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## Family dynamics. An exploration of parental sensitivity and depressive symptoms among mothers and fathers of toddlers

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### ABSTRACT

In studies of maternal sensitivity, the influence of mothers' depressive symptomatology has been consistently highlighted. Additionally, the relevance of both maternal and paternal sensitive responses to children's development has been recognized. However, literature regarding the dynamics of the mother-father-toddler triad is scarce. This is particularly true when understanding how parental sensitivity may be bidirectionally shaped by both parents' (*i.e.*, mothers' and fathers' depressive symptomatology) and children's characteristics (*i.e.*, age). Hence, the present study aims to describe and analyse the associations between parental depression, paternal sensitivity and children's socioemotional difficulties and age with mothers' sensitive responses to highlight the appropriateness of considering fathers' depressive symptoms and sensitivity to better understand the impact of maternal depressive symptomatology on mothers' sensitivity. The participants included 80 Chilean mother-father-child triads in which all children were between 1 and 3 years of age and presented some degree of socioemotional difficulty. The results reveal no differences in maternal and paternal sensitivity or higher depressive symptomatology in mothers than in fathers. Additionally, while mothers' depression was significantly associated with their sensitivity, this was not the case for fathers. Paternal depressive symptomatology was associated with the mother's depression. Finally, paternal sensitivity emerged as a mediator between maternal depressive symptoms and sensitivity. This result calls attention to the use of paternal variables to understand how maternal depression impacts mothers' sensitivity and to thus develop appropriate interventions that expand the scope of such impacts from the dyad to the triad.

**Key words:** Maternal sensitivity; paternal sensitivity; parental depression.

### Introduction

Parents constitute the main source of children's relational experience, which in turn impacts their overall development (Barrows, 2004; Svetlova & Carpenter, 2017). In particular, parental sensitivity, defined as caregivers' abilities to perceive and read their children's signals, interpret them adequately and address them in a prompt and

suitable way, constitutes a crucial aspect of parenting that impacts children's socioemotional development and mental health (Ainsworth, Bell & Stayton, 1974; Bouvette-Turcot, Bernier & Leblanc, 2017; DePasquale & Gunnar, 2020; Farkas, Valloton, Strasser, Santelices & Himmel, 2017; Manning, 2019; McMahon *et al.*, 2019; Riera, 2016).

Although studies show that during children's first five years, both mothers and fathers can sensibly interact with their offspring, the literature regarding parental sensitivity has mainly focused on mother-child interactions and is still inconclusive regarding similarities and differences between maternal and paternal parenting skills. Nonetheless, while some studies have found similar results regarding fathers' and mothers' parental sensitivity to their 4-month babies from evaluations of diverse contexts involving care routines, free play and the 'still face' procedure (Branger, Emmen, Woudstra, Alink & Mesman, 2019; Eickhorst, *et al.*, 2010), others have reported differences such as less sensitivity and emotional availability in fathers (Fuertes, Faria, Beeghly & Lopes-dos-Santos, 2016; Hallers-Haalboom, *et al.*, 2014). Specifically, Fuertes *et al.* (2016) reported higher maternal sensitivity than paternal sensitivity over children's first 9 and 15 months during free play interactions. Additionally, Hallers-Haalboom *et al.* (2014) found higher sensitivity and less intrusiveness in mothers than in fathers of 1- and 3-year-old children in free play interactions. Likewise, Parsons *et al.* (2017) found mothers to provide more positive ratings of happy expressions and more extreme ratings of intense emotions than fathers during a laboratory procedure involving the videorecording of 8-month-old infants. Hence, further research is needed to achieve a better understanding of maternal and paternal parenting skills within family processes.

Among the variables considered to influence parental sensitivity, caregivers' depressive symptomatology has been widely studied and associated with a decrease in parental sensitive responses (Binda, Figueroa-Leigh & Olhaberry, 2019; Bernard, Nissim, Vaccaro, Harris & Lindheim, 2018; DePasquale & Gunnar, 2020; Gentile & Fusco, 2017; Koch *et al.*, 2019; Muzik *et al.*, 2016). Specifically, studies have identified that maternal depression negatively impacts the quality of mother-child interactions as well as the subjective experience of motherhood through the intensification of mothers' negative affect and less positive maternal perceptions of their children and of themselves (Behrendt, Scharke, Herpertz-Dahlmann, Konrad, & Firk, 2019; Field, 2010; McAndrew, 2019; Lefkovic, *et al.*, 2018; Muzik *et al.*, 2016; Tronick & Reck, 2009). In addition, even mild depressive symptoms, which may not be even perceived as problematic, can significantly impact a mother's perception of the quality of her bond with her child (Moehler *et al.*, 2006). Nonetheless, other studies report that adequate maternal sensitivity could act as a protective factor that could reduce the negative effects of maternal depression on young

children's clinical symptomatology (Kaplan, Burgess, Sliter & Moreno, 2009; Seath, Murray, Netsi, Netsi, Psychogiou & Ramchandani, 2015; Sidor, Kunz, Schweyer, Eickhorst & Cierpka, 2011). Therefore, since mothers' sensitivity plays an essential role in children's development, the exploration of its predictors is fundamental to identifying families at risk of less sensitive parenting and thus to the development of children's difficulties (Rahma Alsarhi, Prevoo, Alink & Mesman, 2021).

On the other hand, depressive disorders are a public health concern that affects 18.4% of the general population, with a higher prevalence found in women of working age with less education (Brummelte & Galea, 2016; Dougherty *et al.*, 2013; Markkula, Zito, Peña, Margozzini & Retamal, 2017; Rosenfield & Mouzon, 2013). Within family dynamics, the literature has reported associations between maternal and paternal depressive symptomatology (Kiviruusu, *et al.*, 2020; Thiel, Pittelkow, Wittchen & Garthus-Niegel, 2020). Specifically, Chilean studies report prevalence rates of 38% and of between 10.5% and 18.5% for maternal and paternal depression, respectively (Perez *et al.*, 2018; Hahn-Holbrook, Cornwell-Hinrichs & Anaya, 2018, Jadresic, 2010; Perez & Brahm, 2017).

Similarly, for children with a mother with maternal depression, studies have identified a higher risk of suffering from depression throughout their lives (Fox & Borelli, 2015; Pawlby, Hay, Sharp, Waters & O'Keane, 2009) from negative developmental consequences (Milgrom, Gemmill & Bilszt, 2008; Grace, Evindar & Stewart, 2003; Pearson *et al.*, 2012), a negative effect on mother-baby dyadic adjustment (Vismara *et al.*, 2016, Rolle *et al.*, 2017), an intensification of negative affect and a reduction in maternal sensitive responses to infant signals and needs (Behrendt, Scharke, Herpertz-Dahlmann, Konrad, & Firk, 2019; Lefkovic, *et al.*, 2018). All of the abovementioned consequences have been found in mothers who meet criteria for the diagnosis of major depression as well as in those with subclinical symptomatology (Tronick & Reck, 2009), highlighting the negative impact of depression on family interactions and mental health (Dougherty, Tolep, Smith & Rose, 2013; Olhaberry *et al.*, 2013; Paulson & Bazemore, 2010).

Despite the above evidence of negative impacts of maternal depression on mothers' sensitivity to their children and of a positive association between paternal and maternal depressive symptomatology, few studies have explored the relationship between sensitivity and depressive symptoms in parenting couples of toddlers. While studies acknowledge that both members of the parental dyad constitute a source of psychological and emotional support for all family members, most studies have historically focused on mother-child dyadic interactions (Gentile & Fusco, 2017; Fosco & Grych, 2013; Teubert & Pinquart, 2010). However, father-child relationship research has expanded (Sarkadi, Kristiansson, Oberklaid, & Bremberg, 2008; Wong *et al.*, 2015), revealing its impact on dynam-

ics within the mother-father-child triad, both for parenting and children's development (Sameroff, 2009; Sanson, Letcher, Havighurst, 2018; Woldarsky, Urzúa, Farkas & Valloton, 2019). Particularly, studies have identified an association between paternal emotional support and adequate maternal sensitivity (Olhaberry & Santelices, 2013) as well as an association between fathers' involvement with mothers' and offspring's mental health (Fisher, 2017; Gere *et al.*, 2013). Additionally, studies have found that the father's acceptance reduces the impact of maternal depression on the mother's sensitive responses, while his aggressiveness exacerbates the negative impact of the mother's depression on her sensitivity towards their 6-month-old baby and that triadic interactions mediates the association between the mother's parenting skills and socioemotional difficulties in children of between 1 and 3 years of age (Cockenbergh & Leerkes, 2003; Leon & Olhaberry, 2020). However, even though there is evidence that fathers' depressive symptomatology could predict mothers' depression at a later point in time, studies of this relationship, particularly of the factors' interdependence, are still scarce, particularly for the toddler raising years (Theil, 2020).

Another important aspect to consider when studying parental sensitivity is the possible influence of a child's age and socioemotional difficulties. Development between 12 and 48 months is characterized by rapid, complex, simultaneous and interrelated cognitive, emotional and physical changes. In particular, socioemotional development refers to children's development of capacities to form close and secure adult and peer relationships; explore and learn from the environment and experience, regulate and express emotions in socially and culturally appropriate ways (Yates, Ostrosky, Cheatham, Fetting, Haffer & Santo, 2008). Therefore, during the toddler years, children become capable of independent walking, coordination, paying attention to others, distinguishing the cooccurrence of different emotions, understanding that others' internal states can differ from their own and developing mechanisms that allow for a better understanding and regulation of their own emotions and behaviours in accordance to cultural practices (Allen, 2017; Henderson, Burrows & Usher, 2017; Brownell & Knopp, 2007; Johansson, Marciszko, Brocki & Bohlin, 2015; Tomasello & Carpenter, 2007; Svetlova & Carpenter, 2017). Notwithstanding, while children's more developed socioemotional skills may facilitate caregivers' sensitive responses, other age-appropriate developments, such as oppositional behaviour and the search for autonomy, as well as socioemotional difficulties, may increase demands on parental sensitivity (DePasquale & Gunnar, 2020; Dougherty *et al.*, 2013). Specifically, among the unique challenges of raising toddlers, the literature has identified that parents' perceptions of their children's stubbornness, noncompliance, aggression, communication challenges, and need for autonomy emerge as the major challenges of

parenting children of this age group (Known *et al.*, 2013; McHale *et al.*, 2000).

Based on the abovementioned findings, the literature shows that family subsystems do not function in isolation and that children's development cannot be comprehended based on their interactions with each parent separately (Favez, Scaiola, Tissot, Darwiche & Frascarolo, 2011; Fosco & Grych, 2013). Thus, since each member of the mother-father-child triad plays a specific role in the family context, evidence stresses the relevance of studying maternal depressive symptomatology and sensitivity in relation to children's development as well as how mothers' sensitive responses may be affected by other family members' characteristics.

Hence, the present study aims to analyse the relationships between parental depression, paternal sensitivity and children's socioemotional difficulties and age with mothers' sensitive responses in Chilean mother-father-child triads. The intention is to highlight the appropriateness of considering fathers' depressive symptoms and sensitivity as well as children's characteristics to understand the impact of maternal depression on her sensitivity within family dynamics. It is hypothesized that there is a negative association between parental depressive symptomatology and sensitivity as well as between children's socioemotional difficulties and parental sensitivity. Additionally, higher levels of depression are expected in mothers, and paternal sensitivity is expected to act as a mediator between maternal depression and maternal sensitivity.

## Materials and methods

### Participants

The participants included 80 mother-father-child triads that resided in Santiago, Chile and were referred by family health care centres, JUNJI nursery/daycare centres (National Board of Daycare Centers of the Ministry of Education of the Government of Chile) or other participants due to children's socioemotional difficulties. All participating toddlers were between 12 and 36 months of age ( $M=24.73$ ,  $SD=7.35$  months) and were the youngest of their family group. Of these toddlers, 60% were male, 71.3% were firstborn children and 58.1% were attending daycare. The mothers' ages ranged from 20 to 43 years ( $M=32.26$ ,  $SD=4.97$ ), and the fathers' ages ranged from 22 to 54 years ( $M=34.66$ ,  $SD=6.34$ ). Seventy-five percent of the mothers and 78.75% of the fathers had a technical or university degree, and 48.75% of the mothers and 93.75% of the fathers had a full-time paid job at the time of the study.

As our inclusion criteria, we studied parents of at least 18 years of age in a couple relationship at the time of the study and with at least one child between the ages of 12 and 36 months with difficulties in one or more of the following areas: sleeping, feeding, behavioural, emotional,

and relationship issues, as assessed by the *Ages & Stages Questionnaires: Social-emotional ASQ:SE* (Squires *et al.*, 2002). Exclusion criteria included the presence of intellectual and/or sensory disability in children as well as the presence of parental psychosis and/or addictions as diagnosed by a health professional, by the referring institution, or at the first family interview.

## Procedure

The population included in this study took part in a larger Fondecyt Start-up Project (N° 11140230) that considered the implementation and evaluation of a video-feedback intervention and that was approved by the institutional Human Research Ethics Committees of the Catholic University of Chile and by the Chilean National Commission of Scientific and Technological Research (CONICYT).

Participants were contacted by phone by certified members of the research team who explained the study in detail and determined whether the participants' families met the inclusion and/or exclusion criteria. For those who fulfilled the requirements and agreed to participate, the first assessment session was coordinated at the family's household, where both parents signed an informed consent form that explained the study's objective, benefits, risks, and data confidentiality safeguards and the voluntary nature of participation. Thereafter, parents completed surveys on sociodemographic and psychological characteristics and on their children's socioemotional difficulties in the presence of a psychologist to address doubts that may emerge. Afterwards, maternal and paternal sensitivity were independently assessed for each caregiver with their child from the recording of a free play interaction according to the procedure defined by the Experimental Index of Child-Adult Relationships (CARE-Index, Crittenden, 2006, unpublished manuscript). At the end of the evaluation, triads participated in a brief video-feedback intervention.

## Instruments

*Personal information questionnaire.* The following sociodemographic information was collected: each child's age, gender, birth order and number of siblings and each parent's age, years of education, employment status, and history of psychological/pharmacological treatment. An overview of sociodemographic information can be found in Table 1.

*Experimental Index of Child-Adult Relationships (CARE-Index, Crittenden, 2006, unpublished manuscript).* This instrument was used to evaluate the sensitive responses of mothers and fathers during dyadic interactions with their children. The index was used to assess caregiver-child interactions through 3 to 5 minutes of video recording of free play. Values were coded according to 7 aspects of interactive behaviour evaluated separately for each participant (facial and verbal expression, body positioning and contact, expressions of affect and turn taking, and the selection and control of activity) and with three descriptors for each adult (sensitive, controlling and nonresponsive) and four for each child (cooperative, difficult, compulsive and passive). Finally, coding was done based on two main dyadic constructs (the adult's sensitivity to the child's signals and the latter's cooperation with the former) and a dyadic sensitivity scale of 0 to 14 points, with values of 0-4 signalling 'risky' parenting, values of 5-6 denoting 'poor' parenting, values of 7-10 denoting 'adequate' parenting, and values of 11-14 denoting 'sensitive' parenting. Scores of below 7 indicate a need for intervention. For the present study, coding was performed by psychologists trained by the author of the instrument without information about the families and reached an interjudge reliability value of  $\geq 0.7$ .

*The Beck Depression Inventory (BDI-IA, Beck, et al., 1961).* We assessed depressive symptomatology through a 21-item self-report questionnaire. Each item was rated on a 0-3 scale, with higher scores denoting higher levels

**Table 1. Differences in maternal and paternal sensitivity.**

	Group	Mothers					Fathers				
		N	Mean	SD	U	P	N	Mean	SD	U	P
Child Gender	Male	48	5.88	1.71	619	0.132	48	6.40	2.22	739	0.775
	Female	32	6.25	1.55			32	6.13	1.56		
Paid Job	No	19	5.84	2.29	0.432	0.086	2	7.5	4.95	0.75	0.937
	Yes	61	6.08	1.41			78	6.26	1.91		
Child in Day-care	No	31	5.81	1.33	0.586	0.367	31	6.23	2	0.637	0.745
	Yes	43	6.30	1.87			43	6.3	1.9		
Nationality	Chilean	75	6	1.58	0.184	0.951	76	6.28	1.93	0.171	0.804
	Other	5	6.4	2.7			4	6.5	3.11		
Current Treatment	No	70	6.21	1.66	0.131	0.001***	76	6.32	2.01	0.138	0.761
	Yes	10	4.70	0.68			4	5.75	0.96		
Former Treatment	No	41	5.88	1.42	0.736	0.533	55	6.42	2.05	0.593	0.3190
	Yes	39	6.18	0.86			25	6.00	1.8		

U, U Mann-Whitney test; \*P<0.05, \*\*P<0.01, \*\*\*P<0.001.

of depressive symptomatology. Scores for instrument categories were set as follows: scores of 0-9 denoted minimal depression, scores of 10-18 denoted mild depression, scores of 19-29 denoted moderate depression and scores of 30-63 denoted severe depression, and the clinical cut-off point for the Chilean sample was set as 14. The Chilean adaptation of the BDI-IA reports high estimations of internal consistency  $\alpha=0.92$  (Valdés *et al.*, 2017), and in the present study, an *alpha value* of .83 was calculated for both the fathers and mothers.

*The Ages & Stages Questionnaire: Social-emotional (ASQ:SE, Squires et al., 2002).* Children's socioemotional development was assessed with a caregiver's report questionnaire evaluating 7 areas of socioemotional development (autonomy, compliance, adaptive functioning, self-regulation, affect, interaction and social communication). The questionnaire was completed by both parents. To address potential doubts, the questionnaire was completed in the presence of a psychologist and scored according to the number of reported concerns. Higher total scores indicate problems, whereas low scores suggest that a child's social and emotional behaviour was considered appropriate by his or her parents. The instrument has evidenced concurrent validity levels of 71%-90% with an overall agreement score of 84%, a test-retest reliability score of 89%, and intraclass correlations of 0.91 (Squires *et al.*, 2002). The overall Cronbach alpha of the ASQ-SE is 0.82 (Squires *et al.*, 2002). The instrument measures different forms depending on a child's age, and the number of items measured varies by form. Since children included in our sample were between 1 and 3 years of age, different forms were used, and it was not possible to compare the direct scores obtained. Thus, the severity of the problems facing each child was calculated as a percentage relative to the maximum possible score for each child's respective age.

### Data analysis

First, normality and homoscedasticity assumptions were tested with a Shapiro Wilk test and scatterplot of residuals vs. predicted values, respectively. Since these assumptions were violated, the Mann-Whitney U test was used to compare mean differences in maternal and paternal sensitivity according to sociodemographic variables.

Preliminary analyses were run to confirm expected correlations between parental sensitivity and depression and between children's age and socioemotional development.

A three-stage hierarchical multiple linear regression model was then calculated to estimate the association between maternal sensitivity (dependent variable) and both depression and paternal sensitivity (independent variables). Due to variability in the children's ages (12 to 36 years) and the different levels of emotional difficulty for which they were referred, both variables were controlled. Additionally, given violations of normality and homoscedasticity assumptions in our data, a bootstrapping

regression was used based on the observations and via error resampling. The bootstrap method allows for inference even when errors do not follow a normal distribution or constant error variance (Hosseini *et al.*, 2017).

Finally, as a way of evaluating the mediating effect of paternal sensitivity on the relationship between maternal depressive symptomatology and sensitivity, a mediation model was employed. For this purpose, Model 4 of a process macro (Hayes, 2016) was used. Within this mediation model, maternal depression was introduced as an independent variable, paternal sensitivity was used as a mediator and maternal sensitivity was set as a dependent variable. As recommended by Hayes (2009), 5000 bootstrap samples for the construction of a 95% bias-corrected confidence interval (CI) for indirect effects were used. The null hypothesis was rejected once the CI did not include zero. The data analyses were managed using SPSS v.25 considering 95% confidence intervals (SPSS, 2017).

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## Results

### Preliminary analyses

The results show no significant differences between mothers and fathers' sensitivity ( $U(79)=-1.19$ ,  $P=0.239$ ). Most parents showed less than 7 points on sensitivity, which was set as the cut-off point for requiring intervention ( $M=6.03$ ,  $SD=1.65$  and  $M=6.29$ ,  $SD=1.98$  for mothers and fathers, respectively). According to this threshold, 68.8% of the mothers and 66.3% of the fathers showed sensitivity levels for which intervention is recommended.

Regarding differences in parental sensitivity and sociodemographic variables for the mothers and fathers, such differences were only observed in mothers in current psychological treatment, who showed significantly lower levels of sensitivity than those who were not ( $U(79)=5.199$ ,  $P<0.001$ ) (see Table 1).

Regarding the participation of mothers and fathers in parenting activities, 100% of the mothers reported being involved in tasks associated with feeding, cleaning and playing with their children. For the fathers, 81.3% reported taking part in feeding and cleaning, while 93.8% stated that they played with their children.

Regarding the depressive symptomatology distributions of the mothers and fathers, 25% of the sample was composed of couples in which both the mother and father evidenced depressive symptomatology from the 9-point cut-off indicator. Additionally, for 32.5% and 6.3% of the couples, only the mother and father evidenced depressive symptoms, respectively. Furthermore, for 36% of the participating couples, no depression indicators were identified in either member of the parenting dyad.

Moreover, significant differences were found for parental depression ( $U(79)=4.52$ ,  $P\leq 0.001$ ), where the average BDI score recorded as 10.28 ( $SD=6.53$ ) for mothers and as 6.45 ( $SD=5.40$ ) for fathers. Among the mothers,

10% exhibited moderate depression, 39% exhibited mild depression and 51% exhibited no or minimal depressive symptomatology. Among the fathers, 74% exhibited no or minimal depression, 23.5% had mild depression and 2.5% had moderate depressive symptoms.

Regarding the children's socioemotional difficulties, 65% of the participating children scored above the cut-off point of the ASQ-SE. That is, 52 children presented clinically significant difficulties in their socioemotional development when participating in the study.

Moreover, the results show that the mothers' and fathers' sensitivity levels were significantly correlated ( $r=0.414$ ,  $P<0.001$ ) and that the mothers' depression was significantly correlated with maternal sensitivity ( $r=-0.237$ ,  $P=0.034$ ). In addition, paternal sensitivity, although not correlated with paternal depression ( $r=-0.112$ ,  $P=0.323$ ), was significantly associated with maternal depression ( $r=-0.301$ ,  $P=0.007$ ). Additionally, while the child's age was not related to maternal sensitivity ( $r=0.064$ ,  $P=0.571$ ), it was associated with paternal sensitivity ( $r=0.26$ ,  $P=0.02$ ), indicating that while the mothers were equally sensitive to all of their children, the fathers were more sensitive to their older toddlers. Finally, the children's socioemotional difficulties were not significantly associated with either maternal ( $r=-0.129$ ,  $P=0.256$ ) or paternal ( $r=-0.057$ ,  $P=0.614$ ) sensitivity. The above correlations are illustrated in Table 2.

### Hierarchical regression analysis

To explore how paternal sensitivity and maternal depression are associated with maternal sensitivity, a hierarchical regression analysis was run while controlling for child age and social-emotional development. In stage one, neither a child's age nor his or her socioemotional development contributed significantly to the regression model ( $F(2,77)=1.11$ ,  $P=0.333$ ). Control variables accounted for only 2.8% of the variation in maternal sensitivity. In stage two, maternal depression significantly explained maternal sensitivity ( $r=-0.028$ ,  $P=0.031$ ). With the introduction of

maternal depression, the model explained an additional 5.79% of the variation in maternal sensitivity. The change in the R-square value of this step was significant ( $F(1,76)=4.82$ ,  $P=0.031$ ). Finally, the inclusion of paternal sensitivity into the regression model explained an additional 11.3% of the variation in maternal sensitivity, and this change in the R-square value was significant ( $F(1,75)=10.58$ ,  $P=0.002$ ). When all four independent variables were included in stage three, maternal depression was no longer significant ( $\beta=-0.027$ ,  $P=0.222$ ) in explaining maternal sensitivity. The only remaining significant predictor of maternal sensitivity was paternal sensitivity ( $r=-0.095$ ,  $P=0.002$ ). Together, the four independent variables accounted for 19.91% of the variance in maternal sensitivity (Table 3). Bootstrapped coefficients for the full model are shown in Table 4.

### Mediation analysis

As shown in Figure 1, maternal depression was negatively associated with paternal sensitivity (a) ( $\beta=-0.301$ , 95% CI  $[-0.156, -0.026]$ ). In turn, the latter was positively associated with maternal sensitivity (b) ( $\beta=0.377$ , 95% CI  $[0.135, 0.493]$ ). Once paternal sensitivity was included in the model, the direct effect (c') of maternal de-

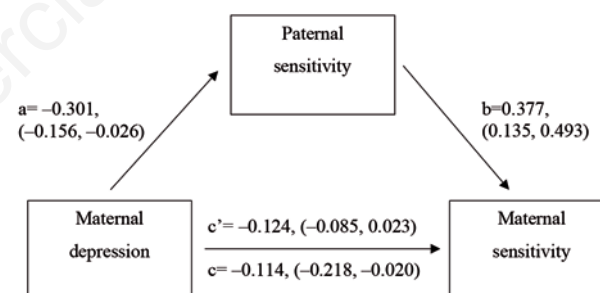


Figure 1. Standardized regression coefficients for the relationship between maternal depression and maternal sensitivity mediated by paternal sensitivity.

Table 2. Correlation matrix.

	1	2	3	4	5	6	7	8	9
1. Child's age	—								
2. Maternal Education	0.038	—							
3. Paternal Education	0.091	0.701***	—						
4. Child's socio-emotional difficulties	0.299**	0.006	-0.082	—					
5. Maternal Sensitivity	0.064	0.184	0.067	-0.129	—				
6. Paternal Sensitivity	0.260*	-0.084	-0.020	-0.057	0.414***	—			
7. Maternal Depression	-0.074	0.104	-0.041	-0.067	-0.237*	-0.301**	—		
8. Paternal Depression	-0.164	0.035	-0.056	-0.002	-0.043	-0.112	0.206	—	
9. Couple's number of children	0.151	-0.304**	-0.220	-0.023	-0.196	0.037	-0.022	0.023	—

\* $P<0.05$ , \*\* $P<0.01$ , \*\*\* $P<0.001$ .

pression on maternal sensitivity was no longer significant ( $\beta = -0.124$ , 95% CI  $[-0.085, 0.023]$ ) due to a total mediation effect ( $\beta = -0.114$ , 95% CI  $[-0.218, -0.020]$ ).

## Discussion and conclusions

This study provides evidence that contributes to the existing literature on parental sensitivity in highlighting the relevance of considering both mothers and fathers in research of this area.

Initially, the results revealed higher levels of depressive symptomatology in women than in men (Brummelte, *et al.*, 2016; Dougherty *et al.*, 2013). A possible explanation in line with the aforementioned literature is based in the multicausality and complexities of depression aetiology, for which the interplay between the roles of sex hormones, reproductive events and conflicts between parenting and professional interests could explain the higher levels of depressive symptomatology evidenced by mothers (Brummelte & Galea, 2010; Marchand *et al.*, 2016; Markkula *et al.*, 2017). This argument has gained momentum in explaining the higher incidence of depres-

sion found in Chilean women. In particular, Chilean sociodemographic data show that while 0.6% of men do not work because they are taking care of a family member, this percentage is 19.4% among women (Encuesta Casen, 2017). Additionally, female participation in the Chilean labour market is lower than in most OECD countries (Caldera, 2014), reflecting work-family conflicts that many Chilean women encounter, which may contribute to the development of depressive symptomatology as observed in the participants of the present study.

Furthermore, and according to previous studies, the results show that mothers and fathers do not differ significantly in their ability to sensitively respond to their children's signals and needs (Branger *et al.*, 2019). Additionally, even though the results show a negative association between maternal depression and sensitivity (Binda *et al.*, 2019; Bernard *et al.*, 2018; Muzik *et al.*, 2016), the most important factor in explaining mothers' sensitivity was found to be fathers' sensitivity. Among these associations, the latter emerged as a risk factor that may intensify the negative impact of maternal depression by decreasing mothers' sensitivity (Gere *et al.*, 2013; Olhaberry & Santelices, 2013). Particularly, the negative re-

**Table 3. Hierarchical regression to predict maternal sensitivity.**

Predictor	B	$\beta$	t	p	95% CI		Overall model test		
					Lower	Upper	F (df1, df2)	R <sup>2</sup>	$\Delta R^2$
<b>Stage 1</b>							1.11 (2, 77)	0.028	0.028
Intercept	5.865	0.664	8.829	<0.001					
Child Age	0.025	0.026	0.958	0.341	-0.122	0.347			
ASQ-SE	-0.027	0.019	-1.379	0.172	-0.397	0.072			
<b>Stage 2</b>							2.39 (3, 76)	0.086	0.058
Intercept	6.605	0.731	9.038	<0.001					
Child Age	0.022	0.026	0.855	0.395	-0.131	0.327			
ASQ-SE	-0.029	0.019	-1.514	0.134	-0.403	0.055			
BDI_M	-0.061	0.028	-2.195	0.031	-0.461	-0.022			
<b>Stage 3</b>							4.66 (4, 75)	0.199	0.113
Intercept	4.808	0.882	5.445	<0.001					
Child Age	-0.002	0.025	-0.0685	0.946	-0.233	0.2179			
ASQ-SE	-0.019	0.019	-1.038	0.303	-0.333	0.1049			
BDI_M	-0.034	0.027	-1.2326	0.222	-0.351	0.0827			
SENS_P	0.308	0.095	3.2528	0.002	0.143	0.596			

ASQ-SE, socio-emotional development; BDI\_M, maternal depression; SENS\_P, paternal sensitivity.

**Table 4. Bootstrap coefficients for the full model.**

Model	Unstandardized	Bias	Standard error	95% bca CI	
				Lower	Upper
H <sub>1</sub> (Intercept)	4.847	0.037	0.900	2.835	6.366
Child age	-0.002	<0.000	0.023	-0.046	0.043
ASQ-SE	-0.020	<0.000	0.016	-0.046	0.015
BDI_M	-0.035	-0.001	0.022	-0.073	0.018
Paternal sensitivity	0.309	-0.003	0.119	0.090	0.565

bca, bias corrected accelerated; CI, confidence interval; ASQ-SE, socio-emotional development; BDI\_M, maternal depression. Bootstrapping based on 1000 replicates. Coefficient estimate is based on the median of the bootstrap distribution.

relationship between maternal depressive symptomatology and paternal sensitivity and the total mediation effect observed for the indirect effect of paternal sensitivity on the relationship between maternal depression and maternal sensitivity call attention to the dynamics and relational transactions that occur within family systems. In light of these results, future interventions that address parental sensitivity should expand the scope of analysis from the dyad to the triad by considering both members of the parenting couple.

In this regard, the literature has highlighted the relationship between depression and partner satisfaction as well as its differences according to gender, where increments of parental conflict have been associated with decreased in support towards the partner, and where women's depressive symptomatology has been identified as a predictor of men's marital satisfaction (Faulkner, Davey & Davey, 2005; Gabriel, Beach & Bodenmann, 2010).

Particularly, in the present study, the foregoing findings could be reflected in greater paternal reactivity to maternal depression and in higher levels of maternal discomfort resulting from a lack of partner support as expressed in the failure to have sensitive responses towards one's children's signals and needs. As previously stated, Chile is a country in which traditional gender roles are reinforced, with women assuming the majority of housework and child-rearing tasks (Bush & Peterson, 2014). Therefore, since cultural values and perspectives impact parental sensitivity (DePasquale & Gunnar, 2020), maternal depression, with its concomitant interferences in daily functioning, and children's increasing autonomy, which requires more parental coordination and limit setting, may increase paternal stress (American Psychiatric Association, 2013; Goodman, 2008; McHale *et al.*, 2000). This could in turn impact fathers' parental skills, such as their sensitivity, which would increase family stress and successively disturb maternal sensitivity even further. This hypothesis highlights the relevance of considering cultural perspectives to accurately interpret the associations between parenting and children's development within the family system (DePasquale & Gunnar, 2020).

Moreover, even though children's age was not found to explain maternal sensitivity, it was significantly associated with paternal sensitivity. This result suggests that while children's socioemotional development over the years does not have an impact on maternal sensitivity, it facilitates fathers' sensitive responses towards the needs of their children through their toddler years. Most likely, the development of cognitive, affective, motor, and interactional skills in children close to three years of age could facilitate exchanges and favour the quality of interactions and sensitivity in parents. Particularly, the fact that a mother evidences equal levels of sensitivity regardless of her child's age could be attributable to mothers being responsible for childrearing during the first year of their children's lives and carrying out less paid work. Thus, it

could be speculated that these mothers have had more opportunities to interact with their children since birth, which in turn would favour nonverbal exchanges as well as the quality of interactions with younger children whose interactive skills are developing (Fuentes *et al.*, 2016; Huston & Rosenkrantz Aronson, 2005). Future studies should address this association to develop more understanding of which aspects of children's development may have a stronger impact on paternal sensitivity. The result stresses the notion that the parent-child relationship is built not only on sociocultural factors but also throughout bidirectional processes that impact both children's and parents' characteristics (DePasquale & Gunnar, 2020).

Regarding the hierarchical regression analysis results, it is likely that the small percentage (19.9%) of variance explaining maternal sensitivity according to paternal sensitivity, maternal depression, childhood socioemotional difficulties and child age is due to other relevant variables not being considered in the present study. Bearing these limitations in mind, future studies on parental sensitivity should also include variables associated with couples' relationship satisfaction, adjustment to parenting and other sociocultural elements that underline and impact parental practices (DePasquale & Gunnar, 2020; Rahma Alsarhi, Prevoo, Alink & Mesman, 2021).

Overall, the above results highlight the complexities of maternal sensitivity and its relations to other variables of the family system and help broaden diagnostic understanding of the relationship between maternal depression and sensitivity. This opens the way for preventive treatments and interventions that expand the scope of analysis from the dyad to the triad.

Notwithstanding its relevance, the present study presents various limitations, such as its use of self-report questionnaires to assess depression, the low variability in parental sensitivity and depression found, and the fact that the children studied had been referred for socioemotional difficulties. Additionally, we used a convenience sample and no control with respect to the presence and/or absence of depressive symptomatology among the members of the parenting dyad. Moreover, the low variability in parental depression, particularly for fathers, may have impeded the evaluation of the significance of this variable to mothers' sensitive responses. The use of cross-sectional data that preclude causal interpretation encourages future studies to address such variables from a longitudinal perspective and use other methods and instruments. For example, it would be relevant to propose study designs that allow for an exploration of possible variations between caregivers' sensitive responses, children's ages and socioemotional difficulties, and methods that directly assess the mother-father-child triad in community-based samples.

Finally, although the value of parental sensitivity and family mental health has been well established among clinicians and researchers (O'Neill *et al.*, 2021; Foster, O'Brien & Korhonen, 2011), their understanding within



the triadic dynamic has been less studied (Barrows, 2004; Favez *et al.*, 2006; Sweeney & MacBeth, 2016). Thus, our study highlights the relevance of developing clinical screening and interventions that consider the mother-father-child triad in a dynamic way where every partner makes a significant contribution to family interactions (Favez, *et al.*, 2011; Favez, Frascarolo & Tissot, 2017; Fosco & Grych, 2013). Consequently, our results stress the importance of studying more associations between caregivers' mental health and parenting skills within families, where health professionals should be active agents in promoting the screening of parents' mental health and in the promotion and development of parenting skills in both mothers and fathers.

## References

- American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders (5th ed.)*. doi:10.1176/appi.books.9780890425596.
- Ainsworth, M. D. S., Bell, S. M., & Stayton, D. F. (1974). Infant-mother attachment and social development: Socialization as a product of reciprocal responsiveness to signals. In M. P. M. Richards (Ed.), *The integration of a child into a social world* (pp. 99-135). New York, NY, US: Cambridge University Press.
- Allen, M. (2017). Cognitive development beyond infancy. In B. Hopkins, E. Geangu, & S. Linkenauer (Eds.), *The Cambridge Encyclopedia of Child Development* (pp. 288-296). Cambridge: Cambridge University Press. doi:10.1017/9781316216491.049.
- Barrows, P. (2004). Fathers and families: locating the ghost in the nursery. *Infant Mental Health Journal*, 25(5), 408-423. doi:10.1002/imhj.20016.
- Beck, A., Ward, C., Mendelson, M., Mock, J. & Erbauch, J. (1961). An inventory for measuring depression. *Archives of General Psychiatry*, 4(6), 561-571. doi:10.1001/archpsyc.1961.01710120031004.
- Behrendt, H. F., Scharke, W., Herpertz-Dahlmann, B., Konrad, K., & Firk, C. (2019). Like mother, like child? Maternal determinants of children's early social-emotional development. *Infant Mental Health Journal*, 40(2), 234-247. doi:10.1002/imhj.21765.
- Bernard, K., Nissim, G., Vaccaro, S., Harris, J. L., & Lindhiem, O. (2018). Association between maternal depression and maternal sensitivity from birth to 12 months: a meta-analysis. *Attachment & Human Development*, 20(6), 578-599. doi:10.1080/14616734.2018.1430839.
- Binda, V., Figueroa-Leigh, F., & Olhaberry, M. (2019). Antenatal and postnatal depressive symptoms: Association with quality of mother-infant interaction. *Infant Behavior and Development*, 57, 101386. doi:10.1016/j.infbeh.2019.101386.
- Bouvette-Turcot, A.-A., Bernier, A., & Leblanc, É. (2017). Maternal psychosocial maladjustment and child internalizing symptoms: Investigating the modulating role of maternal sensitivity. *Journal of Abnormal Child Psychology*, 45(1), 157-170. doi:10.1007/s10802-016-0154-8.
- Branger, M. C. E., Emmen, R. A. G., Woudstra, M.-I. J., Alink, L. R. A., & Mesman, J. (2019). Context matters: Maternal and paternal sensitivity to infants in four settings. *Journal of Family Psychology*, 33(7), 851-856. doi:10.1037/fam0000562.
- Brownell, C. A., & Kopp, C. B. (2007). Transitions in toddler socioemotional development: Behavior, understanding, relationships. In C. A. Brownell & C. B. Kopp (Eds.), *Socioemotional development in the toddler years: Transitions and transformations* (pp. 1-39). The Guilford Press.
- Brummelte, S., & Galea, L. A. (2010). Depression during pregnancy and postpartum: contribution of stress and ovarian hormones. *Progress in Neuro-Psychopharmacology and Biological Psychiatry*, 34(5), 766-776. doi:10.1016/j.pnpb.2009.09.006.
- Brummelte, S., & Galea, L. A. (2016). Postpartum depression: Etiology, treatment and consequences for maternal care. *Hormones and behavior*, 77, 153-166. doi:10.1016/j.yhbeh.2015.08.008.
- Bush K.R., & Peterson G.W. (2014) Parenting and parent-child relationships in Chile. In: Selin H. (Eds.), *Parenting across cultures. Science across cultures: the history of non-western science, vol 7*. Springer, Dordrecht. doi:10.1007/978-94-007-7503-9\_23.
- Caldera, A. (2014). *Policies for making the Chilean labour market more inclusive*. OECD Economics Department Working Papers. doi:10.1787/5jz2r9j3f0r6-en.
- Crockenberg, S.C., & Leerkes, E.M. (2004). Infant and maternal behaviors regulate infant reactivity to novelty at 6 months. *Developmental Psychology*, 40, 1123-1132. doi:10.1037/0012-1649.40.6.1123.
- DePasquale, C. E., & Gunnar, M. R. (2020). Parental sensitivity and nurturance. *Future of Children*, 30(2), 53-70.
- Dougherty, L. R., Tolep, M. R., Smith, V. C., & Rose, S. (2013). Early exposure to parental depression and parenting: Associations with young offspring's stress physiology and oppositional behavior. *Journal of Abnormal Child Psychology*, 41(8), 1299-1310. doi:10.1007/s10802-013-9763-7.
- Eickhorst, A., Schweyer, D., Köhler, H., Jelen-Mauboussin, A., Kunz, E., Sidor, A., & Cierpka, M. (2010). Sensitivity of parents with psychosocial stress. *Bundesgesundheitsblatt, Gesundheitsforschung, Gesundheitsschutz*, 53(11), 1126-1133. doi:10.1007/s00103-010-1143-7.
- Encuesta Casen (2017). Observatorio Social. *Previsión social: síntesis de resultados. Santiago de Chile: Ministerio de Desarrollo Social y Familia*. Available from: [http://observatorio.ministeriodesarrollosocial.gob.cl/casen-multidimensional/casen/casen\\_2017.php](http://observatorio.ministeriodesarrollosocial.gob.cl/casen-multidimensional/casen/casen_2017.php)
- Faulkner, R. A., Davey, M. & Davey, A. (2005). Gender-related predictors of change in marital satisfaction and marital conflict. *The American Journal of Family Therapy*, 33, 61-83. doi:10.1080/01926180590889211.
- Farkas, C., Vallotton, C. D., Strasser, K., Santelices, M. P., & Himmel, E. (2017). Socioemotional skills between 12 and 30 months of age on Chilean children: When do the competences of adults matter?. *Infant Behavior and Development*, 49, 192-203. doi:10.1016/j.infbeh.2017.09.010.
- Favez, N., Scaiola, C. L., Tissot, H., Darwiche, J., & Frascarolo, F. (2011). The family alliance assessment scales: steps toward validity and reliability of an observational assessment tool for early family interactions. *Journal of Child and Family Studies*, 20(1), 23-37. doi:10.1007/s10826-010-9374-7.
- Favez, N., Frascarolo, F., & Tissot, H. (2017). The family alliance model: a way to study and characterize early family interactions. *Frontiers in Psychology*, 8, 1441. doi:10.3389/fpsyg.2017.01441.
- Fisher, S. D. (2017). Paternal mental health: why is it relevant?

- American Journal of Lifestyle Medicine*, 11(3), 200-211. doi:10.1177/1559827616629895.
- Field, T. (2010). Postpartum depression effects on early interactions, parenting, and safety practices: a review. *Infant Behavior and Development*, 33(1), 1-6. doi:10.1016/j.infbeh.2009.10.005.
- Fosco, G. M., & Grych, J. H. (2013). Capturing the family context of emotion regulation: A family systems model comparison approach. *Journal of Family Issues*, 34(4), 557-578. doi:10.1177/0192513X12445889.
- Foster, K., O'Brien, L., & Korhonen, T. (2012). Developing resilient children and families when parents have mental illness: A family-focused approach. *International Journal of Mental Health Nursing*, 21(1), 3-11. doi:10.1111/j.1447-0349.2011.00754.x.
- Fox, M., & Borelli, J. (2015). Attachment moderates the association between mother and child depressive symptoms. *Psi Chi Journal of Psychological Research*, 20(1), 29-36.
- Fuertes, M., Faria, A., Beeghly, M., & Lopes-dos-Santos, P. (2016). The effects of parental sensitivity and involvement in caregiving on mother-infant and father-infant attachment in a Portuguese sample. *Journal of Family Psychology*, 30(1), 147-156. doi:10.1037/fam0000139.
- Gabriel, B., Beach, S. R. H., & Bodenmann, G. (2010). Depression, marital satisfaction and communication in couples: Investigating gender differences. *Behavior Therapy*, 41, 306-316. doi:10.1016/j.beth.2009.09.001.
- Gentile, S., & Fusco, M. L. (2017). Untreated perinatal paternal depression: effects on offspring. *Psychiatry Research*, 252, 325-332. doi:10.1016/j.psychres.2017.02.064.
- Gere, M., Hagen, K., Villabø, M., Arnberg, K., Neumer, S., & Torgensen, S. (2013). Fathers' mental health as a protective factor in the relationship between maternal and child depressive symptoms. *Depression and Anxiety*, 30(1), 31-38. doi:10.1002/da.22010.
- Grace, S.L., Evindar, A., & Stewart, D. (2003). The effect of postpartum depression on child cognitive development and behavior: a review and critical analysis of the literature. *Archives of Women's Mental Health*, 6, 263-274. doi:10.1007/s00737-003-0024-6.
- Goodman, J. H. (2008). Influences of maternal postpartum depression on fathers and on father-infant interaction. *Infant Mental Health Journal: Official Publication of The World Association for Infant Mental Health*, 29(6), 624-643. doi:10.1002/imhj.20199.
- Hahn-Holbrook, J., Cornwell-Hinrichs, T., & Anaya, I. (2018). Economic and health predictors of national postpartum depression prevalence: a systematic review, meta-analysis, and meta-regression of 291 studies from 56 countries. *Frontiers in Psychiatry*, 8, 248.
- Hallers-Haalboom, E. T., Mesman, J., Groeneveld, M. G., Endendijk, J. J., van Berckel, S. R., van der Pol, L. D., & Bakermans-Kranenburg, M. J. (2014). Mothers, fathers, sons and daughters: Parental sensitivity in families with two children. *Journal of Family Psychology*, 28(2), 138. doi:10.1037/a0036004.
- Hayes, A. F. (2016). *PROCESS macro for SPSS and SAS (Version 2.16)* [Computer software].
- Hayes, A. F. (2009). Beyond Baron and Kenny: Statistical mediation analysis in the new millennium. *Communication Monographs*, 76(4), 408-420. doi:10.1080/03637750903310360.
- Henderson, H., Burrows, C., & Usher, L. (2017). Emotional development. In B. Hopkins, E. Geangu, & S. Linkenauer (Eds.), *The Cambridge Encyclopedia of Child Development* (pp. 424-430). Cambridge: Cambridge University Press. doi:10.1017/9781316216491.068.
- Hosseini, S. M., Latifi, S., & Kelishadi, R. (2017). Analysis of factors affecting the body mass index in a national sample of Iranian children and adolescents: bootstrapping regression. *Advanced Biomedical Research*, 6.
- Huston, A. C., & Rosenkrantz Aronson, S. (2005). Mothers' time with infant and time in employment as predictors of mother-child relationships and children's early development. *Child Development*, 76(2), 467-482. doi:10.1111/j.1467-8624.2005.00857.x.
- Jadresic, E. (2010). Depresión en el embarazo y el puerperio. *Revista Chilena de Neuro-Psiquiatría*, 48(4), 269-278.
- Johansson, M., Marciszko, C., Brocki, K., & Bohlin, G. (2015). Individual differences in early executive functions: A longitudinal study from 12 to 36 months. *Infant and Child Development*, 25(6), 533-549. doi:10.1002/icd.1952.
- Kaplan, P., Burgess, A., Sliter, J., & Moreno, A. (2009). Maternal sensitivity and the learning-promoting effects of depressed and non-depressed mothers' infant-directed speech. *Infancy*, 14, 143-161. doi:10.1080/15250000802706924.
- Kiviruusu, O., Pietikäinen, J. T., Kylliäinen, A., Pölkki, P., Saarenpää-Heikkilä, O., Marttunen, M., ... & Paavonen, E. J. (2020). Trajectories of mothers' and fathers' depressive symptoms from pregnancy to 24 months postpartum. *Journal of Affective Disorders*, 260, 629-637. doi:10.1016/j.jad.2019.09.038.
- Koch, S., De Pascalis, L., Vivian, F., Meurer Renner, A., Murray, L., Arteche, A. (2019) Effects of male postpartum depression on father-infant interaction: the mediating role of face processing. *Infant Mental Health Journal*, 40, 263-276. doi:10.1002/imhj.21769.
- Kwon, K. A., Han, S., Jeon, H. J., & Bingham, G. E. (2013). Mothers' and fathers' parenting challenges, strategies, and resources in toddlerhood. *Early Child Development and Care*, 183(3-4), 415-429. doi:10.1080/03004430.2012.711591.
- Lefkovic, E., Rigó Jr, J., Kovács, I., Talabér, J., Szita, B., Kecskeméti, A., ... & Baji, I. (2018). Effect of maternal depression and anxiety on mother's perception of child and the protective role of social support. *Journal of Reproductive and Infant Psychology*, 36(4), 434-448. doi:10.1080/02646838.2018.1475726.
- Leon, M. J., & Olhaver, M. (2020). Triadic interactions, parental reflective functioning, and early social-emotional difficulties. *Infant Mental Health Journal*, doi:10.1002/imhj.21844.
- Manning, L. B. (2019). The relation between changes in maternal sensitivity and attachment from infancy to 3 years. *Journal of Social and Personal Relationships*, 36(6), 1731-1746. doi:10.1177/0265407518771217.
- Marchand, A., Bilodeau, J., Demers, A., Beaugard, N., Durand, P., & Haines III, V. Y. (2016). Gendered depression: vulnerability or exposure to work and family stressors?. *Social Science & Medicine*, 166, 160-168. doi:10.1016/j.socscimed.2016.08.021.
- Markkula, N., Zitko, P., Peña, S., Margozzini, P., & Retamal, P. (2017). Prevalence, trends, correlates and treatment of depression in Chile in 2003 to 2010. *Social Psychiatry and Psychiatric Epidemiology*, 52(4), 399-409. doi:10.1007/s00127-017-1346-4.
- McAndrew, A. J. (2019). Maternal perinatal depression: Emotional development in offspring from infancy to adoles-

- cence. *Early Child Development and Care*, 189(1), 168-177. doi:10.1080/03004430.2017.1292398.
- McHale, J.P., Kuersten-Hogan, R., Lauretti, A., & Rasmussen, J.L. (2000). Parental reports of coparenting and observed coparenting behavior during the toddler period. *Journal of Family Psychology*, 14, 220-236. doi:10.1037//0893-3200.14.2.220.
- McMahon, G. E., Spencer-Smith, M. M., Pace, C. C., Spittle, A. J., Stedall, P., Richardson, K., Cheong, J.L.Y., Doyle, L. W., Anderson, P. J., & Treyvaud, K. (2019). Influence of fathers' early parenting on the development of children born very preterm and full term. *The Journal of Pediatrics*, 205, 195-201. doi:10.1016/j.jpeds.2018.09.073.
- Milgrom, J., Gemmill, A., & Bilszt, J. (2008). Antenatal risk factors for postnatal depression: A large prospective study. *Journal of Affective Disorders*, 108, 147-57. doi:10.1016/j.jad.2007.10.014.
- Moehler, E., Brunner, R., Wiebel, A., Reck, C., & Resch, F. (2006). Maternal depressive symptoms in the postnatal period are associated with long-term impairment of mother-child bonding. *Archives of Women's Mental Health*, 9(5), 273-278. doi:10.1007/s00737-006-0149-5.
- Muzik, M., Morelen, D., Hruschak, J., Rosenblum, K. L., Bocknek, E., & Beeghly, M. (2016). Psychopathology and parenting: An examination of perceived and observed parenting in mothers with depression and PTSD. *Journal of Affective Disorders*, 207, 242-250. doi:10.1016/j.jad.2016.08.035.
- Olhaberry, M. & Santelices, M. P. (2013). Presencia del padre y calidad de la interacción madre-hijo: un estudio comparativo en familias chilenas nucleares y monoparentales. *Universitas Psychologica*, 12(3), 833-843. doi:10.11144/Javeriana.UPSY12-3.ppci.
- O'Neill, M. C., Badovinac, S., Pillai Riddell, R., Bureau, J. F., Rumeo, C., & Costa, S. (2021). The longitudinal and concurrent relationship between caregiver sensitivity and preschool attachment: A systematic review and meta-analysis. *PLoS One*, 16(1), e0245061. doi:10.1371/journal.pone.0245061
- Pawlby, S., Hay, D., Sharp, D., Waters, C., & O'Keane, V. (2009). Antenatal depression predicts depression in adolescent offspring: prospective longitudinal community-based study. *Journal of Affective Disorders*, 113, 236-243. doi:10.1016/j.jad.2008.05.018.
- Paulson, J., & Bazemore, S. (2010). Prenatal and postpartum depression in fathers and its association with maternal depression: a meta-analysis. *JAMA*, 303(19), 1961-1969. doi:10.1001/jama.2010.605.
- Parsons, C. E., Young, K. S., Jegindoe Elmholdt, E. M., Stein, A., & Kringelbach, M. L. (2017). Interpreting infant emotional expressions: Parenthood has differential effects on men and women. *Quarterly Journal of Experimental Psychology*, 70(3), 554-564. doi:10.1080/17470218.2016.1141967.
- Pearson, R.M., Melotti, R., Heron, J., Joinson, C., Stein, A., Ramchandani, P.G., & Evans, J. (2012). Disruption to the development of maternal responsiveness? The impact of prenatal depression on mother-infant interactions. *Infant Behavior and Development*, 35, 613-626. doi:10.1016/j.infbeh.2012.07.020.
- Perez, C. F., & Brahm, M. P. (2017). Paternal postpartum depression: Why is it also important?. *Revista Chilena de Pediatría*, 88(5), 582-585.
- Pérez, F., Catalán, A., Morales, A., Quinlan, A., Riquelme, D., Navarro, J., & Valdés, C. (2018). Assessment of postpartum depression in a group of Chilean parents. *Journal of Men's Health*, 14(2), 56-64.
- Rahma, Alsarhi, K., Prevoo, M. J., Alink, L. R., & Mesman, J. (2021). Sensitive parenting in urban slums in Makassar, Indonesia: the roles of experienced child maltreatment and sociodemographic risk. *Attachment & Human Development*, 23(2), 199-211. doi:10.1080/14616734.2020.1828546.
- Riera, J. (2016). *Improving quality of mother-child relationship and their attachment, as a factor of mental health: A systematic review of interventions*. Barcelona, España: Universitat de Barcelona.
- Rollè, L., Prino, L.E., Sechi, C., Vismara, L., Neri, E., Polizzi, C., Trovato, A., Volpi, B., Molgora, S., Fenaroli, V., Ierardi, E., Ferro, V., Lucarelli, L., Agostini, F., Tambelli, R., Saita, E., Riva Crugnola, C. & Brustia, P. (2017) Parenting stress, mental health, dyadic adjustment: a structural equation model. *Frontiers in Psychology*, 8, 1-10. doi:10.3389/fpsyg.2017.00839.
- Rosenfield S., Mouzon D. (2013) Gender and mental health. In Aneshensel C.S., Phelan J.C., Bierman A. (Eds.), *Handbook of the sociology of mental health. Handbooks of sociology and social research*. Springer, Dordrecht. doi:10.1007/978-94-007-4276-5\_14.
- Sameroff, A. (2009). The transactional model. In Sameroff A. (Ed.), *The transactional model of development: How children and contexts shape each other* (pp. 3-21). American Psychological Association. doi:10.1037/11877-001.
- Sanson A.V., Letcher P.L.C., Havighurst, S.S. (2018). Child characteristics and their reciprocal effects on parenting. In: Sanders M., Morawska A. (Eds.), *Handbook of parenting and child development across the lifespan*. Springer, Cham. doi:10.1007/978-3-319-94598-9\_15.
- Sarkadi, A., Kristiansson, R., Oberklaid, F., & Bremberg, S. (2008). Fathers' involvement and children's developmental outcomes: A systematic review of longitudinal studies. *Acta Paediatrica*, 97(2), 153-158. doi:10.1111/j.1651-2227.2007.00572.x.
- Seath, V., Murray, L., Netsi, E., Psychogiou, L., & Ramchandani, P. (2015). Paternal depression in the postnatal period and early father-infant interactions. *Parenting: Science and Practice*, 15, 1-8. doi:10.1080/15295192.2015.992732.
- Sidor, A., Kunz, E., Schwyer, D., Eickhorst, A., & Cierpka, M. (2011). Links between maternal postpartum depressive symptoms, maternal distress, infant gender and sensitivity in a high-risk population. *Child and Adolescent Psychiatry and Mental Health*, 5, 7. doi:10.1186/1753-2000-5-7.
- SPSS, I. (2017). *IBM SPSS 25.0 for Windows* [Computer software]. Chicago, IL: SPSS.
- Squires, J., Bricker, D., & Twombly, E. (2002). *Ages & stages questionnaires: Social-emotional (ASQ:SE): A parent-completed, child-monitoring system for social-emotional behaviors*. Baltimore, MD: Brookes. Available from: <http://archive.brookespublishing.com/documents/asq-se-technical-report.pdf>
- Svetlova, M., & Carpenter, M. (2017). Social development. In B. Hopkins, E. Geangu, & S. Linkenauer (Eds.), *The Cambridge Encyclopedia of Child Development* (pp. 415-423). Cambridge: Cambridge University Press. doi:10.1017/9781316216491.067.
- Teubert, D., & Pinquart, M. (2010). The association between coparenting and child adjustment: A meta-analysis. *Parenting: Science and Practice*, 10(4), 286-307. doi:10.1080/15295192.2010.492040.

- Thiel, F., Pittelkow, M. M., Wittchen, H. U., & Garthus-Niegel, S. (2020). The relationship between paternal and maternal depression during the perinatal period: a systematic review and meta-analysis. *Frontiers in Psychiatry, 11*. doi:10.3389/fpsy.2020.563287.
- Tomasello, M., & Carpenter, M. (2007). Shared intentionality. *Developmental Science, 10*(1), 121-125. doi:10.1111/j.1467-7687.2007.00573.x.
- Tronick, E., & Reck, C. (2009). Infants of depressed mothers. A review of longitudinal studies on antenatal and postnatal depression. *Harvard Review of Psychiatry, 17*, 147-56. doi:10.1080/10673220902899714.
- Valdés, C., Morales-Reyes, I., Pérez, C., Medellín, A., Rojas, G., & Krause, M. (2017). Propiedades psicométricas del inventario de depresión de Beck IA para la población chilena. *Revista Médica de Chile, 145*(8), 1005-1012. doi:10.4067/s0034-98872017000801005.
- Vismara, L., Rollè, L., Agostini, F., Sechi, C., Fenaroli, V., Molgora, S., Neri, E., Prino, L.E., Odorisio, F., Trovato, A., Polizzi, C., Brustia, P., Lucarelli, L., Monti, F., Saita, E. & Tambelli, R. (2016) Perinatal parenting stress, anxiety, and depression outcomes in first-time mothers and fathers: a 3- to 6-months postpartum follow-up study. *Frontiers in Psychology, 7*, 1-10. doi:10.3389/fpsyg.2016.00938.
- Woldarsky, V., Urzúa, C., Farkas, C., & Valloton, C. D. (2019). Differences in Chilean and USA mothers' sensitivity considering child gender and temperament. *Journal of Child and Family Studies, 28*(7), 1937-1947. doi:10.1007/s10826-019-01419-3.
- Wong, O., Nguyen, T., Thomas, N., Thomson-Salo, F., Handrinos, D., & Judd, F. (2015). Perinatal mental health: fathers-the (mostly) forgotten parent. *Asia-Pacific Psychiatry, 8*(4), 247-255. doi:10.1111/appy.12204.
- Yates, T., Ostrosky, M. M., Cheatham, G. A., Fetting, A., Shaffer, L., & Santos, R. M. (2008). *Research synthesis on screening and assessing social-emotional competence*. The Center on the Social and Emotional Foundations for Early Learning. Available from: [http://csefel.vanderbilt.edu/documents/rs\\_screening\\_assessment.pdf](http://csefel.vanderbilt.edu/documents/rs_screening_assessment.pdf) Accessed: August 22, 2021.