric qualities in previous studies (e.g., $\alpha = 0.90$; Bigras et al., 2017) as well as in the current sample ($\alpha = 0.88$ for both mothers and fathers). The CCTQ includes 24 items that measure eight different forms of CIT: physical abuse, psychological abuse, physical neglect, psychological neglect, exposure to interparental psychological violence, exposure to interparental physical violence, peer bullying and sexual abuse. Childhood sexual abuse was considered (1 = yes) when it had occurred at least once before the age of 18 years old. For the other types of interpersonal trauma, participants report how often they experienced them in a typical year before 18 years, on a 7-point Likert scale ranging from “never” (0) to “every day” (6) and were considered when they occurred at least once in a “typical year”. Each form of CIT was first dichotomized as experienced (yes = 1), or not (no = 0) and then summed to form an index of cumulative CIT, ranging from 0 (no trauma) to 8 (eight different forms of childhood interpersonal trauma) congruently with the scientific literature on CIT (e.g., Hodges

Table 1 Sociodemographic characteristics for the sample and differences between mothers and fathers.

Characteristics	Parents (n = 1686)		Mothers (n = 843)		Fathers (n = 843)		Diff. p
	%	n	%	n	%	n	
Birthplace							
Canada	83 %	1398	84.1 %	709	81.7 %	689	0.04
Africa	4.7 %	77	3.8 %	32	5.3 %	45	0.007
Europe	5.2 %	87	5.4 %	44	5.1 %	43	0.99
South America	1.7 %	28	1.4 %	12	1.9 %	16	0.45
Asia	1.5 %	25	1.8 %	15	1.2 %	10	0.30
Other	4.2 %	70	3.7 %	31	4.6 %	39	0.18
Level of education completed							
Primary school	2.9 %	48	1.9 %	16	3.8 %	32	0.02
High school	15.4 %	259	12.8 %	108	17.9 %	151	<0.001
Cegep	38.9 %	655	36.5 %	308	41.2 %	347	0.03
Undergraduate	27.9 %	470	32.3 %	272	23.5 %	198	<0.001
Graduate	14.9 %	251	16.4 %	138	13.4 %	113	0.05
Gross personal annual income (CAN\$)							
19,999 or less	6.6 %	111	10.2 %	86	3 %	25	<0.001
20,000 - 39,999	21.4 %	360	29.2 %	246	13.5 %	114	<0.001
40,000 - 59,999	31.6 %	531	30.8 %	260	32.1 %	271	0.71
60,000 - 79,999	22.7 %	381	18.3 %	154	26.9 %	227	<0.001
80,000 - 99,999	10.2 %	171	6.5 %	55	13.8 %	116	<0.001
100,000 or more	7.6 %	127	4.5 %	38	10.6 %	89	<0.001
Relationship status							
Common-law	71.3 %	1200					
Married	28.7 %	484					
	M (SD)	Range	M (SD)	Range	M (SD)	Range	
Age (years)	31.6	19–57	30.5(4.8)	19–46	32.6(5.8)	20–57	<0.001
Number of children	1.8	1–15	1.8(1)	1–15	1.8(1)	1–13	0.88
Relationship duration (years)	6.9(4)	0.67–21.5 yrs					
Age of the child (months)	2.7(1.6)	0–9					

Note. M = mean. n = number of participants. SD = standard deviation. % = percentage of sample. Missing is as follows: 3 participants did not report their level of education; 5 participants did not report their gross personal annual income; 1 participant did not report their birthplace; 7 participants did not report their first language; 2 participants did not report their relationship status; 10 participants did not report the number of children. The paired sample t-test and the McNemar test were used to examine differences between mothers and fathers.

et al., 2013; Lafrenaye-Dugas et al., 2018). For rates of CIT in the sample, see Table 2.

Dispositional Mindfulness was assessed using the Five Facet Mindfulness Questionnaire (FFMQ; Baer et al., 2006). The FFMQ is a self-reported 15-item questionnaire assessing dispositional mindfulness and its five mindfulness facets (i.e., *observation*, *description*, *non-judgment*, *non-reactivity* and *acting with awareness*). Participants respond on a 5-point Likert scale, ranging from 1 (Never or very rarely true) to 5 (Very often or always true). The total score is obtained by summing the 15 items, with a higher score indicating a higher dispositional mindfulness. Previous studies reported satisfactory psychometric qualities for the FFMQ (e.g., de Bruin et al., 2012; Royuela-Colomer and Calvete, 2016). In the current study, the total score and facets' scores show adequate internal consistency for both mothers and fathers ($\alpha = 0.74$ to 0.84), and modest internal consistency for the *observation* scale (mothers $\alpha = 0.62$, fathers $\alpha = 0.64$).

Postpartum depressive symptoms were measured using the 10-item Edinburgh Postpartum Depression Scale (EPDS; Cox et al., 1987) assessing depressive symptoms in the last week on a four-point Likert scale. The total score is computed through a sum of the items and ranged from 0 to 30, with a total score equal to or >13 generally indicating clinical-level depressive symptoms (Mann and Evans, 2015). Previous studies reported satisfactory psychometric qualities in mothers (e.g., Records and Rice, 2009) and fathers (e.g., Matthey et al., 2001), as the current study (mothers $\alpha = 0.83$; fathers $\alpha = 0.82$).

4.4. Data analytical strategy

A small number of participants ($n = 18$) had missing data for at least one of the study variables. No demographic variable predicted the likelihood of missing data. Descriptive and correlational analyses were performed using the Statistical Package for Social Sciences software (IBM Corp, 2019) and Mplus 8.4 (Muthén and Muthén, 2017).

The hypothesized path analysis model was then tested using structural equation modeling in Mplus, using the full information maximum likelihood estimation to account for missing data. All paths were estimated using a maximum likelihood approach with standard errors (MLR) that is robust to non-normality. The Actor-Partner Interdependence Model (APIM; Kenny et al., 2006) was used to examine the association between CIT and SPD, and the moderating effect of mindfulness on this link. The APIM is well suited for the analysis of dyadic data characterized by the non-independence of observations. The non-independence of observations is modeled by (1) allowing the residuals of both partners to covary and (2) estimating the causal effect of each partner's independent variable on the other partner's dependent variable. Adopting the APIM terminology, the "actor" effect refers to the

association between the person's childhood trauma and their own postpartum depressive symptoms (i.e., within-partner); and the "partner" effect refers to the association between the person's CIT and the partner's postpartum depressive symptoms (i.e., cross-partner).

The model was simultaneously estimated on both parents' data. In the first step, the actor's dependent variable, SPD, was simultaneously regressed on the actor's and partner's independent variable, CIT. Mindfulness was entered in the second step as a moderator of the association between CIT and SPD (for a schematic presentation of the model, see Fig. 1). Four potential moderations were examined: the moderation of the link between (1) an actor's CIT and the actor's SPD by the actor's mindfulness; (2) a partner's CIT and an actor's SPD by the partner's mindfulness; (3) an actor's CIT and the actor's SPD by the partner's mindfulness; (4) and a partner's CIT and an actor's SPD by the actor's mindfulness. The moderator and independent variables were centered around the sample mean to facilitate interpretation. Significant interactions were plotted for mindfulness scores at one standard deviation above and below the sample mean. To assess whether the associations were robust to potential confounds, the child's age, parental income, number of children in the household, relationship duration, and COVID-19 pandemic (i.e., parents' completed the questionnaires during the pandemic = 1, or before the pandemic = 0), were entered as covariates.

To explore the role of each of the five mindfulness dimensions in the link between CIT and SPD, we repeated the second step with each facet's score entered individually as moderators of the link between CIT and postpartum depressive symptoms in five separate models. This allowed us to examine moderation effects for each facet while avoiding multicollinearity problems between facets and maintaining statistical power.

Lastly, the differences in model estimates between mothers and fathers were examined by constraining each estimate (e.g., the slope of the regression of an actor's CIT on actor's postpartum depressive symptoms) to be equal among partners and comparing the fit with the fit of a model in which the estimate was allowed to differ. Model comparison was conducted using the rescaled -2 log likelihood difference test, which is distributed as chi-squared with degrees of freedom equal to the rescaled difference in the number of parameters between models and a liberal α -value of 0.10 is used to identify differences between genders (Kenny and Ledermann, 2010). Pooled estimates (in Tables, see "pooled across parents") were reported when no parental difference was found, and specific results for mothers and fathers were reported when results indicated differences (in Tables, see "Mothers" and "Fathers").

Model fit was examined using the chi-square (χ^2) statistic, the Root Mean Square Error of Approximation (RMSEA), the Standardized Root Mean Square Residual (SRMR), the Comparative Fit Index (CFI), and the Tucker-Lewis Index (TLI). A non-significant χ^2 statistic, RMSEA and

Table 2
Rates of childhood interpersonal trauma history in the sample and differences between mothers and fathers.

Childhood interpersonal trauma	Mothers ($n = 843$)	Fathers ($n = 843$)	Diff.
	%	%	p
Physical abuse	41.6 %	43.4 %	0.44
Psychological abuse	35.3 %	28.2 %	0.002
Sexual abuse	18.5 %	7.5 %	<0.001
Physical neglect	11.9 %	16.4 %	0.008
Psychological neglect	73.4 %	65.4 %	<0.001
Physical interparental violence	8.4 %	6.5 %	0.19
Psychological interparental violence	41 %	34.1 %	0.003
Bullying	45.1 %	43.7 %	0.68
Cumulative Childhood Interpersonal Trauma			
No types of trauma	11.4 %	17.4 %	<0.001
1 type	18.6 %	19.7 %	0.53
2 types	21.4 %	19.5 %	0.39
3 types	16.1 %	15 %	0.64
4 types and more	32.5 %	28.4 %	0.08

Note. n = number of participants. % = percentage of sample. The McNemar test was used to examine differences between mothers and fathers.

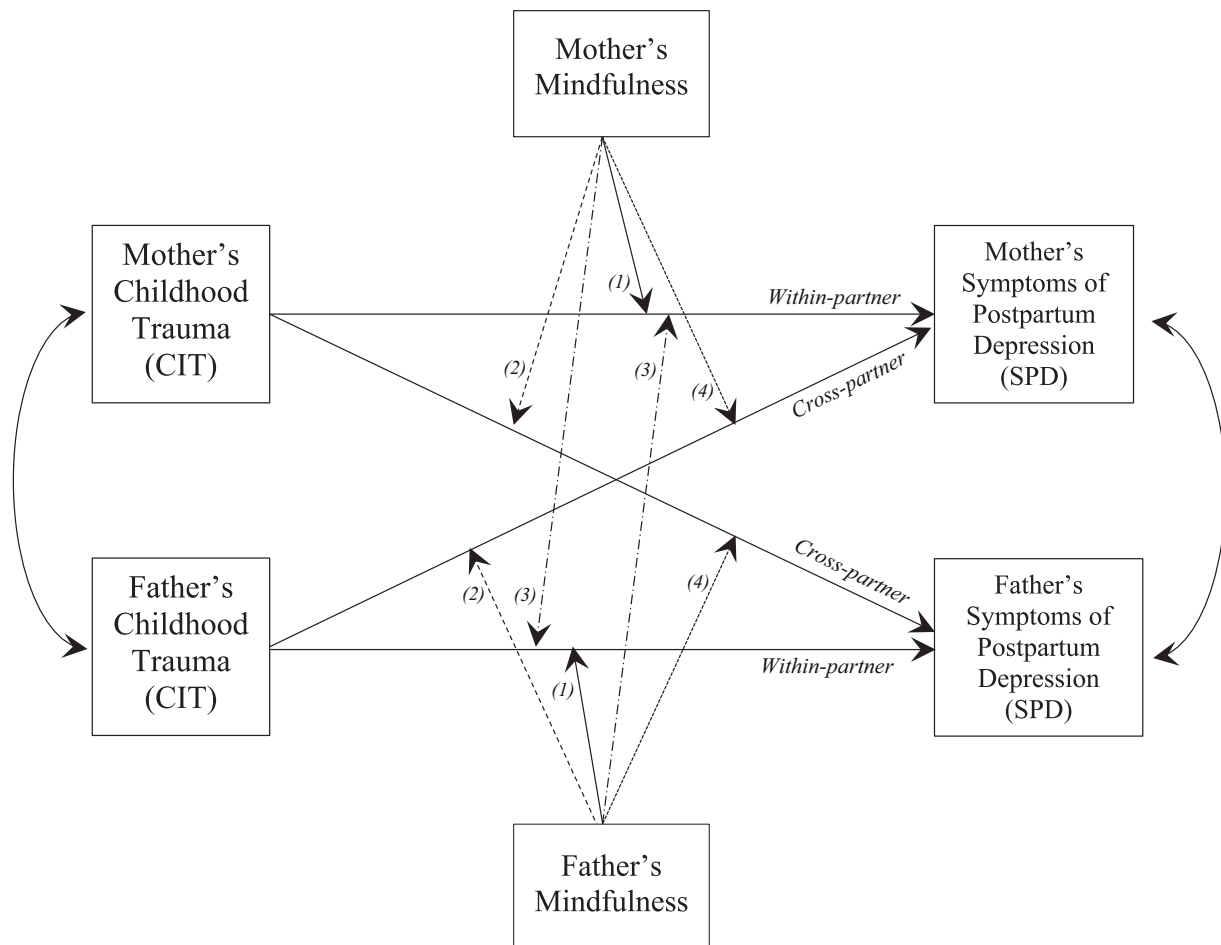


Fig. 1. Diagram of the study’s APIM. “Within-partner”: The association between CIT and symptoms of postpartum depression within an actor; “Cross-partner”: The association between a partner’s CIT and an actor’s symptoms of postpartum depression; (1) the interaction between actor’s CIT and actor’s mindfulness on actor’s symptoms of postpartum depression; (2) the interaction between partner’s CIT and partner’s mindfulness on actor’s symptoms of postpartum depression; (3) the interaction between actor’s CIT and partner’s mindfulness on actor’s postpartum depression symptoms; (4) the interaction between partner’s CIT and actor’s mindfulness on actor’s postpartum depression symptoms.

Table 3
Sample statistics and correlations among the study variables.

Variable	1	2	3	4	5	6
1. M – Symptoms of Postpartum Depression						
2. F – Symptoms of Postpartum Depression	0.19***					
3. M – Childhood Interpersonal Trauma	0.25***	0.09**				
4. F – Childhood Interpersonal Trauma	0.11**	0.28***	0.13***			
5. M – Mindfulness	-0.47***	-0.15***	-0.18***	-0.07		
6. F – Mindfulness	-0.08*	-0.42***	-0.01	-0.13***	0.14***	
Mean	6.70	5.08	2.75	2.45	54.02	52.40
SD	4.59	4.31	1.94	1.93	8.28	7.82

Note. n = 843 couples (1686 participants). “M” = Mothers’ variables; “F” = Fathers’ variables.

* p < .05.
** p < .01.
*** p < .001.

SRMR values of 0.08 or less (Hu and Bentler, 1999) and CFI and TLI values over 0.90 (Hoyle and Panter, 1995) indicate good model fit.

5. Results

5.1. Descriptive statistics

Sample correlations among the study variables are provided in Table 3, in addition to means and standard deviations for each measure.

Results showed there was interdependency between partners’ scores. Among mothers and fathers, SPD were positively related to their CIT and negatively related to their mindfulness. One parent’s SPD were positively correlated with the other parent’s CIT and negatively related to the other parent’s mindfulness. These sets of correlations were statistically equivalent in mothers and fathers. Lastly, mothers’ and fathers’ SPD were positively correlated, as were CIT and mindfulness.

Model comparisons conducted using the rescaled -2 log likelihood difference test indicated that the parents’ results were distinguishable by

Table 4

Associations between the actor’s and partner’s childhood trauma, their dispositional mindfulness, and their symptoms of postpartum depression.

	Parental differences		Pooled across parents				Std Estimate
	$\Delta\chi^2$	<i>p</i>	Unstd Estimate (SE)	<i>z</i>	<i>p</i>	95 % CI	
Step 1							
A’s CIT → A’s SPD	0.04	0.841	0.58 (0.06)	10.47	0.000	0.48, 0.69	0.25
P’s CIT → A’s SPD	0.20	0.655	0.15 (0.05)	2.97	0.003	0.05, 0.26	0.07
Step 2							
A’s CIT → A’ SPD	0.61	0.436	0.42 (0.05)	8.43	0.000	0.33 0.52	0.18
A’s Mind. → A’s SPD	1.01	0.316	−0.22 (0.01)	−18.68	0.000	−0.25, −0.20	−0.40
A’s CIT X A’s Mind. → A’s SPD	1.21	0.272	−0.02 (0.01)	−3.44	0.000	−0.04, −0.01	−0.08
A’s CIT X P’s Mind. → A’s SPD	0.21	0.648	−0.00 (0.01)	−0.44	0.659	−0.02, 0.01	−0.01
P’s CIT → A’s SPD	0.10	0.749	0.12 (0.05)	2.54	0.011	0.03, 0.22	0.06
P’s Mind. → A’s SPD	1.94	0.163	−0.03 (0.01)	−2.24	0.025	−0.05, −0.00	−0.05
P’s CIT X P’s Mind. → A’s SPD	0.41	0.524	0.01 (0.01)	0.98	0.325	−0.01, 0.02	0.02
P’s CIT X A’s Mind. → A’s SPD	2.22	0.136	0.00 (0.01)	0.04	0.967	−0.01, 0.01	0.00

Note. *n* = 843 couples (1686 participants). “CIT” = Childhood Interpersonal Trauma; “SPD” = Symptoms of Postpartum Depression; “Mind.” = Mindfulness; “A” = Actors; “P” = Partners. The “Parental” column presents the χ^2 value comparing nested models; non-significant result indicates non-significant difference between fathers and mothers. The “Pooled across genders” column presents the estimates pooled across mothers and fathers because no difference was found between parents. “Unstd” = Unstandardized; “CI” = Confidence interval. Significant effects are in bold.

gender. Relative to fathers, mothers reported higher SPD, $\chi^2_{(1)} = 54.44, p < .000$, higher scores for CIT, $\chi^2_{(1)} = 11.43, p < .001$, and higher mindfulness scores, $\chi^2_{(1)} = 18.21, p < .000$. We therefore treated the dyads as distinguishable by gender (identified as mothers and fathers).

5.2. Main data analyses: CIT, mindfulness and SPD

5.2.1. Association between CIT and SPD

Results revealed a significant association between one parent’s higher CIT and their own higher SPD, $\beta_{pooled} = 0.25, p < .001$ (see top

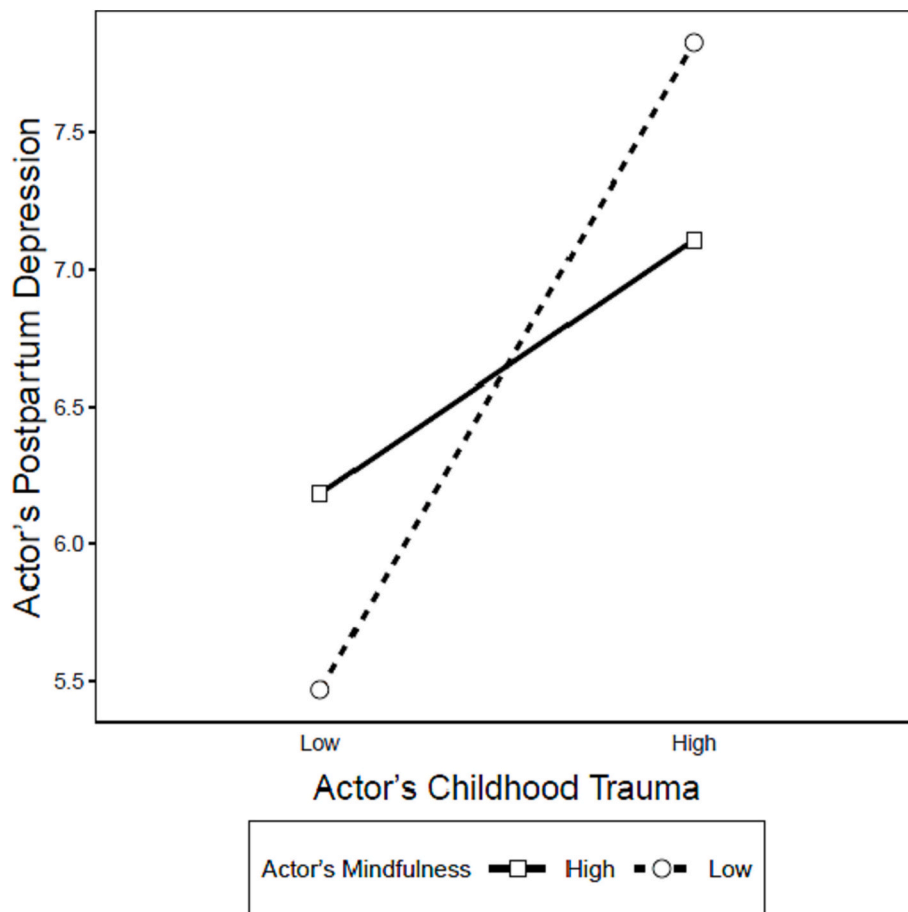


Fig. 2. The Moderation of the Association between Actor’s Childhood Trauma and Actor’s Postpartum Depressive Symptoms by Actor’s Mindfulness, using unstandardized estimates.

section of Table 4). The association between the partner and the actor's SPD (i.e., cross-partner) was also significant, $\beta_{\text{pooled}} = 0.07$, $p < .01$. Higher CIT in one parent predicted higher SPD in their co-parent. No parental differences were found between mothers and fathers for those links. Controlling for child's age, parental income, number of children in the household, and relationship duration did not change the significance of these within-partner and cross-partner associations. Fit indices supported the adjustment of the model to the data: χ^2 ($df = 2$) = 0.20, $p = .904$, CFI = 1.00, TLI = 1.00, RMSEA = 0.00, 90 % CI [0.000, 0.057], and SRMR = 0.004. This model explained 7.8 % of the variance in mothers' SPD and 9.0 % in fathers' SPD.

5.2.2. Mindfulness as a moderator of the association between CIT and SPD

Actor's and partner's mindfulness and the four possible interactions with the actor's and partner's CIT were entered into the model (see Fig. 1). One parent's higher cumulative CIT and their co-parent's cumulative CIT remained positively associated with the parent's higher SPD (see Table 4). As expected, parents' higher dispositional mindfulness was related to their lower SPD, $\beta_{\text{pooled}} = -0.40$, $p < .001$. A cross-partner association was also found, $\beta_{\text{pooled}} = -0.05$, $p < .05$. Higher mindfulness reported by one parent was linked with their co-parent's lower SPD.

Consistent with hypotheses, the association between an actor's CIT and the actor's SPD was moderated by the actor's mindfulness, $b_{\text{pooled}} = -0.02$, $SE = 0.01$, $p < .001$ (see Fig. 2). The association between CIT and SPD was weaker among parents reporting higher mindfulness, $b = 0.24$, $SE = 0.06$, $p < .001$, than those reporting lower mindfulness, $b_{\text{pooled}} = 0.61$, $SE = 0.08$, $p < .001$ (see Fig. 2). No other significant interactions were found. All links were equivalent between mothers and fathers, and remained stable after controlling for child's age, parental income, number of children in the household, COVID-19, and relationship duration. Fit indices supported the adjustment of the hypothesized moderation model to the data: χ^2 ($df = 8$) = 6.27, $p = .617$, CFI = 1.00, TLI = 1.00, RMSEA = 0.000, 90 % CI [0.000, 0.031]; and SRMR = 0.009. This moderation model explained 25.6 % of the variance in mothers' SPD, and 24.6 % in fathers' SPD.

5.2.3. Mindfulness facets as moderators of the association between CIT and postpartum depressive symptoms

In five separate models, we substituted dispositional mindfulness (total score) for each of the mindfulness facets to examine their potential moderating effects (see Supplemental Materials for detailed results). Two specific moderation effects were observed. The *acting with awareness* dimension moderated the association between CIT and SPD among fathers and the *observation* dimension moderated this association among mothers, with satisfactory fit indices (*acting with awareness* moderation model: χ^2 [$df = 6$] = 2.91, $p = .820$, CFI = 1.00, TLI = 1.00, RMSEA = 0.000, 90 % CI [0.000, 0.027]; and SRMR = 0.008; *observation* moderation model: χ^2 [$df = 6$] = 4.12, $p = .660$, CFI = 1.00, TLI = 1.00, RMSEA = 0.000, 90 % CI [0.000, 0.036]; and SRMR = 0.007). In fathers who reported higher *acting with awareness* ($\beta = -0.08$, $p < .05$), the association between their CIT and their SPD was weaker; with this moderation model explaining 19.8 % of the variance in SPD (see Table 6 in Supplemental Material). In mothers who reported higher *observation* ($\beta = -0.08$, $p < .05$), the association between their CIT and their SPD was weaker; with this moderation model explaining 8.4 % of the variance in SPD (see Table 5 in Supplemental Material). Results also showed direct links between higher dispositions toward describing ($\beta_{\text{pooled}} = -0.26$, $p < .05$), non-judging ($\beta_{\text{pooled}} = -0.49$, $p < .05$) as well as non-reacting ($\beta_{\text{mothers}} = -0.21$, $p < .05$; $\beta_{\text{fathers}} = -0.13$, $p < .05$) and lower SPD, although those mindfulness facets did not moderate the link between CIT and SPD (see Tables 7, 8 and 9 in Supplemental Material for detailed results).

6. Discussion

This study aimed to examine the moderating role of dispositional mindfulness in the association between CIT and SPD, using a dyadic approach among both parents. Results showed the inter-influence of co-parents' past CIT, dispositional mindfulness, and SPD. One parent's CIT and their partner's CIT were both associated with one parent's SPD. Dispositional mindfulness acted as a protective factor against aggravation of SPD by past CIT, specifically through the higher levels of *acting with awareness* among fathers and *observing* among mothers. This study adds to the existing literature surrounding CIT and SPD while providing insight on how co-parents may influence each other's symptoms. This study is also the first to document the role of a protective mechanism for SPD in relation to past CIT.

6.1. CIT and SPD

Our findings confirmed that the risk of having depressive symptoms during the first months postpartum is higher in parents who have experienced more CIT, demonstrating for the first time that the level of symptoms may vary according to the number of different types of experienced childhood interpersonal trauma. This significant association between CIT and SPD was equivalent in mothers and fathers. Elevated SPD are often examined with particular attention to the experience of mothers since they tend to report more symptoms than fathers, as evidenced by our results showing that mothers report more CIT and more SPD. Still, the relationship between CIT and SPD remains understudied in fathers, with only one study addressing this issue (i.e., CIT and prenatal depression; Skjothaug et al., 2014). Our findings reveal that, similarly to mothers, fathers who have higher levels of CIT report higher SPD. It is possible that the effects of CIT on SPD do not depend on factors related to carrying a child (e.g., hormones), but on the altered capacities of CIT survivors to face parental challenges during the postpartum period (e.g., reduced sleep, accumulation of tasks and roles; Neri et al., 2020). Such findings highlight the relevance of studying CIT and SPD in both parents.

Our hypothesis that more cumulative CIT in one parent would be linked to their partner's higher SPD was also confirmed. The more one parent has experienced CIT, the more his or her partner is at risk of reporting SPD. Previous studies have documented similar associations between partners involving CIT with parenting stress (Bai and Han, 2016; Rassart et al., 2022), and with anxiety (Corsini-Munt et al., 2017), but this is the first study to document dyadic associations between CIT and depressive symptoms. CIT-related sequelae could become entangled between partners as they both experience the multiple challenges associated with the birth of a child and the psychological burden it involves. This could reawaken past trauma and distress that would not only spill over into the survivor's current experience but also into their partner's experience (Liu et al., 2019), leading to more SPD for both parents. This inter-influence among co-parents is also reflected in the significant covariations we observed between their levels of CIT and SPD; a result consistent with previous research showing how partners' SPD (Neri et al., 2020) and CIT history (Rassart et al., 2022) are interconnected.

6.2. The moderating role of dispositional mindfulness

Results confirmed that dispositional mindfulness acts as a protective mechanism in the association between CIT and SPD. In mothers and fathers with high mindfulness, the association between CIT experience and SPD was weaker, whereas CIT was related to higher SPD for parents who reported lower mindfulness. This offers a potential explanation as to why certain studies observed a link between CIT and SPD (e.g., Choi

et al., 2017; Nagl et al., 2017), while others did not (De Venter et al., 2016). Varying levels of dispositional mindfulness during the postpartum period could explain the variations in CIT survivors' experiences of SPD.

Consistent with the idea of a *pain paradox* (Briere, 2015), parents who have experienced multiple forms of CIT may try to lessen these painful internal experiences through lowered mindfulness disposition and increased experiential avoidance (e.g., dissociative states, substance use, self-injury) that, in return, tend to maintain or exacerbate distress (Briere et al., 2010). Survivors who rely on these responses to face stress might struggle to observe and label inner experiences non-judgementally and non-reactively (lower dispositional mindfulness) in their daily lives, lowering their capacity to prevent SPD after the birth of their child. CIT survivors with higher dispositional mindfulness could notice and sit with their inner experiences, even negative ones, without resorting to harmful avoidant strategies, stopping the cycle of pain and avoidance that may contribute to SPD. Results suggest that mindfulness might act as a protective mechanism to alleviate SPD in CIT survivors.

Mindfulness can be taught, and, with practice, individuals can report increased dispositional mindfulness. Mindfulness-based interventions (MBIs; including prenatal weekend courses and postnatal online programs) have shown a significant increase in dispositional mindfulness and a decrease in depressive symptoms for mothers (Dimidjian et al., 2016; Duncan et al., 2017; Fernandes et al., 2021; Guo et al., 2020; Sheydaei et al., 2017). Our results emphasize that MBIs could also be relevant for fathers and for CIT survivors in particular.

Contrary to our expectations, a parent's dispositional mindfulness level did not moderate the association between their own CIT and their partner's SPD. However, our results showed that one's increased dispositional mindfulness was linked to the partner's lower SPD. The protective role of dispositional mindfulness in the association between CIT and SPD thus appears to be of an intrapersonal nature.

6.3. Key dispositional mindfulness facets in the association between CIT and SPD

The moderating effect of dispositional mindfulness as a whole (i.e., the total FFMQ score) in the association between CIT and SPD reflects that dispositional mindfulness acts as a protective factor, with similar levels of protection for fathers and mothers. Yet, analyses examining the role of each mindfulness facet yielded gender-specific contributions. Overall, these results suggest that mindfulness seems to play a protective role in the link between CIT and SPD in both parents, but through specific mechanisms in mothers and fathers.

Specifically, results showed a buffering role of *observing* in mothers, meaning that more the mother reported higher disposition to observe their inner experience and external stimuli, and less CIT was related to higher SPD. This gender-specific buffering effect may be related to women's higher disposition for *observing* (Royuela-Colomer and Calvete, 2016). Moreover, from a prevention perspective, being able to notice one's negative emotions and thoughts during the postpartum period could protect mothers who are CIT survivors from the risk of becoming overwhelmed by their negative internal experiences and from reporting higher SPD. *Observing* has been described as the first step in being mindful as it allows purposeful attention to be paid to one's inner experiences (Baer et al., 2006). Given the unique challenges that mothers face (e.g., hormonal changes, breastfeeding, post-childbirth recovery, more intrusive thoughts and hyperarousal; Lev-Wiesel et al., 2009), their ability to mindfully observe their internal states and external simulation as they unfold may be especially important in promoting resilience and acting as buffer against the effects of CIT on higher SPD. By mindfully *observing*, mothers might more readily stay in contact with their inner experiences, refraining from letting CIT memories contaminate current experiences, and remaining focused on the needs of their new child as well as their own. Interestingly, in past studies on mindfulness and depression, the *observing* facet was the only facet not significantly

associated with depressive symptoms (Asensio-Martínez et al., 2019; de Bruin et al., 2012), contrasting with the current results. This difference could be attributed to the inclusion of CIT and partner variables in this study and suggests that being able to observe internal experiences as they unfold is a relevant component to foster in mothers who are CIT survivors to lower their SPD.

In fathers, results rather showed a buffering role of *acting with awareness* in the association between CIT and SPD. This specific buffering effect in father may be related to men's higher disposition to *act with awareness* (Alispahic and Hasanbegovic-Anic, 2017). *Acting with awareness* involves turning off one's auto-pilot and focusing on what is happening in the here and now, which may be challenging, but very helpful to foster resilience when fathers are navigating a period as transformative as the first months postpartum. This finding suggests that, during this transition, fathers who are CIT survivors and who report higher tendency to focus moment-to-moment on what they are doing would report fewer SPD than CIT survivors struggling with this aspect of mindfulness. Resorting to an autopilot state could provide relief to parents and allow them to accomplish parental tasks throughout their busy post-partum schedule while keeping distress at bay and maintaining control. However, our results suggest that the disposition of fathers to mindfully select how they act after attending to the information presented to them here and now, specifically buffers the negative effect of CIT on SPD. Indeed, this specific protective effect of *acting with awareness* in fathers may be anchored in the importance of self-awareness and calculated actions for them to decrease SPD in the postpartum period. This suggests that the deleterious effects of CIT on fathers' SPD may be buffered when they show an increased disposition to act mindfully, without making snap judgments, without acting on autopilot based on memories from the past, and without impulsivity, before responding to each situation during the postpartum period. This effect of *acting with awareness* might be especially salient for fathers given their role as the main support person following the birth of their child, which requires them to be primarily focused on behaving mindfully, based on their values and current needs, in addition to their partner's and child's, to foster their own well-being.

Finally, although the remaining facets (i.e., *describing*, *non-reacting*, and *non-judging*) did not act as protective factors in the link between CIT and SPD, they were related to lower SPD. We speculate that parents who report a lower disposition to describe their feelings or who tend to take a negative evaluative stance (or reaction) toward their thoughts and feelings or toward external stimuli (e.g., the child not sleeping or crying incessantly) might report lower subjective well-being. Parents with high nonjudgment skills do not assess each state or situation as good or bad, but rather observe the situations as they are, along with their effects on their internal states and the consequences of their behaviors, and can eventually take a metacognitive distance to have better control over their reactions and behaviors, resulting in better adaptation during the postpartum period (with lower SPD).

7. Limitations and future directions

This study has several strengths including, the large number of parental couples, data on fathers, and advanced statistical methods to study transactional associations between the two parents, but also has limitations. First, the sample was limited to different-gender dyads and co-parents. Further work should confirm the results on diverse parental couples, such as same-gender dyads and single parents. Second, the internal consistency for the *observation* scale was modest and results regarding its protective role in mother should be replicated. Third, even if the online format of the questionnaire allowed respondents to complete the survey from their home at the time of their choosing, it is possible that the parents who participated in the study are higher-functioning parents, since more vulnerable parents could feel too overwhelmed to take part in such a study. Fourth, a longitudinal study would provide more insight into the evolution of SPD over time. Fifth,

other aspects of mindfulness (e.g., interpersonal mindfulness, Khoury et al., 2022; non-judgmental acceptance of self and child, inner experiences during parental interactions (Caçador and Moreira, 2021; Fernandes et al., 2021) could further our understanding of its effect on the link between co-parents' CIT and SPD.

8. Conclusion

The results of the study add to the existing literature highlighting the protective role of dispositional mindfulness in the relationship between CIT and postpartum depression. This study supports the importance of including both parents in research, since an interdependence on the levels of mindfulness and SPD was observed. Research about parents often focuses on mothers, yet the link between one's own CIT, mindfulness, and SPD could be observed in both mothers and fathers, underscoring the need to continue research and intervention efforts to include fathers. Our results may also guide future preventive intervention with parents who are also CIT survivors, since they provide encouraging results on the positive effects of mindfulness on this population. Specifically, our findings highlight the importance to foster mothers' disposition to slow down and *observe* their moment-to-moment experience as it unfolds. Mothers are going through many changes and may need time to absorb their new reality mindfully. In fathers, *acting with awareness* without interference from their reactivity could preserve them from SDP. By learning how to focus mindfully on each task at a time, fathers may increase their perceived experience of purpose in their daily lives, which may help mitigate the effect of CIT (and related emotion dysregulation, posttraumatic stress, etc.) on their own SPD. To be effective, interventions for fathers should adopt a flexible delivery, provide a safe well-tailored environment (e.g., groups of fathers, father-specific model) and address their specific needs (e.g., cognitive distortions around masculinity, their role expectations) (O'Brien et al., 2017). Finally, fostering mindful *describing*, *non-reacting* and *non-judging* would not affect the link between CIT and SPD, but might nevertheless be beneficial to both parents' well-being, including SPD. Mindfulness can be taught; MBIs have been found to increase mindfulness dispositions in CIT survivors (e.g., Earley et al., 2014) and in parents with postpartum depression (e.g., Guo et al., 2020). Our findings suggest building a bridge between these two areas of clinical work to foster postpartum mental health in CIT survivors and their families.

Credit authorship contribution statement

NG and AP were co-responsible for the design of the research project, data collection, project administration, and supervision of students involved; NG led the work on this specific study and the drafting of the manuscript; NG, AP, and CAR collaborated on the conceptualization of the data analysis; NG, AP and CAR collaborated in writing the original draft. CAR and GS created the tables, GS produced the figure, and ran the main statistical analyses. CH provided insightful comments to improve the study and contributed to writing the manuscript. MDL contributed to the literature review, checked the references, and helped write the manuscript. All authors contributed to and have approved the final manuscript.

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Role of the funding source

The funding sources had no involvement in study/research design,

data collection, and interpretation, the writing of the manuscript, or the decision to submit the article for publication.

Conflict of interest

The authors have no conflict of interest.

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Appendix A. Supplementary data

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