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# A Longitudinal Study of Parental Depressive Symptoms and Coparenting in the First 18 Months

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Abstract

Although the negative impact of postpartum depression on parenting behaviors has been well established—albeit separately— for mothers and fathers, the respective and joint impact of both parents' mood on family-group interactive behaviors, such as coparenting support and conflict behaviors between the parents, have not yet been investigated. The aim of this study was to examine the association between parental depressive symptoms and coparenting behaviors in a low-risk sample of families with infants, exploring reciprocity between the variables, as well as gender differences between mothers and fathers regarding these links. At 3 (T1), 9 (T2), and 18 months postpartum (T3), we assessed both parents' depressive symptoms with a self-report questionnaire and observed coparenting support and conflict in triadic mother–father–child interactions. The results revealed that higher maternal depressive symptoms at T1 were associated with lower support at T1 and T2. Conflict at T3 was associated with higher maternal depressive symptoms at T3 and, more surprisingly, with less depressive symptoms in mothers at T2 and fathers at T3. Cross-lagged associations suggested that parental depressive symptoms were more likely to influence coparenting than the reverse. Moreover, maternal depressive symptoms were more likely to be linked to coparenting behaviors than were paternal depressive symptoms. These results confirm that parental—mostly maternal—depressive symptoms, even of mild intensity, may jeopardize the development of healthy family-level relations, which previous research has shown to be crucial for child development.

*Keywords:* coparenting, longitudinal study, maternal depression, paternal depression, triadic interactions

# A Longitudinal Study of Parental Depressive Symptoms and Coparenting in the First 18 Months

Parental depressive symptoms following the birth of a child are common, and approximately 15% of mothers and 8% of fathers meet the criteria for clinical depression in the first months postpartum (Gawlik et al., 2014; Ramchandani, Stein, Evans, & O'Connor, 2005). Depression in either mothers or fathers is likely to negatively affect the parent-child (Connell & Goodman, 2002; Sethna, Murray, & Ramchandani, 2012) and the marital relationship (Cummings & Davies, 1994; Gotlib & Beach, 1995), which may in turn lead to negative developmental outcomes in children (S. H. Goodman et al., 2011; Ramchandani et al., 2005; Smith, Eryigit-Madzwamuse, & Barnes, 2013). Most studies in the field, however, have investigated the consequences of maternal and paternal depression on family relationships as separate phenomena. Indeed, the impact of parental depression was mostly investigated in separate dyads, considering either the mother–child or, more rarely, the father–child dyad. Consequently, our perspective of the impact of parental depression on family relationships is still fragmented. Moreover, family-level processes, that is, the relational processes involving the two parents and the child(ren) together, have rarely been taken into account. Only in the last few years have researchers begun to fill this gap. Regarding both parents, recent studies have reported significant links between maternal and paternal depressive symptoms and negative coparenting, notably coparenting conflict (McDaniel & Teti, 2012; Solmeyer & Feinberg, 2011). These findings, based on self-reported assessments of coparenting, are encouraging and suggest that more studies should be conducted to understand the links between parental depression and family-level processes such as coparenting. There is a need in particular for studies that observe coparenting behaviors to

understand the triadic—or "polyadic"—interactive processes occurring in families with one or two parents who present depressive symptoms.

## Coparenting as a Family-Level Process

Coparenting has been defined as the way in which two adults rearing a child (or several children) coordinate and support each other in relation to the child and how they work as a team in the rearing tasks (McHale, 1995; Van Egeren & Hawkins, 2004). Different theoretical models of coparenting have considered a high level of support and a low level of conflict between the coparents to be the core components of a healthy coparenting relationship, as this pattern of behaviors has been associated with more positive social and affective development in children (for a meta-analysis, see Teubert & Pinquart, 2010). A low level of support and a high level of conflict between the coparents during infancy and the preschool years have, in turn, been shown to explain a significant proportion of negative affective and cognitive outcomes in the child, such as depressive and anxious symptoms (Katz & Low, 2004), behavior problems (McHale & Rasmussen, 1998), or lower performances in Theory of Mind tasks during the school years (Favez et al., 2006, 2012).

Support and conflict have also been studied in the context of marital relationships, which refers to behaviors that sustain or threaten the romantic relations between the partners. In the context of the coparenting relationship, support and conflict refer to the behaviors that characterize interparental teamwork regarding the education and rearing of the children. The distinction between the marital and the coparental relationship was first proposed by Minuchin (1974) in order to dissociate two relational functions between the parents: The marital relationship meets the partners' emotional and sexual needs, whereas coparenting meets the need to ensure the children's physical and emotional well-being during their

development. As both relationships involve the same partners, this distinction has sometimes been questioned. Empirical evidence has shown, however, that the marital and coparenting relationships follow different patterns of evolution from infancy to the preschool years (Schoppe-Sullivan, Mangelsdorf, Frosch, & McHale, 2004) and that the quality of the coparental relationship, over and above the quality of the marital relationship, is predictive of the child's development (Jouriles et al., 1991; McHale & Rasmussen, 1998). Coparenting is an aspect of family life in its own right, with proper characteristics, which makes it a relational subsystem that is distinct from—albeit connected to—marital processes. Moreover, whereas marital and parent–child relationships refer to dyadic subsystems in the family, the coparenting relationship is at least a triadic phenomenon, as it involves two adults and one or several children. Coparenting is thus defined as a phenomenon occurring at a "family-group" level, which cannot be measured by summing individual or dyadic parent–child or marital data (McHale & Fivaz-Depeursinge, 1999).

## Depressive Symptoms and Coparenting: Reciprocal Influences

Taking these arguments into consideration, it will be necessary to investigate the links between coparenting difficulties, such as low support and high conflict observed during triadic interactions, and depressive features in parents, to add complementary data to the few studies that have reported links between depression and self-reported coparenting. Some studies have suggested that depression is likely to influence coparenting (McDaniel & Teti, 2012), whereas other studies have found that negative coparenting, particularly "coparental undermining"—which relates to coparenting conflict—is a strong predictor of depressive symptoms in both parents (Solmeyer & Feinberg, 2011). To date, the specific hypothesis of reciprocal influences between parental depressive symptoms and coparenting has not yet been tested, although the idea of relational difficulties in the family and depression as being both

causes and consequences of each other has been previously discussed (e.g., see Cummings & Cicchetti, 1990; Dickstein et al., 1998). Moreover, studies have shown that there is a strong interdependence between individual variables and the relational subsystems in the family; the "spillover" hypothesis (Engfer, 1988; Katz & Gottman, 1996) has, for example, been posited to explain how an individual's dissatisfaction in marriage has a detrimental impact not only on marital interactions, but also on other relational subsystems in the family such as parent(s)-child relationships, which, in turn, increases dissatisfaction. In the present study, we intended to extend the spillover hypothesis to the links between parental depressive symptoms and negative coparenting.

## The Present Study

The general aim of this study was thus to investigate the reciprocal influences between both parents' depressive symptoms and behaviors of coparenting support and conflict observed during mother–father–child triadic interactions. In order to understand these reciprocal influences, it was necessary to use a longitudinal design with data collected for all variables at multiple times (Finkel, 1995). We collected data in a sample of 69 two-parent families at three points in the first 18 months of the child's life: 3 months (T1), 9 months (T2), and 18 months postpartum (T3). We used path analysis to investigate the covariance between the variables, testing for the adjustment of a cross-lagged model of relations between parental depressive symptoms, coparenting support, and coparenting conflict. The model included cross-sectional links between depressive symptoms and coparenting support and conflict at each time point, as well as longitudinal regression paths from each variable to the others from one point to the next (T1 to T2 and T2 to T3).

The estimation of this model allowed to test the hypotheses that (a) higher depression in mothers and fathers would be linked to lower coparenting support and higher conflict and that (b) these variables would exert a mutual influence on one another. The test of this model also allowed to conduct an exploratory investigation of the differences between mothers and fathers in the links between depressive symptoms and coparenting.

## Method

### Participants

We collected the data in a low-risk sample of 69 two-parent families living in the French-speaking part of Switzerland. Families were recruited at *Babyplanet*, an annual fair about child care taking place in Lausanne, Switzerland, by research assistants who distributed flyers that briefly explained the context of the research. The flyers were also distributed to every family during parental visits to the General Register Office and to the maternity service of the University Hospital of Lausanne, Switzerland. The socioeconomic status of the participants ranged from lower- to upper-middle class according to Hollingshead's two-factor classification, with most fathers and mothers in the upper-middle class (61.2% and 68.2%, respectively) and approximately half of the families with both parents in the upper-middle class (49.2%). At the time of the first meeting for data collection (T1), mothers ranged in age from 23 to 41 years ($M$ = 32.3, $SD$ = 4.4) and fathers from 23 to 54 years ($M$ = 34.9, $SD$ = 5.8). Most of the parental couples were married (74.6%). Children were 37 boys (53.6%) and 32 girls (46.4%). They were all born healthy and at full-term, and most were first-born babies (68.2%). At T1, the mean age for children was 98.7 days ($SD$ = 9.5). Study inclusion criteria were that (a) both parents and the infant had to live in the same household, and that (b)

families had to be fluent in French (the language of all testing material). The parents involved in the study signed a consent form for their participation in the research.

## Study Design and Procedure

The longitudinal design of the study included three measurement points in the first 18 months of the child's life: at 3 (T1), 9 (T2), and 18 months postpartum (T3). At each time point, the families came to our laboratory. During these laboratory sessions, the families were first invited to play in a triadic play setting. At the end of each session, each parent received a set of self-report questionnaires, including a measure of postpartum depressive symptoms (see below). Sociodemographic variables were also included in the questionnaires at T1. The questionnaires had to be filled in separately by each parent within 7 days and returned by mail in postage-paid envelopes.

Concerning the evolution of the sample size from T1 to T3, one family (1.4% of the total sample) dropped out between T1 and T2, and two families did so between T2 and T3 (2.8%). In the overall sample, the percentage of missing data ranged from 1.8% to 5.4%. The results of Little's MCAR test (1988) suggested that the data were missing completely at random, $\chi^2 = 157.054$, $df = 162$, $p = .60$. We used a full information maximum likelihood (FIML) method to estimate our models, which allows us to use all information in the observed data and to account for missing data; it also requires no data imputation.

## Measures

**Parental depressive symptoms.** At each time point, parents filled in the Edinburgh Postnatal Depression Scale (EPDS; Cox, Holden, & Sagovsky, 1987; for the validation study of the French version, see Guédeney & Fermanian, 1998). On the EPDS, 10 items are rated on 4-point scales to obtain a total score ranging from 0 to 30 (Cronbach's alphas range from .70

to .85). Scores of 11 points and above indicate clinical depression according to the validation study of the French version of the test; however, we mainly focused on the continuous score on the scale in the present study. This questionnaire was specifically designed to screen for mothers at risk for postpartum depression (PPD) by assessing a set of PPD symptoms. The EPDS has been widely used, especially in studies investigating the impact of maternal and paternal PPD on parenting behaviors and parent-child relationships (Paulson, Dauber, & Leiferman, 2006).

**Coparenting.** To collect observational data about coparenting behaviors during triadic interactions, we invited fathers, mothers, and babies to take part in the Lausanne Trilogue Play (LTP; Corboz-Warnery, Fivaz-Depeursinge, Gertsch-Bettens, & Favez, 1993). This validated observational situation was specifically designed to assess the quality of triadic interactions in families with infants and toddlers. The family members sit in an equilateral triangular configuration at a distance fostering interaction (80 cm between the center of each seat). The setting can be adapted according to the age of the child. In the setting for infants, the child sits in a baby chair, which can be oriented in three positions: toward one parent, toward the other, and between the two of them. The chair can also be leaned forward ("sit" position) or backward ("lay" position). In the setting for toddlers, the child sits in a high chair, the parents and the child sit around a small round table, and a set of gender-free toys and objects (three stuffed pigs, three spoons, three socks) are at hand.

The scenario of the LTP is structured in four parts: (a) One parent plays with the child (the *active parent* role), the other one being "simply present" (the *participant-observer* role); (b) parents switch roles; (c) the three play together; and (d) parents have a discussion, leaving the child on his or her own for a short while. A research assistant informs the parents of the transition from one part to the next by using a light. The timing of the parts has been set

according to the naturalistic duration of the classic LTP in less standardized procedures and is different in the setting for infants and toddlers. In the setting for infants, each part lasts 2 min, whereas each part of the task with toddlers lasts 3 min, with 10 s allowed for the transition between parts. The order of parts (a) to (c) was counterbalanced to rule out an order effect, and part (d) always occurred last. For coding purposes, the LTPs were videotaped in a multiple-camera technical setting.

We used the Family Alliance Assessment Scales (FAAS) to assess the quality of the coparenting behaviors occurring during the LTP. The FAAS is specifically designed to assess the quality of triadic and family interactions during the LTP (for the validation study and a thorough description of the scales, see Favez, Lavanchy Scaiola, Tissot, Darwiche, & Frascarolo, 2011). The behaviors of parents and child are rated along fifteen 3-category ordinal scales, as being "Appropriate," "Moderate," or "Inappropriate." For the present study, we specifically used two scales: Coparenting support and coparenting conflicts. During the LTP, examples of behaviors reflecting appropriate coparenting support are talking positively about the other parent, praising the other parent, encouraging the child to play with the other parent, thanking the other parent, following the other parent's lead or previous ideas in the play, showing positive affective expressions when watching the other parent play with the child, and offering material support (e.g., bringing a pacifier if needed). Inappropriate coparenting support is defined by behaviors of negative coparenting support, such as when parents support each other against the child, thus forming a coalition against the child, who is then put in the position of scapegoat (Minuchin, 1974). These behaviors are scarce and have been described in the interactions of disturbed families facing massive conflicts (Fivaz-Depeursinge & Favez, 2006). A high score on this scale reflects a high frequency of positive support behaviors and a low frequency of non-appropriate support behaviors. Examples of

behaviors indicating high coparenting conflict are competition between the parents to get the attention of the child, verbal sparring, direct negative comments to the other parent about his or her play, mockery, negative comments to the child about the other parent, exclusion of a parent by the other, and interference of a parent when the other is playing with the child. A high score on this scale reflects a high frequency of these behaviors. Thus, a high score on the support scale and a low score on the conflict scale indicated positive coparenting.

### Coding Strategy and Interrater Reliability

An experimented rater coded all the videotapes. In order to compute interrater reliability, 45 cases were randomly selected ($n$ = 15 at each point in time) and coded by a second rater, who was trained to the coding system by the first rater. Following the recommendations for ordinal data (Norman & Streiner, 2008), we used a weighted kappa statistic to assess interrater reliability: Kappas were .77 for the "coparenting support" scale and .69 for the "coparenting conflict" scale. Agreement for both scales could be considered satisfactory (Hallgren, 2012; Landis & Koch, 1977). After reliability had been computed, the two coders discussed the discrepancies in the double-coded cases and established a consensus on discrepant codes.

### Statistical Analyses

In the first step of analyses, a full set of descriptive statistics (including mean and standard deviation) was computed for all variables under study. In the second step, we specified a cross-lagged model of relations between mothers' depressive symptoms, fathers' depressive symptoms, coparenting support, and coparenting conflict. We defined T1 variables (maternal depressive symptoms, paternal depressive symptoms, coparenting support, and coparenting conflict) as exogenous variables, predicting the same variables at T2 (auto- and cross-predictions), which in turn predicted the variables at T3 (longitudinal links).

Covariances between the variables at T1, T2, and T3 were also estimated (cross-sectional links). In this model, all of the links were freely estimated. Then, in order to investigate the differences between mothers and fathers in the links between depressive symptoms and coparenting, we specified 14 alternative models, each assuming the equivalence between the parents on one specific parameter (equality constraint fixed between the parents on this specific parameter). The adjustment of each alternative model was tested against the original model, in which all the parameters had been freely estimated for each parent. Thus, 14 likelihood ratio tests with 1 degree of freedom were conducted. A significant result would indicate that the fit of a model including a separate estimation of a given parameter for each parent (i.e. the original model) is significantly better than the fit of a model assuming an equivalence between the parents on the given parameter (i.e. in the alternative model), and thus that the difference between the parents on this given parameter is significant.

All the models were estimated by using a Full Information Maximum Likelihood (FIML) estimator. We performed the descriptive analyses with IBM SPSS Statistics 22 software and the path analyses with IBM SPSS Amos 21 software and Mplus.

## Results

### Descriptive Statistics

Descriptive statistics are presented in Table 1. Concerning depressive symptoms, mean scores at each time point were lower than the cutoff point of 11 points that defined a clinically significant PPD. However, 14 mothers and six fathers were above the cutoff at T1 (21% and 9%, respectively), six mothers and three fathers were above the cutoff at T2 (11% and 5%), and seven mothers and five fathers were above the cutoff at T3 (12% and 9%). Only one mother and one father had scores above the cutoff from T1 to T3; of note is that they were not in a couple relationship together. The EPDS mean score was lower for men than for women at

the three time points, but this difference was significant only at T1, as attested by paired-sample *t* tests, $t(61) = 2.78$, $p < .01$. We analyzed the evolution of parental depressive symptoms with a repeated-measures analysis of variance (ANOVA), which revealed no main effect of time. Concerning the ratings of coparenting behaviors during triadic interactions, the mean scores were in the high range for support and in the low range for conflict. A repeated-measures ANOVA showed no significant effect of time, suggesting that both variables were stable.

[Insert Table 1 about here]

**Estimation of Reciprocal and Longitudinal Links Between Parental Depressive Symptoms and Coparenting**

The results showed that the model, in which the cross-sectional and longitudinal links (from T1 to T2 and T2 to T3) between maternal depressive symptoms, paternal depressive symptoms, support, and conflict were freely estimated, showed a good adjustment to the data, $\chi^2 = 22.729$, $df = 16$, $p = .121$, comparative fit index (CFI) = .956, root mean square error of approximation (RMSEA) = .079, 90% confidence interval (CI) [.000, .147], according to the standard described by Hu and Bentler (1999). The RMSEA, however, was just at the limit of .08 and indicated a fair rather than an excellent fit. The estimation of the parameters (see Figure 1 and Table 2) revealed high and significant longitudinal links within each variable: Maternal depressive symptoms at T1 significantly predicted maternal depressive symptoms at T2, which predicted maternal depressive symptoms at T3. Similar results were found for paternal depressive symptoms and coparenting conflict. On the other hand, T1 support predicted T2 support, whereas T2 support was not linked to T3 support. The links between maternal and paternal depressive symptoms were mostly not significant, except for the cross-

sectional association between both variables at T1. Support and conflict were negatively and significantly related at each point in time. Significant links between parental depressive symptoms and coparenting also appeared: Higher T1 maternal depressive symptoms were associated with lower T1 and T2 support. Higher T2 maternal depressive symptoms predicted lower conflict at T3. Finally, the results for cross-sectional links at T3 revealed that lower conflict was associated with lower maternal depressive symptoms, but with higher paternal depressive symptoms.[1] Of note, the estimation of a second model showed that these results held when parents' SES, child gender, and being a first-time parent (or not) were included as covariates. This model including covariates showed a slightly poorer fit than the model without covariates, $\chi^2 = 25.330$, $df = 16$, $p = .064$, CFI = .952, RMSEA = .093, 90% CI [.000, .153]. This result suggested that these covariates had no influence on the target variables and on their dynamics.

[Insert Figure 1 about here]

[Insert Table 2 about here]

**Differences Between Mothers and Fathers**

We found very few significant differences between mothers and fathers. Among the 14 likelihood ratio tests that were conducted to test differences on specific parameters, only 2 yielded significant results: The model assuming differences in the link between T1 depression and T1 support between mothers and fathers showed a significantly better fit than a model assuming equivalence between both parents on this specific parameter, $\chi^2 = 5.505$, $df = 1$, $p = .019$. When freely estimated, the link between T1 depression and support was negative and significant for mothers, but not for fathers (respectively $\beta = -.311$, $p = .017$, and $\beta = .022$, $p = .859$). A similar result was found for the link between T3 depression and T3 conflict, $\chi^2 =$

12.672, $df = 1$, $p < .001$. This link was positive and significant for mothers, $\beta = .383$, $p = .006$, whereas it was negative for fathers, $\beta = -.276$, $p = .046$. All of the 12 remaining tests yielded non-significant results.

## Discussion

The first aim of the present study was to investigate the reciprocal influence between parental depressive symptoms and coparenting during the first 18 months of the child's life. We specified a model that included auto-regressive and cross-lagged associations between mothers' and fathers' depressive symptoms on the one hand and coparenting on the other. We expected to observe several links between depressive symptoms and coparenting for both parents, in particular higher depressive symptoms linked to lower support and higher conflict. The second aim of this study was to address the respective influence of maternal and paternal depressive symptoms on family functioning, by comparing a model in which paths between depression and coparenting were different for mothers and fathers to a model in which they were equivalent. The results allowed us to provide first answers to these questions.

### The Links Between Parental Depressive Symptoms and Coparenting

First, in the estimation of our model, many links between both parents' depressive symptoms and coparenting behaviors turned out to be significant. In line with our hypotheses, maternal depressive symptoms were negatively associated with coparenting support and positively associated with conflict behaviors between the parents. Higher maternal depressive symptoms at baseline were cross-sectionally associated with lower support and predicted lower support 6 months later; moreover, higher maternal depressive symptoms at 18 months were cross-sectionally associated with higher conflict. In accordance with results of previous studies, reciprocal influences between maternal depression and coparenting can be considered

to explain these results: On the one hand, depressive mood may lead to emotional unavailability (Biringen & Robinson, 1991; Field, 1994), which in turn hinders the parents' interactional capacities. Thus, just as they struggle to adjust to their baby during dyadic interactions, the mothers who are experiencing depressive symptoms—even of mild intensity—may have more difficulties in cooperating with the father during triadic interactions. Studying the quality of family interactions during mealtime, Dickstein and colleagues (1998) explained that depressed mothers who experience difficulties in dyadic interactions with their child were even more likely to experience difficulties in a triadic—or "polyadic"—context, as the complexity of the interactional adjustment in multiperson systems increases exponentially with the extension of the system. On the other hand, considering the other direction of the causal path, the development of negative coparenting dynamics in the early postpartum period could have led mothers to develop depressive symptoms. The transition to parenthood is known to be a challenging period for the individuals and for the couple (Christopher & al., 2015; Trillingsgaard, Baucom, & Heyman, 2016). The parents have to find a new homeostasis as a couple, redefining the relations and the space of each individual, including the newborn child—whether the child is the first one or not. Failure to find a new equilibrium that is satisfying for both parents and the child might be the cause of suffering.

Unexpected results also appeared: Lower coparenting conflict at 18 months was predicted by higher maternal depressive symptoms at 9 months and cross-sectionally associated with higher paternal symptoms. Because these results were unexpected, we had to speculate about the reason for these links. In previous studies, depression has been shown to be linked to lower parental involvement and withdrawn parenting behaviors (e.g., Field, Hernandez-Reif, & Diego, 2006), so that less symptoms are thought to be associated with an

increase of interaction and communication between the parents. As interparental communication may include positive as well as negative interactions, such as conflict and competitive behaviors, it is thus possible that conflict would increase as depressive symptoms decrease and communicative withdrawal increases. On the other hand, lower involvement associated with depression might lead to lower conflict and competition between the coparents. A working hypothesis would be that higher depressive symptoms will lead to less engagement in family interactions, which would in turn diminish the opportunities for conflicts to occur. This speculative hypothesis needs to be examined in future studies that take into account the variable of parental involvement as a possible mediator between depressive symptoms and coparenting.

### Differences Between Mothers and Fathers

One major feature of our results is that most significant relations appeared between depressive maternal symptoms and coparenting, whereas weaker links between paternal depressive symptoms and coparenting appeared. This result may seem contrary to what has been suggested in previous studies (J. H. Goodman, 2004; Matthey, Barnett, Ungerer, & Waters, 2000), which have shown that paternal depressive symptoms during the postpartum period would likely jeopardize the development of healthy family relationships. One way to explain these results is to consider the global context of the transition to parenthood. In Switzerland, most fathers in middle to high socioeconomic status families work full time—or close to full time—and paternal leave is nonexistent (or usually restricted to 1 or 2 days), so that a father's mild depressive state will be less closely related to family functioning as compared with that of mothers in the first months. Indeed, mothers are still the primary caregivers for children and are still the central figure of the family in the early postpartum period, and mothers are entitled to a 14-week maternity leave. This dynamic may

progressively change after mothers go back to work—even part time—and it is not surprising that the only significant link between paternal depressive symptoms and coparenting appeared at 18 months in the present study. However, despite the fact that most significant links appeared for mothers, the discrepancy in the estimation of separate parameters for each parent was only significant for two of these parameters, suggesting that the differences between mothers and fathers should be cautiously interpreted.

**Strengths and Limitations**

The present study has some strengths and limitations. For example, we are conscious that the small sample size might limit the generalizability of the findings. We acknowledge that, considering our sample size and the complexity of our model, a lack of statistical power might have led to Type II errors. Power analyses, however, showed that the limited sample size nevertheless allowed us to efficiently detect significant paths between the variables and to rule out the nonsignificant paths (see Footnote 1). We will, however, have to conduct further studies in larger samples in order to confirm the present findings. Moreover, studies should also be conducted in samples of parents presenting more severe depression, although we acknowledge that the collection of such data will most likely be extremely complex. Among the potential difficulties to be expected in such studies, the definition of inclusion criteria—e.g., families with one or both parents depressed—as well as keeping highly depressed parents involved in a study over 15 months, will have to be cautiously handled. As a last consideration, we would like to acknowledge as a major strength of the present study the collection of observational data of family interactions that include both parents and the child. Indeed, whereas links between depressive symptoms and self-reported coparenting had already been established, an investigation of the links between parental depressive symptoms

and coparenting behaviors was still missing. The fact that repeated measures were collected is an additional strength, allowing a longitudinal perspective of these questions.

## Clinical Implications

The findings of the present study may have several implications for clinicians working with depressed parents or families facing coparenting difficulties. First, the results suggest that, at least at the beginning of the postpartum period, the presence of depressive symptoms in one parent is likely to be associated with depressive symptoms in the other parent. Thus, when one parent is depressed, it might be beneficial for the whole family to receive the help of health care professionals. Second, clinicians should be aware that, when a parent, particularly the mother, shows depressive symptoms in the early postpartum period—even symptoms of mild intensity—negative consequences for family-level relations can rapidly occur. Clinicians should also be aware that low support and high conflict in young parent couples can trigger increased depressive features in both parents, but particularly mothers. We believe that, in cases of either parental depressive symptoms or coparenting difficulties, clinicians should adopt a family perspective and include both parents and the child(ren) in the therapeutic process.

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## Footnotes

[1] We performed additional analyses to confirm the validity of our findings: First, in order to investigate if the distribution of our variables might have affected the FIML estimation of the parameters, we estimated our model also within the Bayesian estimation framework, which is more robust to violation of normality assumption and well suited to analyses of small sample sizes (Spiegelhalter, Abrams, & Myles, 2004). In our analyses, the Bayesian solution for our model was virtually identical to that obtained from maximum likelihood estimation. All standard diagnostic checks associated to the Bayesian estimation (convergence statistic, trace and autocorrelation plots, comparison of first and last third of each parameter's posterior distribution) signaled the successful estimation. Second, given the modest sample size and the complexity of our model, we computed power estimations of the two significant cross-lagged paths, following the method outlined by Satorra and Saris (1985). This procedure yielded a power estimate for the effects of mothers' depression at T1 on support at T2 and mothers' depression at T2 on conflict at T3 of .96 and .75 respectively, suggesting that the model we tested had sufficient power to reveal effects of interest. Finally, as only a few significant cross-lagged associations appeared, we compared a model including these two significant paths in the original model to an alternative model in which the cross-lagged paths had been all fixed to 0. The likelihood ratio test comparing these two models was significant, which suggested that the cross-lagged associations, although not numerous, were worth to be considered in a longitudinal model linking parental depression and coparenting.

Table 1

*Descriptive Statistics and Repeated-Measures ANOVA for Parental Depression, Coparenting Support, and Conflict from Time 1 to Time 3*

| | Time 1 | | Time 2 | | Time 3 | | |
|---|---|---|---|---|---|---|---|
| Variables | Range | *M* (*SD*) | Range | *M* (*SD*) | Range | *M* (*SD*) | *F* (*df*) |
| Depression | | | | | | | |
| Mother | 0–24 | 6.72 (4.61) | 0–15 | 5.19 (3.82) | 0–23 | 5.97 (4.69) | 1.93 (2, 96) |
| Father | 0–15 | 5.09 (3.19) | 0–12 | 4.07 (3.21) | 0–18 | 5.07 (3.80) | 2.49 (1.75, 83.74) |
| Coparenting | | | | | | | |
| Support | 0–2 | 1.56 (0.61) | 0–2 | 1.46 (0.68) | 0–2 | 1.47 (0.59) | 0.96 (2, 128) |
| Conflict | 0–2 | 0.51 (0.59) | 0–2 | 0.53 (0.70) | 0–2 | 0.53 (0.64) | 0.08 (2, 128) |

*Note.* ANOVA = analysis of variance.

Table 2

*Estimated Unstandardized (with Standard Errors) and Standardized Parameters for the Regression Weights of the Cross-lagged Model Linking Parental Depressive Symptoms, Coparenting Support, and Conflict from Time 1 to Time 3 (see Figure 1)*

| *Parameter Estimate* | *Unstandardized* | *95% CI* | *Standardized* | *p value* |
|---|---|---|---|---|
| T1 depression M to T2 depression M | 0.418 (0.139) | [0.189, 0.646] | .499 | .000 |
| T1 depression M to T2 depression F | 0.072 (0.105) | [-0.085, 0.230] | .105 | .340 |
| T1 depression M to T2 support | -0.042 (0.019) | [-0.076 -0.008] | -.285 | .016 |
| T1 depression M to T2 conflict | 0.018 (0.021) | [-0.017, 0.054] | .122 | .303 |
| T1 depression F to T2 depression M | -0.170 (0.179) | [-0.478, 0.139] | -.139 | .264 |
| T1 depression F to T2 depression F | 0.610 (0.159) | [0.407, 0.813] | .607 | .000 |
| T1 depression F to T2 support | 0.022 (0.025) | [-0.025, 0.069] | .103 | .370 |
| T1 depression F to T2 conflict | 0.022 (0.034) | [-0.027, 0.072] | .101 | .378 |
| T1 support to T2 depression M | -0.051 (1.039) | [-1.885, 1.783] | -.008 | .956 |
| T1 support to T2 depression F | 0.852 (0.879) | [-0.433, 2.137] | .164 | .185 |
| T1 support to T2 support | 0.361 (0.160) | [0.075, 0.647] | .327 | .014 |
| T1 support to T2 conflict | -0.247 (0.190) | [-0.543, 0.050] | -.217 | .102 |
| T1 conflict to T2 depression M | -0.470 (1.257) | [-2.311, 1.372] | -.072 | .609 |
| T1 conflict to T2 depression F | -0.670 (0.830) | [-1.954, 0.613] | -.124 | .299 |
| T1 conflict to T2 support | -0.007 (0.170) | [-0.291, 0.277] | -.006 | .962 |
| T1 conflict to T2 conflict | 0.322 (0.177) | [0.026, 0.618] | .272 | .033 |
| T2 depression M to T3 depression M | 0.440 (0.215) | [0.149, 0.732] | .371 | .002 |
| T2 depression M to T3 depression F | -0.090 (0.150) | [-0.350, 0.170] | -.091 | .465 |
| T2 depression M to T3 support | 0.012 (0.023) | [-0.027, 0.051] | .077 | .530 |

| | | | | |
|---|---|---|---|---|
| T2 depression M to T3 conflict | -0.039 (0.022) | [-0.080, 0.001] | -.239 | .049 |
| T2 depression F to T3 depression T2 | 0.087 (0.288) | [-0.250, 0.424] | .060 | .624 |
| depression F to T3 depression FT2 | 0.558 (0.200) | [0.255, 0.860] | .463 | .000 |
| depression F to T3 support | 0.0240 (0.028) | [-0.023, 0.072] | .132 | .282 |
| T2 depression F to T3 conflict | -0.013 (0.031) | [-0.061, 0.035] | -.066 | .588 |
| T2 support to T3 depression M | -0.610 (1.090) | [-2.437, 1.218] | -.090 | .520 |
| T2 support to T3 depression F | 0.597 (0.749) | [-0.935, 2.129] | .105 | .459 |
| T2 support to T3 support | 0.121 (0.130) | [-0.110, 0.353] | .140 | .313 |
| T2 support to T3 conflict | 0.015 (0.170) | [-0.233, 0.264] | .016 | .905 |
| T2 conflict to T3 depression M | 1.421 (1.373) | [-0.351, 3.193] | .216 | .120 |
| T2 conflict to T3 depression F | 0.027 (0.752) | [-1.456, 1.509] | .005 | .973 |
| T2 conflict to T3 support | -0.223 (0.127) | [-0.448, 0.001] | -.266 | .055 |
| T2 conflict to T3 conflict | 0.320 (0.151) | [0.079, 0.560] | .352 | .010 |

*Note.* Model fit: $\chi^2 = 22.729$, $df = 16$, $p = .121$, CFI = .956, RMSEA = .079, 90% CI [.000, .147]. Parameter estimates for the covariances are not reported here, but are available upon request. CI = confidence interval; M = mother; F = father; T1 = time 1; T2 = time 2; T3 = time 3.

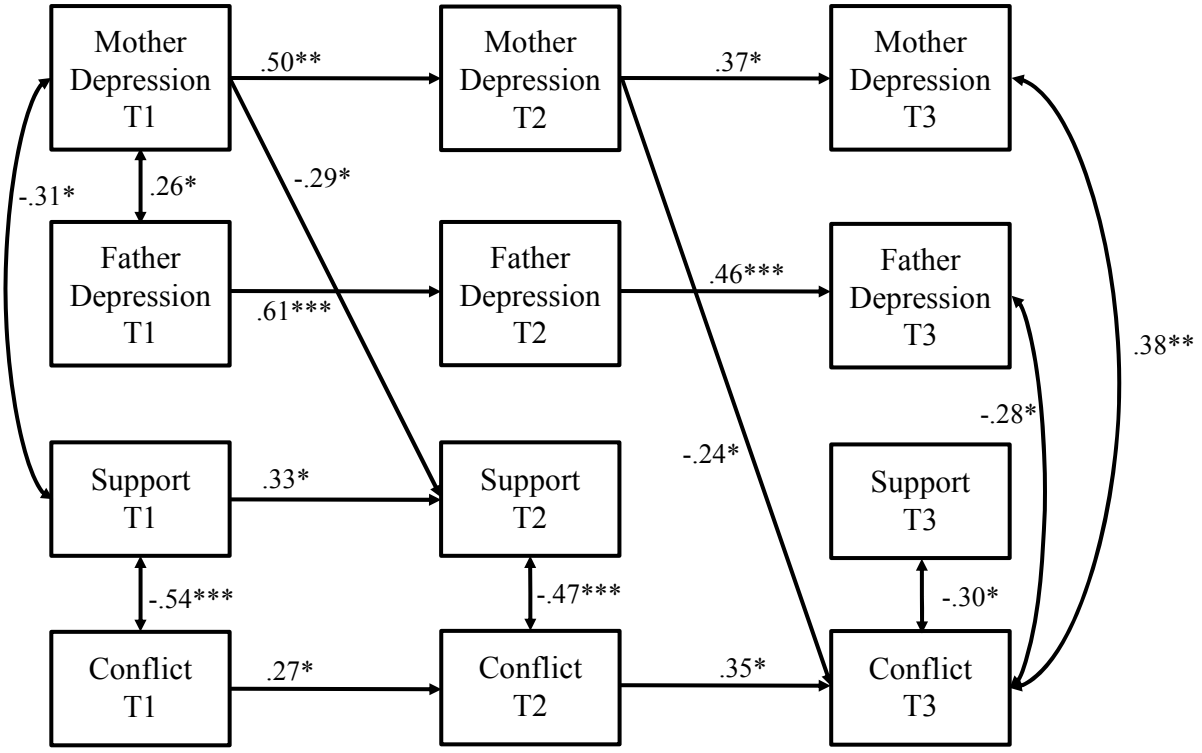


*Figure 1.* Cross-lagged model of the links between maternal and paternal depression and coparenting. Only significant paths with their estimates are shown (the parameter estimation for the remaining paths can be found in Table 1). Only standardized coefficients are displayed. Values for error variables, as well as means and intercepts for all variables, were estimated, but are not reported here. T1 = Time 1, 3 months postpartum; T2 = Time 2, 9 months postpartum; T3 = Time 3, 18 months postpartum.

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