Partners, parents & childrearing beliefs: couple satisfaction during the transition to parenthood and attitudes towards child maltreatment across countries and caregivers
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Couple Satisfaction, Mental Health Problems, and Parental Sensitivity during the Transition to Parenthood

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Abstract

While there is theoretical and empirical evidence for associations between personal mental health, couple satisfaction, and parental sensitivity, most research is focused on the postnatal period. In order to expand the developmental scope of this research and identify early risk factors for later personal, couple, and parent-child functioning, this study examined associations between mental health problems, couple satisfaction, and parental sensitivity in parents from pregnancy until two years post-partum. The sample consisted of 438 couples expecting their first child. Both parents filled out questionnaires about their mental health problems and couple satisfaction at 36 weeks pregnancy, and when the child was 4, 14, and 24 months old. In addition, both parents were separately observed in free play with their child at ages 4, 14, and 24 months; these five-minute sessions were coded for parental sensitivity. Results showed the interrelatedness between personal mental health, couple satisfaction, and parental sensitivity. For both parents, we found a bidirectional relation between mental health problems and couple satisfaction that was already evident during the prenatal phase. For mothers, we also found a negative relation between couple satisfaction and parental sensitivity. Our findings highlight the importance of the prenatal period in family processes, with prenatal couple satisfaction and mental health problems evident as early risk factors for later personal and couple functioning. We therefore encourage both empirical and theoretical research to include prenatal measures of personal mental health and the couple functioning when examining family dynamics, especially in light of the promotion of prevention efforts.

Keywords: mental health problems, couple satisfaction, parental sensitivity, transition to parenthood, mothers and fathers

Introduction

Individual parental functioning, the dyadic functioning between partners in a romantic relationship, and the quality of the parent-child relationship are closely interrelated and jointly pivotal for child development (e.g., Belsky, 1984; Cox & Paley, 1997; Cummings & Davies, 2002). There is a bidirectional association between dissatisfaction with the couple relationship and the mental health of both individuals within the couple (e.g., Beach Katz, Kim, & Brody, 2003; Mamun et al., 2009). In addition, problems with both personal mental health and the couple relationship negatively affect the ability to parent sensitively (e.g., Cummings, & Davies, 1999; Krishnakumar & Buehler, 2000), which in turn predicts problems in child functioning (e.g., Bakermans-Kranenburg, van IJzendoorn, & Juffer, 2003; Kok et al., 2013). Different theoretical models focus on the interdependence between the individual, couple, and parent-child system (e.g., Belsky, 1984; Cox & Paley, 1997; Cummings & Davies, 2002). However, these mainly focus on the postnatal period, even though both the individual and the couple system already exist before the child is born. Expanding this research to the prenatal phase can contribute to theoretical frameworks about the interplay between individual, couple, and parental relationship characteristics across the transition to parenthood that is known to decrease couple satisfaction (e.g., Mitnick, Heyman, & Smith Slep, 2009) and can adversely affect parental wellbeing (e.g., Hughes et al., 2020). These insights in turn can inform efforts to identify early risk factors for the development of parental mental health problems, problems in the relationship, and negative parenting behaviors. The goal of this study is therefore to examine the associations between mental health problems, couple satisfaction, and parental sensitivity in both mothers and fathers from pregnancy until the child is two years old.

Different theoretical models, including the family systems model (Cox & Paley, 1997), the process model (Belsky, 1984), and the process-oriented theoretical framework by Cummings and Davies (2002), focus on the interdependence of multiple systems to predict child development. They stress the need for comprehensive research including multiple systems to be able to fully understand family dynamics. Three important subsystems are the individual, the couple, and the parent-child system, that have indeed been found to be interrelated. There is evidence for bidirectional associations between individual characteristics such as mental health and the couple relationship (e.g., Beach et al., 2003; Kouros & Cummings, 2011; Mamun et al., 2009). A lack of social support and high hostility between spouses in low-quality couple relationships can negatively impact mental health (Beach, Sandeen, & O'Leary, 1990). Likewise, the negative behaviors caused by mental health problems, such as rumination and catastrophizing (Garnefski, Legerstee, Kraaij, Van Den Kommer, & Teerds, 2002),

create stressful interpersonal situations that in turn can also result in decreasing couple satisfaction (Goldfarb & Trudel, 2019; Hammen, 1991).

Problems in the couple relationship as well as personal mental health problems can also negatively affect the parent-child system. One central aspect of the parent-child system is parental sensitivity, defined as the ability of the parent to correctly perceive, interpret, and respond to the signals of the child (Ainsworth, Bell, & Stayton, 1974). Sensitive parenting is related to positive child development and fewer behavioral problems (e.g., Bakermans-Kranenburg et al., 2003; Kok et al., 2013). It is therefore important to examine factors that can promote or hamper the development of sensitivity. The quality of the couple relationship is one factor related to parental sensitivity; parents who have more relationship problems are found to be less sensitive towards their child (e.g., Cox, Paley, Payne, & Burchinal, 1999; Oosterhouse, Riggs, Kaminski, & Blumenthal, 2020). In addition, there is meta-analytic evidence for a negative relation between interparental relationship problems and the quality of parenting behaviors, with the strongest effect sizes for harshness and low parental acceptance, which are considered insensitive parenting behaviors (e.g., Krishnakumar & Buehler, 2000). These results are in line with the spillover hypothesis that states that problems in the couple relationship 'spill over' to the parent-child relationship and are related to negative parenting practices (Repetti, 1987). A recent study, using partly the same dataset as the current study, showed that the spillover effect is already present before birth, especially in fathers (Foley, Branger, Alink, Lindberg, & Hughes, 2019). It was found that lower prenatal couple relationship quality was related to less coherent descriptions of fathers about their relationship with the unborn child. Parental mental health problems are also related to reduced sensitivity (e.g., Campbell, Matestic, Von Stauffenberg, Mohan, & Kirchner, 2007; Cummings & Davies, 1999). Parents with mental health problems, such as depression, are often preoccupied with their own feelings and also have negative attitudes towards themselves and others which can result in not noticing or incorrectly interpreting the child signals, and/or the inability to respond effectively (e.g., Field, 2010; Gelfand & Teti, 1990). In addition to a direct link, there is also evidence that the individual and couple systems interact to predict parental sensitivity in that the negative association between depression and sensitivity is stronger when partner aggression is present (e.g., Crockenberg & Leerkes, 2003).

In sum, the theoretical frameworks and empirical evidence regarding associations between personal mental health problems, couple satisfaction, and parental sensitivity mostly focus on the postnatal period. This is likely to result in an incomplete story as the individual and couple systems are already present during the prenatal period, and the transition to parenthood can be especially challenging for couples. When the

child is born, family roles change as new dyadic systems between each parent and the child emerge, increasing the complexity of family dynamics. The transition to parenthood seems to especially impact the couple relationship, with a consistently found average decrease in couple satisfaction during the transition to parenthood in both men and women (e.g., Mitnick et al., 2009). In addition, in a recent study mental health problems were found to increase during the transition to parenthood, in particular for fathers (Hughes et al., 2020). Given the associations between couple relationship quality and parental mental health (e.g., Kouros & Cummings, 2011) as well as sensitive parenting (e.g., Campbell et al., 2007; Cummings & Davies, 1999), examining prenatal couple satisfaction and mental health could identify early risk factors for the development of later problems in the relationship, mental health problems, and negative parenting behaviors, providing insights that may expand the theoretical models on family systems.

Relatively few longitudinal studies that examine the associations between mental health, couple satisfaction and parenting include both pre- and postnatal measures of mental health and couple satisfaction. However, there is some evidence that prenatal couple satisfaction predicts fewer postnatal mental health problems in (Mexican) women (e.g., Asunción, Navarrete, & Nieto, 2016) and (German) men (e.g., Gawlik et al., 2014). In addition, in one study prenatal positive marital affect predicted sensitivity at 8 months postpartum in both mothers and fathers (Poulsen, Hazen, & Jacobvitz, 2019). In another study, depression and anxiety in the third trimester of pregnancy predicted postpartum parenting stress at 3 and 6 months (Misri et al., 2010), which is in turn negatively related to parental sensitivity (Ward, & Lee, 2020). Many studies however still only include mothers. The role of the father as an individual, partner and parent is also relevant for the functioning of the couple relationship and the child. In addition, in the current-day society fathers are more involved in raising children (e.g., Cabrera, Tammis-LeMonda, Bradley, Hofferth, & Lamb, 2000). It is therefore important to include both parents and to examine similarities and differences in the family dynamics between mothers and fathers.

The current study examines the associations between mental health problems, couple satisfaction, and parental sensitivity in both mothers and fathers using a longitudinal design from the third trimester of pregnancy until the child is two years old. We expect to find: (a) negative associations between mental health problems and couple satisfaction; (b) negative associations between mental health problems and sensitivity; and (c) positive associations between couple satisfaction and sensitivity in both mothers and fathers across time. We also expect (d) prenatal mental health problems to negatively predict postnatal couple satisfaction and sensitivity for mothers and fathers, and (e) prenatal couple satisfaction to negatively predict postnatal mental health problems and positively predict sensitivity.

Method

Sample

For this paper data of the longitudinal, international research project *'New Fathers and Mothers'* were used (Hughes, Devine, Mesman, & Blair, 2020). Couples from the East of England (UK), the Netherlands (NL), and New York State (US) expecting their first child were followed during the transition to parenthood. Recruitment took place at pregnancy-related locations including antenatal clinics, ultrasound scan clinics, midwife clinics, pregnancy fairs, and prenatal exercise classes. Inclusion criteria were: (1) being 21 years or older, (2) being first-time expecting parents, (3) being a couple living together, (4) planning to raise the child together, (5) speaking the Dutch (NL) or English (UK and US) language, and (6) not having a history of severe mental illness or substance abuse.

There were four waves. At the first wave, during the third trimester of pregnancy (36W), 484 couples participated. When the child was 4 months old (4M) parents were visited for the second time. Ten families became ineligible because of birth complications or having made a long-distance move. Of the 474 remaining eligible families, 23 families withdrew, and 6 families missed appointments, resulting in 445 families (94%) agreeing to participate in the second wave. At the start of the next time point, when the child was 14 months old (14M), there were 451 families; the 445 families who participated at 4M and the six families who missed the 4M appointment and returned at 14M. Due to having left the country, 13 families became ineligible. Of the 438 eligible families six families withdrew and 10 families missed appointments at 14M resulting in 422 families that agreed to participate at 14M (96%). The last time point, when the child was 24 months old (24M), started with 438 eligible families of which 12 families became ineligible because they left the country. In total 404 of the remaining 426 families (95%) participated at 24M.

At 4M the age of the children (224 boys, 221 girls) ranged between 3 and 6 months ($M = 4.26$, $SD = 0.46$), at 14M (214 boys, 208 girls) between 9 and 18 months ($M = 14.42$, $SD = 0.57$), and at 24M (209 boys, 195 girls) between 19 and 27 months ($M = 24.47$, $SD = 0.78$). During the first wave, mothers were on average 32 years old ($SD = 3.92$, range: 21.16 – 43.76) and fathers 34 years old ($SD = 4.73$, range: 23.10 – 55.95). Most mothers (56%) and fathers (46%) had a high educational level (Bachelor degree or higher) and only a small part of the parents (7% of the mothers and 13% of the fathers) had a low education level (upper secondary education or less).

Procedure

At four time points, mothers and fathers were visited at home and separately filled out (online) questionnaires. During the half hour home visit at 36W, parents completed a short interview about their thoughts and feelings regarding their unborn child and computer tasks to measure their cognitive ability. During the next three visits at 4M, 14M, and 24M, the parent tasks from the 36W home visit were also administered. In addition, there were also tasks for the child alone to measure the child's cognitive ability and parent-child tasks to observe the parent-child interaction. These home visits lasted around 2 hours. Mothers and fathers were visited separately in a counterbalanced order. To thank the families for participation the children received a small present after each visit and the families received a gift card. The study was reviewed by the Ethics Committees Education and Child Studies Leiden University (ECPW-2014/079), the National Health Service (NHS UK) Research Ethics Committee (London Bloomsbury), and the University Committee on Activities involving Human Subjects at New York University (REF: 14/LO/1113).

Measures

Couple Satisfaction. At each wave both parents completed the 16-item Couple Satisfaction Index (Funk & Rogge, 2007). One item, about the overall happiness with the relationship, was scored on a 7-point scale, weighing heavier than the other items. The other items were scored on a 6-point scale and included questions about more specific feelings (e.g., '*How well does your partner meet your needs?*') and characteristics (e.g., discouraging vs. hopeful) regarding the relationship. To make sure higher scores represented more couple satisfaction on all items, five negatively phrased items were recoded. All items were summed, separately for fathers and mothers at each wave, to calculate a total couple satisfaction score (range = 0-81). Internal consistency was good for both parents at each wave (range Cronbach's α = .94-.97).

Parental Mental Health Problems. At all waves both parents were asked to fill in the Center for Epidemiologic Studies Depression Scale (CES-D: Radloff, 1977), the General Health Questionnaire (GHQ: Goldberg, Oldehinkel, & Ormel, 1998), and the State-Trait Anxiety Inventory (STAI: Marteau & Bekker, 1992). The CES-D consists of 20 items about depressive feelings or behaviors in the past week (e.g., '*I was bothered by things that usually don't bother me*'), the GHQ asks parents 12 questions about feelings regarding general mental health in the past two weeks (e.g., '*In the last two weeks, have you lost much sleep over worry?*'), and the STAI consists of 6 items concerning current anxious feelings (e.g., *'I am tense'*). All questionnaires use a 4-point Likert scale. Positively phrased questions were recoded so that higher scores represent more mental health problems on all items. A total

score was calculated for all three questionnaires separately for mothers and fathers at each wave, by summing all item scores (possible range CED-D = 20-80, GHQ = 12-48, STAI = 6-24). The questionnaires had a high internal consistency at all waves for both parents (Cronbach's alphas ranging from .73 to .90). The total scores across the three questionnaires were moderately to highly correlated at each wave for both mothers and fathers (range correlations = .41-.72). Factor analyses were also performed separately per wave and parent across the three measures. Results showed that depression, anxiety, and general mental health loaded on a single factor (range factor loadings = .62-.92). Therefore, the scores on depression, anxiety, and general mental health were standardized and averaged to calculate a composite score in which higher scores represent more mental health problems. The composite scores had high internal consistencies for both parents at all waves (range Cronbach's alpha = .77-.86).

Sensitivity. Video footage of each parent playing with the child (without toys at 4M and with toys at 14M and 24M) was coded for parental sensitivity using the Ainsworth Sensitivity Scale (Ainsworth, Bell, & Stayton, 1974) at the three postnatal time points. Both parents were given a score ranging from 1 (*highly insensitive*) to 9 (*highly sensitive*). Highly sensitive parents notice the signals of the child, interpret them correctly, and respond to them promptly and appropriately, whereas highly insensitive parents often fail on all these aspects, and instead are mostly concerned with their own needs and wishes (Ainsworth et al., 1974). Coders were trained to reliability (intraclass correlation coefficients, absolute agreement, > .70 between all coders) by the first and last author. Parents within the same family, and time points within the same parent were coded by different coders. Coders were only assigned videos of parents that they had not visited themselves during data collection. In addition, around 25-30% of the videos were double coded to prevent coder drift. If there was a discrepancy between coders of 2 or more points the video was discussed to come to a consensus score.

Analysis plan

To examine if couple satisfaction, mental health problems, and sensitivity were predicted by each other, we performed cross-lagged panel models (Kenny, 1975) in Rstudio using the Lavaan package (Rosseel, 2012). Separate models were built for mothers and fathers. The models included couple satisfaction and mental health problems at 36W, 4M, 14M, and 24M and sensitivity at 4M, 14M, and 24M. We started with a one-lagged model, in which predictions were only made one time point ahead. The fit of the model was however not good for both mothers, $\chi^2(129)$ = 341.00, CFI = 0.85, RMSEA = 0.11, 90%CI [0.092, 0.12], and fathers, $\chi^2(129)$ = 266.52, CFI = 0.92, RMSEA = 0.09, 90%CI [0.07, 0.10]. Therefore, we fitted a

model with predictions across all time points. The fit of this model was significantly better for mothers, $\Delta\chi^2(17)=201.99$, $p < .001$, and fathers, $\Delta\chi^2(17)=138.69$, $p < .001$. We used this model for analyses. To be able to include all families that were eligible at the beginning of the fourth wave ($N = 438$), full information maximum likelihood estimation was used, in which parameters were estimated based on all available data. After inspecting the patterns of the missing data with a missing value analysis (also see Table 1 for the available data per variable per time point) and comparing groups with and without missing data on the main and background variables, the missing data were judged to be at random. The little's MCAR test was not significant for fathers: $\chi^2(335) = 376.02$, $p = .061$, and mothers: $\chi^2(225) = 248.38$, $p = .136$. In addition, for most cases the reasons for the missing data are known (see Sample section) and reflect mostly practical reasons. To evaluate model fit the chi-square (χ^2) statistic, comparative fit index (CFI), and root mean square error of approximation (RMSEA) including 90% confidence interval were examined. We used the CFI > .95 and RMSEA < .08 criteria (Brown & Cudeck, 1993; Hu & Bentler, 1999). To examine potential country differences, multi group comparison analyses were performed. To compare the models with (unconstrained model) and without (constrained model) the parameters varying across the countries, χ^2 difference tests were used. In addition, the Akaike information criterion (AIC) and Bayesian information criterion (BIC) were examined. The χ^2 difference test should be significant and the AIC and BIC should be as low as possible (i.e., lower than the other model) to be a better fitting model to the data.

Results

Couple satisfaction, mental health problems, and sensitivity
Table 1 presents descriptive statistics for the study variables. Table 2 presents the correlations between all study variables. These show positive significant within-person correlations across time and within-time-point correlations between mothers and fathers, for all measures. In addition, for both parents, couple satisfaction was significantly negatively related to mental health problems at all time points. Lastly, maternal mental health problems at 36W and 14M were significantly negatively related to 24M maternal sensitivity, and 36W paternal mental health problems was significantly negatively related to 14M paternal sensitivity.

Table 1: Descriptive Statistics.

		36W		4M		14M		24M	
		N	M(SD)	N	M(SD)	N	M(SD)	N	M(SD)
1. Couple Satisfaction	Mother	426	72.49 (8.24)	418	68.16 (11.37)	390	64.06 (11.95)	355	65.27 (12.47)
	Father	402	71.44 (8.56)	385	67.76 (11.48)	358	62.86 (12.84)	326	64.15 (13.69)
2. Mental Health Problems	Mother	426	.037(0.84)	419	-.009 (0.86)	391	-.002 (0.87)	356	-.002 (0.87)
	Father	402	-.001(0.84)	386	-.022 (0.88)	363	-.000 (0.87)	329	.003 (0.90)
3. Sensitivity	Mother			423	5.25 (1.83)	417	6.16 (1.53)	382	6.53 (1.45)
	Father			417	5.50 (1.80)	391	5.76 (1.60)	360	6.27 (1.40)

Note. 36W = 36 weeks pregnancy, 4M = 4 months postpartum, 14M = 14 months postpartum, 24M = 24M postpartum.

Table 2: Correlations Between Couple Satisfaction, Mental Health Problems, and Sensitivity for Mothers and Fathers.

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.
1. CS 36W	**.52***	.75***	.66***	.67***	-.23***	-.20***	-.15**	-.24***	.07	.04	.08
2. CS 4M	.67***	**.55***	.73***	.72***	-.28***	-.42***	-.28***	-.29***	.06	.01	.07
3. CS 14M	.62***	.65***	**.58***	.83***	-.27***	-.27***	-.45***	-.39***	.01	.00	.07
4. CS 24M	.64***	.67***	.78***	**.62***	-.26***	-.22***	-.34***	-.50***	-.02	.02	.09
5. MHP 36W	-.29***	-.25***	-.17**	-.23***	**.13**	.56***	.51***	.46***	.02	-.11*	-.03
6. MHP 4M	-.26***	-.36***	-.30***	-.33***	.40***	**.30***	.51***	.45***	-.02	-.10	-.05
7. MHP 14M	-.21***	-.21***	-.37***	-.31***	.43***	.48***	**.32***	.58***	.06	-.02	-.03
8. MHP 24M	-.24***	-.32***	-.31***	-.42***	.41***	.50***	.56***	**.32***	.07	-.07	-.09
9. Sens 4M	-.01	-.00	-.02	-.04	-.02	.01	.01	-.07	**.21***	.04	.16**
10. Sens 14M	.02	.06	-.02	-.08	-.06	-.04	-.09	-.05	.16**	**.16**	.32***
11. Sens 24M	.02	.03	.03	.06	-.13*	-.03	-.11*	-.08	.14**	.34***	**.22***

Note. CS = couple satisfaction, MHP = mental health problems, Sens = sensitivity, 36W = 36 weeks pregnancy, 4M = 4 months postpartum, 14M = 14 months postpartum, 24M = 24M postpartum. Below diagonal correlations for mothers, above the diagonal for fathers, and on the diagonal (bold) between mothers and fathers. Missings were deleted pairwise. * $p < .05$, ** $p < .01$, *** $p < .001$.

Next, the longitudinal associations between couple satisfaction, mental health problems, and parental sensitivity were examined. First, the constrained model, with the parameters being similar for the three countries, was fitted to the data. The fit of the models for both mothers and fathers is presented in Table 3. For both mothers and fathers the model fit was good. To test whether there were any country differences, the constrained model was compared to the unconstrained model, with the parameters varying across the three countries. The results are presented in Table 4 (mothers) and 5 (fathers). For mothers the χ^2 difference test was significant, $\Delta\chi^2(106) = 136.37$, $p = .03$. The AIC and BIC of the constrained model were however lower than of the unconstrained model implying that the model fit of the unconstrained model is not better than of the constrained model. For fathers the Chi-Squared difference test was not significant, $\Delta\chi^2(106) = 110.51$, $p = .363$, and the AIC and BIC of the constrained model were also lower than of the unconstrained model indicating that the unconstrained model fit was lower than the fit of the constrained model. This means that the model was not different across the three countries. Therefore, the constrained model was chosen as the final model and only the results of the constrained model were interpreted.

Table 3: Model Fit Cross-lagged Panel Models of Mothers and Fathers.

	χ^2	df	CFI	RMSEA (90% CI)
Mothers	139.01	112	.98	.04 (.01 - .06)
Fathers	127.83	112	.99	.03 (.00 - .05)

Note. χ^2 = chi-square statistic, df = degrees of freedom, CFI = comparative fit index, RMSEA = root mean square error of approximation CI = confidence interval.

Table 4: Model Fit Comparison Constrained versus Unconstrained Model Mothers.

	χ^2	df	AIC	BIC	$\Delta\chi^2$
Constrained	139.01	112	19241.83	19727.61	
Unconstrained	2.65	6	19317.46	20235.96	136.37*

Note. χ^2 = chi-square statistic, df = degrees of freedom, AIC = Akaike information criterion, BIC = Bayesian information criterion, $\Delta\chi^2$ = chi-square difference test. * $p < .05$.

Table 5: Model Fit Comparison Constrained versus Unconstrained Model Fathers.

	χ^2	df	AIC	BIC	$\Delta\chi^2$
Constrained	443.08	112	17834.69	18320.20	
Unconstrained	332.57	6	17922.47	18840.46	124.22

Note. χ^2 = chi-square statistic, df = degrees of freedom, AIC = Akaike information criterion, BIC = Bayesian information criterion, $\Delta\chi^2$ = chi-square difference test.

Figure 1 presents the results of the constrained model for mothers. Couple satisfaction at each time point was significantly positively predicted by couple satisfaction at all other prior time points (β = .14-.73). This indicates that there is stability over time for couple satisfaction; if mothers are more satisfied with their relationship compared to the other mothers at one time point, they are also more satisfied with their relationship compared to the other mothers at the other time points. The same results are found for both mental health problems (β = .12-.48) and sensitivity (β = .11-.28). Next, some significant predictions were found between the three constructs. First, couple satisfaction at 36W negatively predicted mental health problems at 4M (β = -.18) and couple satisfaction at 4M negatively predicted mental health problems at 24M (β = -.27). More couple satisfaction was related to fewer mental health problems. Second, mental health problems at 4M negatively predicted couple satisfaction at 14M (β = -.06); more mental health problems were related to less couple satisfaction. Third, sensitivity at 14M negatively predicted couple satisfaction at 24M (β = -.06); more sensitivity was related to less couple satisfaction. No other significant predictions were found.

Figure 2 shows the final model for fathers. For fathers there was also stability over time for couple satisfaction (β = .12-.77), mental health problems (β = .15-.54), and sensitivity (β = .10-.28). Again, all paths across time of the same variable were significant. In addition, some significant paths between couple satisfaction and mental health problems were found. Couple satisfaction at 36W negatively predicted mental health problems at 4M (β = -.12), couple satisfaction at 4M negatively predicted mental health problems at 14M (β = -.15), and couple satisfaction at 14M negatively predicted mental health problems at 24M (β = -.24). The more satisfied fathers were with their relationship, the fewer mental health problems they had. Mental health problems at 36W also negatively predicted couple satisfaction at 4M (β = -.12); more mental health problems were related to less couple satisfaction. There were no other significant paths.
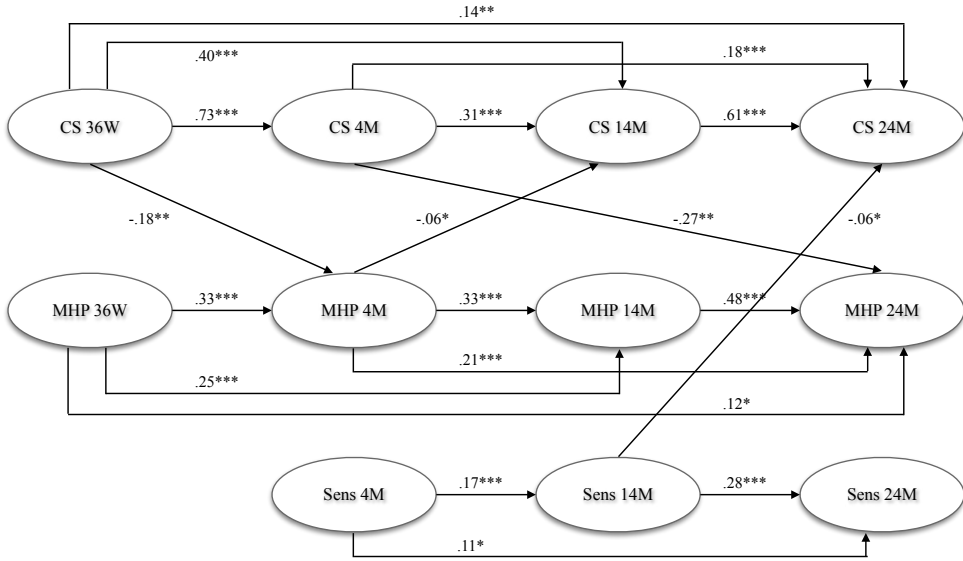
Figure 1: Constrained model of mothers with couple satisfaction and mental health problems at 36W, 4M, 14M and 24M, and sensitivity at 4M, 14M and 24M.

Note. CS = Couple Satisfaction, MHP = mental health problems, Sens = sensitivity, 36W = 36 weeks pregnancy, 4M = 4 months postpartum, 14M = 14 months postpartum, 24M = 24 months postpartum. * $p < .05$, ** $p < .01$, *** $p < .001$. Estimates presented are standardised estimates (β).
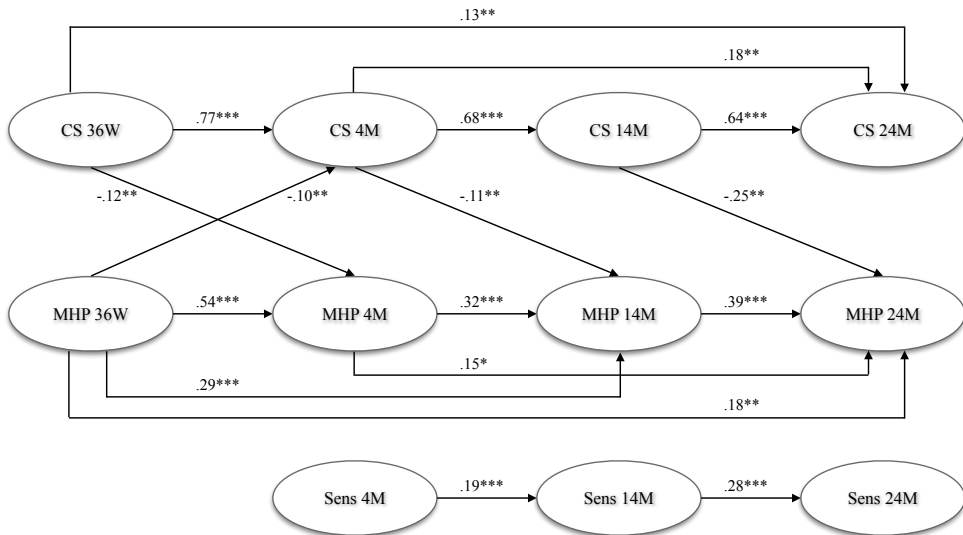
Figure 2: Constrained model of fathers with couple satisfaction and mental health problems at 36W, 4M, 14M and 24M, and sensitivity at 4M, 14M and 24M.

Note. CS = Couple Satisfaction, MHP = mental health problems, Sens = sensitivity, 36W = 36 weeks pregnancy, 4M = 4 months postpartum, 14M = 14 months postpartum, 24M = 24 months postpartum. * $p < .05$, ** $p < .01$, *** $p < .001$. Estimates presented are standardised estimates (β).

Discussion

In the current study we examined associations between parental mental health problems, couple satisfaction, and parental sensitivity in first-time mothers and fathers during the transition to parenthood. Mothers who experienced lower satisfaction in their relationship before becoming a parent had more mental health problems when the baby was 4 months old. In addition, mothers who were less satisfied with their relationship at 4 months had more mental health problems when the child was 24 months old and mothers who had more mental health problems at 4 months experienced less satisfaction with their relationship at 14 months. Finally, mothers who were more sensitive towards their child at 14 months were less satisfied with their relationship when the child was 24 months old. Fathers who were more satisfied with their relationship experienced fewer mental health problems one time point ahead. This was found across all time points. Also, fathers who experienced more prenatal mental health problems were less satisfied with their relationship at 4 months. Paternal sensitivity was not related to couple satisfaction or mental health problems.

These results are partly in line with our hypotheses. We expected to find negative associations between couple satisfaction and mental health problems across time in both mothers and fathers. Bivariate correlations between couple satisfaction and mental health problems were significant across all time points for mothers and fathers. However, in the final model we found more evidence for the prediction from couple satisfaction to later mental health problems instead of the other way around, especially for fathers. This is in line with the marital discord model of depression (Beach et al., 1990), where problems in the relationship are seen as a risk factor for the development of depression through a decrease in social support and an increase in hostility between spouses. However, we did find some evidence that mothers and fathers who had more mental health problems also experienced less couple satisfaction across time. This might be through stressful interpersonal situations created by the negative behavior that are caused by mental health problems (e.g., Garnefski et al., 2002; Hammen, 1991). These results show the bidirectional relation between couple satisfaction and mental health problems also found in other studies (e.g., Mamun et al., 2009), and also demonstrate the interrelatedness between the individual and couple system that is proposed in multiple theoretical frameworks (e.g., Belsky, 1984; Cox & Paley, 1997; Cummings & Davies, 2002). When examining the couple relationship functioning, it is pivotal to also include the individual system and vice versa.

In addition to postnatal couple satisfaction and mental health problems, we included prenatal measures of both constructs. There is limited research including prenatal couple satisfaction and mental health problems, but based on the existing literature (e.g., Asunción et al., 2016; Gawlik et al., 2014) we also expected more prenatal couple satisfaction to predict less postnatal mental health problem and more prenatal mental health problems to predict less postnatal couple satisfaction. Both mothers and fathers who experienced more satisfaction with their relationship before the child was born indeed had fewer postnatal (4 months) mental health problems. Fathers (not mothers) who had more prenatal mental health problems also experienced less postnatal (4 months) couple satisfaction. These results show that the dynamics between the personal and couple system are already present before the child is born and stress the importance of the prenatal period for postnatal personal and couple functioning. There is both empirical (e.g., Beach et al., 2003; Kouros & Cummings, 2011; Mamun et al., 2009) and theoretical (e.g., Belsky, 1984; Cox & Paley, 1997; Cummings & Davies, 2002) evidence for the interdependence between the couple and individual system, however, most research is focused on the postnatal period. This study shows that prenatal couple satisfaction and mental health problems are early risk factors for later personal and couple functioning. Given that the transition to parenthood coincides with an average decrease in couple satisfaction (e.g., Mitnick et al., 2009) and personal wellbeing (e.g., Hughes et al., 2020), a focus on the prenatal phase can give more insight in how to prevent or reduce this decrease and later problems in couple and personal functioning. The results on the one hand strengthen the existing theories about the interdependence between the couple and individual system, and on the other hand expand them by incorporating the importance of the prenatal period.

Regarding sensitivity, the results of the current study are not in line with our hypotheses. We expected both pre- and postnatal mental health problems to negatively predict parental sensitivity, and pre- as well as postnatal couple satisfaction to positively predict parental sensitivity in both mothers and fathers. We did find some negative bivariate correlations between mental health problems and parental sensitivity in both mothers and fathers, these however did not hold in the final model. For fathers, no significant predictions from either (pre- or postnatal) mental health problems or couple satisfaction to sensitivity were found. For mothers, we only found one significant path opposite to the direction of the hypothesis; mothers who were more sensitive when the child was 14 months were less satisfied with their relationship at 24 months. This might have something to do with the time spent on childcare by sensitive mothers. More maternal sensitivity is related to spending more time playing with and taking care of the child (e.g., Lickenbrock & Braungart-Rieker, 2015). Mothers who spend more time with their child have less time to spend with their partner, and less couple

time has been found to be negatively related to relationship satisfaction (e.g., Dew & Wilcox, 2011). This might be especially the case when there are already problems in the relationship, which is in line with the compensatory hypothesis (Engfer, 1988). According to this hypothesis parents in problematic marital relationships show more positive and involved parenting as a way of compensating dissatisfaction within the marital relationship. There is empirical evidence for the compensatory hypothesis, especially in mothers (e.g., Belsky, Youngblade, Rovine, & Volling, 1991; Kouros, Papp, Goeke-Morey, & Cummings, 2014).

Possible explanations for not finding associations between parental sensitivity on the one hand and the couple relationship and mental health problems on the other, might have something to do with our measures. For the parent-child system we used individual parental sensitivity. It might be that not the dyadic relationship between one parent and the child, but triadic interactions between both parents and the child are more affected by the couple relationship functioning. There is evidence that problems in the relationship predict more competitive and lower cooperative co-parenting and lower support of the parenting of the partner (e.g., Christopher, Umemura, Mann, & Hazen, 2015). In addition, positive co-parenting perceptions are found to mediate the relation between interparental relationship quality and the quality of the parent-child relationship (Holland & McElwain, 2013). With regard to the couple system, it is possible that similarities and differences in parenting views between the parents play a role in the effect of couple satisfaction on actual parenting behavior. For example, research has shown that marital adjustment was related to parental discipline through child-rearing disagreements (O'Leary & Vidair, 2005). Finally, on average both mothers and fathers were quite sensitive, and there were not many parents with very low sensitivity scores, which might have prevented finding significant associations.

This study has some limitations. First, the sample was quite homogenous economically and culturally which results in limited generalizability. Second, even though we did not find differences between the countries, these results should be interpreted with caution because of lack of power. And third, we only included three subsystems and only examined direct paths between the subsystems. Given that for example contextual factors also play an important role (e.g., Taraban & Shaw, 2018) focusing on only parental characteristics is not sufficient to fully explain the complicated family dynamics.

The current study is however, as far as we know, the first that examined longitudinal associations between mental health problems, couple satisfaction, and parental sensitivity in both mothers and fathers during the transition to parenthood. The results

demonstrate the complicated interdependence between the individual, couple, and parent-child system. In line with several theoretical frameworks (e.g., Belsky, 1984; Cox & Paley, 1997; Cummings & Davies, 2002) we confirmed the bidirectional relation between the individual and couple system in that parents who experienced lower satisfaction in their relationship, had more mental health problems and vice versa. Only for mothers, the parent-child system was also related to the couple system. As an addition to the existing models, we showed the importance of the prenatal period in family processes, with prenatal couple satisfaction and mental health problems as early risk factors for later personal and couple functioning, both in turn relevant for the quality of parent-child interaction. We therefore encourage both empirical and theoretical research to include prenatal measures of the individual and couple system when examining family dynamics, especially in light of the promotion of prevention efforts.

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