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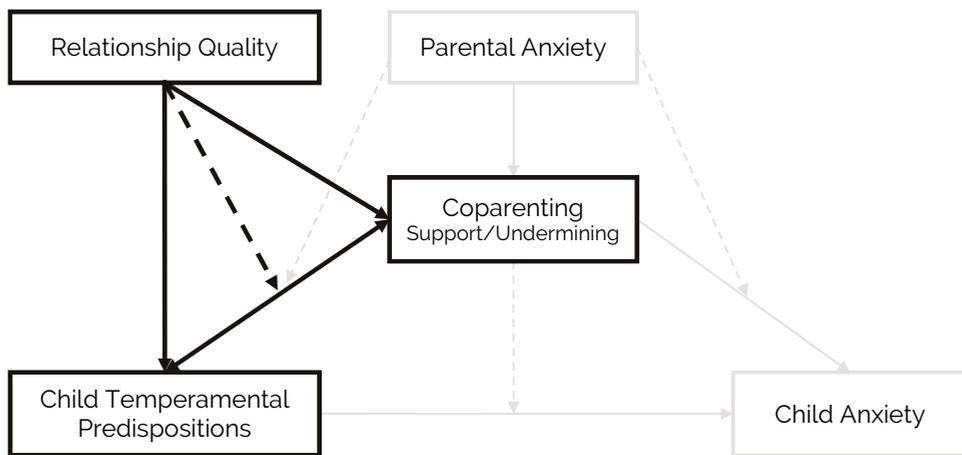
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Graphical representation of the associations tested in this thesis (adjustment of the model by Majdandžić et al., 2012). Dashed lines represent moderation effects. Lines in black are the effects that are tested in Chapter 5. Lines in grey are tested in other chapters.

CHAPTER

5

**Prenatal Relationship
Satisfaction as a Moderator
of the Association between
Coparenting and
Negative Affectivity**

ABSTRACT

Objective

Couples with a high relationship satisfaction before child birth have been proposed to pull together when their child is high on negative affectivity, while couples with poor prenatal relationship satisfaction become less engaged with each other when their child is negative. We tested this hypothesis by relating prenatal relationship satisfaction and child negative affectivity to supportive and undermining coparenting. In addition, we investigated differences between fathers and mothers in these associations.

Methods

Couples pregnant with their first child reported on their prenatal relationship satisfaction ($N = 151$). When children were 4 months, 1 year, 2.5 years, and 4.5 years old, fathers and mothers reported on their own supportive coparenting, undermining coparenting, and their child's negative affectivity. We conducted multilevel analyses to test our hypotheses.

Results

Prenatal relationship satisfaction predicted as expected more supportive and less undermining coparenting for fathers and mothers. As expected, more child negative affectivity related to more undermining coparenting for fathers and mothers. Unexpectedly, for fathers more child negative affectivity related to *more* supportive coparenting; for mothers, we found no relationship between child negative affectivity and supportive coparenting. Relationship satisfaction did not moderate the association between child negative affectivity and supportive or undermining coparenting. Results were the same across all measurement occasions.

Conclusions

This study revealed that child negative affectivity predicted more undermining coparenting, regardless of parent gender or prenatal relationship satisfaction. Fathers' supportive coparenting appears to be sensitive to child negative affectivity in order to function as a buffer in the relationship between the mother and her negative child

INTRODUCTION

Coparenting, “the ways that parents and/or parental figures relate to each other in the role of parent” (Feinberg, 2003, p. 96), has been receiving growing attention in the study on child internalizing behavior problems such as anxiety and depression (Feinberg, 2003; Teubert & Pinquart, 2010). Coparenting is generally studied in terms of supportive coparenting and undermining coparenting. Support refers to affirmation of the other parent’s parenting behaviors, whereas undermining involves disparagement of the other parent, as well as criticism and conflict (Belsky, Woodworth, & Crnic, 1996; McHale, 1995; Feinberg, 2003). A meta-analysis revealed that supportive coparenting behaviors are related to less internalizing problems in children, whereas undermining coparenting behaviors are related to more internalizing problems in children (Teubert & Pinquart, 2010). These effects were found even after controlling for satisfaction with the romantic relationship, a construct that is closely related to, but different from, coparenting (Kitzmann, 2000; Schoppe-Sullivan, Mangelsdorf, Frosch, & McHale, 2004).

A large part of coparenting research has focused on infants and their temperamental characteristics (constitutionally based individual differences in reactivity and self-regulation, Rothbart, 1989; Rothbart & Derryberry, 1981), especially negative affectivity. Negative affectivity is one of the three broad factors of temperament (next to surgency and effortful control; Gartstein & Rothbart, 2003; Rothbart, Ahadi, Hershey, & Fisher, 2001) and is defined as proneness to the experience and expression of negative emotions (Watson & Clark, 1984). Negative affectivity has been related to internalizing problems such as anxiety in children (Fox, Henderson, Marshall, Nichols, & Ghera, 2005). To investigate how negative affectivity is related to coparenting, we studied the relations between child negative affectivity and coparenting from infancy until early childhood.

Findings on the association between child negative affectivity and coparenting have been mixed. Most commonly, negative affectivity was found to be related to less supportive coparenting (Davis, Schoppe-Sullivan, Mangelsdorf, & Brown, 2009; Gordon & Feldman, 2005; Laxman et al., 2013; Schoppe-Sullivan, Mangelsdorf, Brown, & Sokolowski, 2007; Van Egeren, 2004) and to more undermining coparenting (Laxman et al., 2013; Lindsey, Caldera, & Colwell, 2005; Metz, Majdandžić, & Bögels, 2016) in 3-month-olds to 3-year-olds. Other studies with 3-month-old infants, however, found that negative affectivity is related to more support and less undermining (Berkman, Alberts, Carleton, & McHale, 2002, as cited in Schoppe-Sullivan et al., 2004). In some studies, no associations between negative affectivity and support or undermining were found when children were 3 months to 4 years old (McHale et al., 2004; Solmeyer & Feinberg, 2011; Stright & Bales, 2003). Thus, previous research has demonstrated associations between child negative affectivity and coparenting, but the direction of results remains inconsistent across studies. A possible explanation for the diversity in the found associations between negative affectivity and coparenting may be that important moderators have been overlooked.

One of the moderators that may be in play in the associations between child negative affectivity and coparenting behavior is the gender of parents. Several studies found that it is especially fathers' coparenting behavior that is related to infant negative affectivity (Gordon & Feldman, 2008; Lindsey et al., 2005; Van Egeren, 2004). These studies revealed that when infants from 5 months to 15 months have higher negative affectivity, fathers' supportive coparenting is lower, whereas no significant associations were found for mothers' coparenting. In contrast, no differences between fathers and mothers were found in the relations between coparenting and child negative affectivity when children were 1 year old (Solmeyer & Feinberg, 2011). In a previous study on the same sample as the current study (but without the 4.5 years measures as these data were not yet available), we investigated the moderating role of parental anxiety in the associations between parent reported child fearful temperament and self-reported coparenting behaviors (Metz et al., 2016). In this study, we found no differences between fathers and mothers in the associations between coparenting and child fearful temperament: for all parents, undermining coparenting was related to more child fearful temperament when children were 4 months to 2.5 years old, and supportive coparenting was unrelated to child fearful temperament. Studies using observational measures of coparenting behaviors have not distinguished between fathers' and mothers' coparenting behaviors and have therefore been unable to investigate possible mother-father differences (e.g., Laxman et al., 2013; Schoppe-Sullivan, et al., 2007; Schoppe-Sullivan, Mangelsdorf, & Brown, 2009). Hence, thus far results are mixed with regard to the role of parent gender in the associations between child negative affectivity and coparenting; therefore, in the current study we explore the moderating role of parent gender further.

Another possible moderator in the association between negative affectivity and coparenting is couple functioning before the birth of the child. In a transactional model on the interaction between infant characteristics and couple characteristics, Crockenberg and Leerkes (2003) proposed that some couples may be less 'ready' to become parents than others, for example due to age, parents' psychopathology, poor economic situation, short duration of the relationship, or poor relationship satisfaction. Couples who are not ready to become parents are hypothesized to be influenced more strongly by negative affectivity in their infant, resulting in family malfunctioning; in contrast, couples who are ready to become parents are hypothesized to become closer to each other ('pull together') in response to high negative affectivity in their infant. Crockenberg and Leerkes (2003) have advised researchers to study prenatal measures of couple functioning as a moderator in the association between infant temperament and family outcomes, to ensure the use of a moderator that is not yet influenced by the infant's temperament. Especially from a prevention standpoint, identifying early indicators of poor coparenting-child functioning associations seems imperative.

In the current study we focused on prenatal relationship satisfaction as an indicator of early couple functioning. Previous research has demonstrated that relationship satisfaction is closely related to coparenting behaviors (Lindahl, Clements, & Markman, 1997;

Kitzman, 2000; Schoppe-Sullivan et al., 2004) as well as to child functioning (McHale, Kazali, Rotman, Talbot, Carleton, & Lieberson, 2004). To our knowledge, two previous studies have investigated the role of prenatal relationship satisfaction as a moderator in the association between coparenting and young infants' negative affectivity (McHale et al., 2004; Schoppe-Sullivan et al., 2007). Using a composite measure of self-report and observations for relationship satisfaction, McHale et al. (2004) found a trend indicating that in families with 3-month-olds with high mother-reported negative affectivity, prenatal relationship satisfaction predicted more supportive coparenting, whereas in families with infants low on negative affectivity, prenatal relationship satisfaction was not related to supportive coparenting. No significant relations were found for undermining coparenting. Similarly, Schoppe-Sullivan et al. (2007) found that only for couples with low prenatal relationship satisfaction, more parent-reported infant unadaptability at 3 months was related to more observed undermining, and more observed infant unadaptability was related to less supportive coparenting. In contrast, only for couples with high prenatal relationship satisfaction, more parent-reported infant fussiness was related to less undermining. In sum, the findings of these two studies are in line with the idea that couples with high relationship satisfaction pull together in the event of a negative infant, whereas couples with a low relationship satisfaction drift apart (Crockenberg & Leerkes, 2003). However, results for supportive and undermining coparenting did not reveal the same pattern in the two studies, age of the child was restricted to early infancy, and the gender of parents was not taken into account. Therefore, replication of these results in a longitudinal study using measures for both fathers and mothers from infancy to early childhood is important.

Interestingly, past research suggests differences between fathers and mothers in the associations between relationship satisfaction and coparenting (Burney & Leerkes, 2010; Christopher, Umemura, Marin, Jacobvitz, & Hazen, 2015; Pedro, Ribeiro, & Shelton, 2015; Van Egeren, 2004), as was the case for the associations between child negative affectivity and fathers' versus mothers' coparenting. However, the nature of these differences remains unclear: one study found stronger associations between mothers' relationship satisfaction and coparenting in the family (Pedro et al., 2015), while others found especially strong associations between fathers' relationship satisfaction and coparenting in the family (Christopher et al., 2015; Van Egeren, 2004). Taken together with the earlier discussed role of parent gender in the relation between child negative affectivity and coparenting, these findings demonstrate the importance of investigating the role of parent gender as a moderator in the associations between relationship satisfaction and coparenting. Specifically, fathers and mothers may differ in the way their coparenting is affected by their prenatal relationship satisfaction. In addition, it may be the case that the way prenatal relationship satisfaction influences the association between child negative affectivity and coparenting (i.e., the moderation by prenatal relationship satisfaction of the association between child negative affectivity and coparenting) differs for fathers and mothers.

The aim of the current study was to extend previous research on the moderating roles of prenatal relationship satisfaction and parent gender on the association between negative affectivity and coparenting. We included both fathers' and mothers' perceptions of relationship satisfaction and their coparenting behaviors in order to investigate differences between fathers and mothers. In addition, to investigate whether earlier findings also apply to older children, we investigated a longitudinal sample spanning the developmental period from infancy to early childhood with measurements of coparenting and child negative affectivity at 4 months, 1 year, 2.5 years, and 4.5 years.

Based on the reviewed literature, we tested the following hypotheses: 1) higher prenatal relationship satisfaction predicts more supportive coparenting and less undermining coparenting at all ages of the children; 2) child negative affectivity is related to less supportive coparenting and more undermining coparenting across all ages; 3) in families with high prenatal relationship satisfaction, high child negative affectivity is related to more supportive and less undermining coparenting, whereas in families with low prenatal relationship satisfaction, high child negative affectivity is related to less supportive and more undermining coparenting; 4) in addition to these hypotheses, we explored whether differences exist between mothers and fathers in these associations.

METHOD

Participants

The current study is part of an ongoing longitudinal study (The Social Development of Children) and is an extension of previous research on the same sample from 4 months to 2.5 years in which we studied the moderating role of parental anxiety disorder in the associations between child fearful temperament and coparenting (Metz et al., 2016). We recruited couples who were pregnant with their first child through advertisements in magazines and flyers distributed by midwives. This resulted in a total sample of 151 families at the prenatal measurement. The Department of Psychology's ethical approval was obtained and written informed consent was received from all participants. Parents and their children completed five measurement occasions, of which one was when the mother was pregnant of the child. The other measurements were conducted when the child was 4 months old (M age of child = 4.2 months, $SD = 0.33$), 1 year old ($M = 12.4$ months, $SD = 0.72$), 2.5 years old ($M = 30.1$ months, $SD = 0.53$), and 4.5 years old ($M = 54.1$ months, $SD = 1.51$).

At the prenatal measurement, father's age was 33.6 years ($SD = 5.5$) and fathers' average educational level was 6.5 ($SD = 1.7$) on an 8-point scale from 1 (*primary education*) to 8 (*university*). Mothers' average age was 30.7 ($SD = 4.3$) and mothers' educational level was 7.0 ($SD = 1.2$). At the prenatal measurement ($N = 151$), the average relationship duration was 6.1 years ($SD = 3.6$) and 148 couples were married/living together; 1 couple was living apart, and 1 couple indicated a "different" relationship state. At 4 months ($N = 136$), 127

couples were married/living together, 2 couples indicated different, and 7 couples did not provide this information; at 1 year ($N = 130$), 122 couples were married/living together, 1 couple was divorced, 1 couple indicated different, and 6 couples did not provide this information; at 2.5 years ($N = 120$), 112 couples were married/living together, 2 couples were divorced/separated, 2 couples indicated different, and 4 couples did not provide this information; at 4.5 years ($N = 111$), 103 couples were married/living together, 4 couples were divorced/separated, 2 couples indicated different, and 2 couples did not provide this information.

Procedure

Before their child was born, parents separately visited the University research center to complete a clinical interview assessing anxiety disorders, and they completed several questionnaires about themselves, their relationship, and expectations about their child. When children were 4 months, 1 year, 2.5 years and 4.5 years old, mothers and fathers separately visited the research center with their child for observational measurements (not part of the current study) and parents also filled out several questionnaires about the child, about themselves and about their relationship in their own homes. The current study focuses on questionnaires about prenatal relationship satisfaction, coparenting and child temperament.

Measures

Relationship satisfaction

Relationship satisfaction was measured at the prenatal measurement with the *Partnerschaftsfragebogen* (PFB; Hahlweg, 1996), a 30-item questionnaire consisting of three scales: quarreling (e.g., “He/she keeps reminding me about mistakes I made in the past”), tenderness (e.g., “Before we go to sleep, we cuddle in bed”), and togetherness/communication (e.g., “He/she openly shares his/her thoughts and feelings with me”). Items are rated from 1 (*never/almost never*) to 4 (*very often*). We calculated a total score for relationship satisfaction by averaging all items (quarreling reversed). Cronbach’s α for mothers and fathers was .88.

Coparenting

When children were 4 months, 1 year, 2.5 years, and 4.5 years old, parents filled out the Dutch version of the revised Coparenting Scale (CPS; Karreman, van Tuijl, van Aken, & Dekovic, 2008; McHale, 1997; 1999; McHale, Kuersten-Hogan, Lauretti, & Rasmussen, 2000) to assess their coparenting relationship quality. This questionnaire measures the way in which parents rate their own coparenting behaviors towards their partner. The revised CPS consists of 18 items that are answered on a Likert scale from 1 (*absolutely never*) to 7 (*almost constantly/at least once an hour*). McHale (1997) used four scales: family

integrity, disparagement, conflict, and reprimand. McHale's original scales did not yield reliable measures in our sample; in order not to lose data, we performed a principal-component analysis with Varimax rotation to find a factor structure with a satisfactory fit to the data. Due to an error, 1 item from the original scale was not administered. Three items did not correlate with the other items in the factor analysis and were therefore removed. This procedure resulted in 14 items, which yielded two reliable factors: Undermining coparenting and Supportive coparenting. Both scales consisted of 7 items. See Metz et al. (2016) for a detailed description of scale construction.

We computed scale scores by averaging the corresponding items. The scale measuring Support consisted of items such as "How often in a typical week (when all three of you are together) do you make an affirming or complimentary remark about your partner to your child?". Cronbach's α for Support ranged from .85 to .86 for mothers across measurement occasions, and from .85 to .89 for fathers. The scale measuring Undermining consisted of items such as "How often in a typical week when you are alone with your child do you find yourself saying something clearly negative or disparaging about your partner to your child?". Cronbach's α for Undermining ranged from .75 to .79 for mothers and from .74 to .79 for fathers across measurement occasions.

Child negative affectivity

Child negative affectivity was assessed at each age with age-appropriate questionnaires stemming from the same approach to temperament (Gartstein & Rothbart, 2003; Rothbart et al., 2001). At 4 months and at 1 year, fathers and mothers completed the Revised Infant Behavior Questionnaire (IBQ-R; Gartstein & Rothbart, 2003). The IBQ-R assesses infant temperament from 3 to 12 months and consists of 14 scales with 191 items which are rated on a 7-point Likert scale from 1 (*never*) to 7 (*always*). Parents filled out how often, during the past seven days, their child displayed specific behaviors. In the current study we used the dimension Negative Affectivity. This dimension consists of the following scales: sadness (14 items; e.g., "How often did the baby seem sad when the caregiver was gone for an unusually long period of time?"), distress to limitations (16 items; e.g., "How often, when placed on his/her back, did the baby fuss or protest?"), fear (16 items; e.g., items, "How often did the baby startle to a sudden or loud noise?"), falling reactivity (reversed; 13 items; e.g., "How often, when frustrated with something, did the baby calm down within 5 minutes?"), and soothability (reversed; 11 items; e.g., "How often, when patting or gently rubbing some part of the baby's body, did s/he soothe immediately?"). The score of the negative affectivity dimension was calculated by averaging scale scores. At 4 months, Cronbach's α (based on scale scores) for negative affectivity was .76 for mothers and .79 for fathers; at 1 year, Cronbach's α for negative affectivity was .74 for mothers and .69 for fathers.

At 2.5 years, both parents filled out the short form of the Early Childhood Behavior Questionnaire (ECBQ; Putnam, Gartstein, & Rothbart, 2006). The ECBQ short form is a

parent-report measure of temperament in 1.5- to 3-year-old children and consists of 18 scales and 107 items. Parents filled out how often their child displayed specific behaviors in the last two weeks. Items were rated on a 7-point Likert scale from 1 (*never*) to 7 (*always*). In the current study, we used the dimension Negative Affectivity. To ensure comparability to the Negative Affectivity dimensions in the IBQ-R and the Children's Behavior Questionnaire (see below), we included the following scales in this construct: discomfort (10 items; e.g., "During everyday activities, how often did your child seem to be irritated by tags in his/her clothes?"), fear (11 items; e.g., "While at home, how often did your child show fear at a loud sound?"), sadness (12 items; e.g., "During everyday activities, how often did your child become sad or blue for no apparent reason?"), frustration (12 items; e.g., "When told that it was time for bed, how often did your child get irritable?"), soothability (reversed, 9 items; e.g., "When s/he was upset, how often did your child change to feeling better within a few minutes?"), and shyness (12 items; e.g., "When approaching big unfamiliar children playing, how often did your child watch rather than join in?"). The score of the negative affectivity dimension was calculated by averaging scale scores. Cronbach's α (based on scale scores) for mothers was .59, and for fathers .64.

At 4.5 years, we measured negative affectivity using the Children's Behavior Questionnaire Short Form (CBQ; Putnam & Rothbart, 2006; Rothbart et al., 2001). The CBQ short form is a parent-report measure of temperament for children aged 3 to 8 years. The questionnaire consists of 15 scales and 94 items. Parents filled out how true or untrue the descriptions were of their child's reactions during the past six months. Items were rated on a 7-point Likert scale from 1 (*extremely untrue*) to 7 (*extremely true*). In the current study, we used the dimension Negative Affectivity. To ensure comparability to the negative affectivity dimensions in the IBQ-R and the ECBQ, we included the following scales of the CBQ: anger/frustration (6 items; e.g. "My child gets angry when told s/he has to go to bed"), discomfort (6 items; e.g. "My child is quite upset by a little cut or bruise"), falling reactivity/soothability (reversed, 6 items; e.g. "My child is easy to soothe when s/he is upset"), fear (6 items; e.g. "My child is afraid of loud noises"), sadness (7 items; e.g. "My child cries sadly when a favorite toy gets lost or broken"), and shyness (6 items; e.g. "My child acts shy around new people"). The score of the negative affectivity dimension was calculated by averaging scale scores. We found that alpha (based on scale scores) was modest for mothers and fathers ($\alpha = .51$ and $\alpha = .57$, respectively).

At several of the measurement occasions, Cronbach's α was modest for at least one of the parents. This is probably due to the multidimensional nature of the construct of negative affectivity, which includes both 'internalizing' scales (e.g., sadness, fear), and 'externalizing' scales (e.g., anger). Because reliability and validity of the current temperament questionnaire battery is widely established (Gartstein & Rothbart, 2003; Putnam et al., 2006; Putnam & Rothbart, 2006; Rothbart et al., 2001), we followed past research in utilizing the construct of negative affectivity.

Statistical Analyses

Before analyzing the data, we inspected missing data and dropout by comparing families with complete data to those with missing data on demographic variables and study variables through *t*-tests. In the case of significant differences based on demographic variables ($p < .05$), we included these measures in the further analyses. Only when these measures changed the outcomes significantly, demographic variables were kept in the final models.

To account for the hierarchical nature of our data, we used multilevel analysis with a two-level structure: measurement occasions nested within families. The significance of effects was evaluated at $\alpha = .05$. All multilevel models included a random intercept. Parent (mother and father) and Child Age (four measurement occasions: 4 months, 1 year, 2.5 years, and 4.5 years) were entered as dummy variables, with mother and 4 months as reference categories. Models were analyzed using MLwiN version 2.24 (Rasbash, Charlton, Browne, & Cameron, 2014). Assumptions of multivariate normality and linearity were checked for all variables and were satisfactory. All independent variables were grand-mean centered before adding them to the models; this was done in order to ensure a meaningful interpretation of the intercept (Snijders & Bosker, 1999).

We constructed two sets of models: one model predicting supportive coparenting, and one model predicting undermining coparenting. In all models, we entered child age as a control variable. We first tested a main effect model including parent gender, prenatal relationship satisfaction, and child negative affectivity. Then, we added interaction effects one-by-one to test our hypotheses regarding differences between fathers and mothers, and between families with high and low relationship satisfaction. Last, we added the three-way interaction between parent gender, relationship satisfaction and child negative affectivity. Significant interaction terms ($\alpha = .05$) were kept in the final model. When significant, we plotted interaction effects and tested simple slopes, as described in Preacher, Curran, and Bauer (2006). We present main effects models without interactions, and the final models including only significant interaction effects.

RESULTS

Preliminary Analyses

At the prenatal measurement, 151 families were included in the study. After the prenatal measurement, 15 families did not participate in the further study. Because these families did not have data on the dependent variables (i.e., support and undermining), these families were excluded from all further analyses. During the following measurement occasions, six families dropped out after 4 months, 8 families dropped out after 12 months, and 11 families dropped out after 30 months.

We explored whether the 15 families that dropped out after the prenatal measurement differed from the families who did not drop out after the prenatal measurement. We found that prenatal relationship satisfaction did not differ between mothers and fathers who dropped out after the prenatal measurement ($M = 2.39$, $SD = 0.32$ and $M = 2.15$, $SD = 0.33$, respectively) and mothers and fathers who did not drop out ($M = 2.32$, $SD = 0.31$ and $M = 2.22$, $SD = 0.30$, respectively); for mothers $t(145) = -0.82$, $p = .414$, for fathers $t(144) = 0.78$, $p = .436$. On demographic variables, some differences were found. Mothers and fathers who dropped out after the prenatal measurement had a lower educational level ($M = 6.14$, $SD = 1.51$ and $M = 5.36$, $SD = 2.13$, respectively) than mothers and fathers who did not drop out ($M = 7.12$, $SD = 1.14$ and $M = 6.56$, $SD = 1.61$, respectively), for mothers $t(148) = 2.94$, $p = .004$, for fathers $t(147) = 2.60$, $p = .011$, and couples who dropped out after the prenatal measurement had a shorter relationship duration than included couples ($M = 3.32$ years, $SD = 1.78$ and $M = 6.35$, $SD = 3.67$, respectively), $t(148) = 3.04$, $p = .003$. Parents' age did not differ between families who did and did not drop out after the prenatal measurement.

For families who dropped out after the birth of the child (i.e., between 4 months and 4.5 years), we found no differences on educational level, parents' age, and relationship duration compared to families who did not drop out. However, mothers of dropped out families rated their child's negative affectivity as significantly higher ($M = 2.92$, $SD = 0.62$) than mothers of families who did not drop out ($M = 2.64$, $SD = 0.53$), $t(124) = 2.14$, $p = .035$. We found no differences on prenatal relationship satisfaction, supportive coparenting, and undermining coparenting. Because we did not find differences between dropped out families and families who did not drop out, we did not include demographic variables as covariates in the model.

Descriptive Analyses

In Table 1, descriptives for all study variables are displayed for the final sample. In Table 2, correlations between fathers' and mothers' scores are presented. Fathers' scores on child prenatal relationship satisfaction, negative affectivity, and coparenting were significantly correlated with mothers' scores. As hypothesized, higher prenatal relationship satisfaction was significantly correlated to more supportive and less undermining coparenting for both fathers and mothers. Prenatal relationship satisfaction was not correlated with child negative affectivity for both fathers and mothers. Further, contrary to our expectations, fathers' and mothers' supportive coparenting was unrelated to child negative affectivity. Both fathers' and mothers' undermining coparenting was significantly related to more child negative affectivity; note that associations were consistent over time for fathers, whereas for mothers we did not find significant associations between undermining and child negative affectivity at 4 months and at 4.5 years.

Table 1 Means, Standard Deviations and N's for the Study Variables

	Mother			Father		
	Mean	SD	N	Mean	SD	N
Marital Satisfaction	2.32	0.31	133	2.22	0.30	132
Negative Affectivity 4 months	2.69	0.55	126	2.75	0.54	125
Negative Affectivity 1 year	2.76	0.53	122	2.80	0.53	119
Negative Affectivity 2.5 year	2.83	0.52	116	2.90	0.50	111
Negative Affectivity 4.5 year	3.65	0.60	107	3.34	0.69	107
Support 4 months	5.20	0.87	118	4.92	0.91	115
Support 1 year	5.29	0.84	117	4.97	0.88	115
Support 2.5 year	5.27	0.70	115	5.13	0.82	110
Support 4.5 year	5.17	0.77	108	4.98	0.76	105
Undermining 4 months	2.24	0.71	117	2.01	0.65	116
Undermining 1 year	2.33	0.70	117	2.26	0.69	115
Undermining 2.5 year	2.57	0.67	115	2.47	0.68	110
Undermining 4.5 year	2.61	0.73	108	2.53	0.71	105

Table 2 Pearson's Correlations between Prenatal Relationship Satisfaction and all measures of Negative Affectivity, Support and Undermining.

	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Prenatal Relationship Satisfaction	.55**	-.14	.00	.03	-.18	.22*	.38**	.28**	.32*	-.31**	-.41**	-.34**	-.31**
2. Negative Affectivity 4 months	-.14	.52**	.49**	.31**	.39**	.13	-.04	.00	.04	.34**	.39**	.44**	.35**
3. Negative Affectivity 1 year	-.05	.50**	.51**	.37**	.36**	.17	.18	.14	.11	.22*	.26**	.29**	.13
4. Negative Affectivity 2.5 year	-.12	.32**	.31**	.32**	.41**	-.06	.06	-.13	-.01	.15	.20*	.17	.14
5. Negative Affectivity 4.5 year	.05	.28**	.17	.42**	.66**	.09	.07	.03	.10	.09	.28**	.24*	.28**
6. Support 4 months	.35**	-.07	-.07	-.13	-.13	.20*	.70**	.64**	.62**	-.04	.02	-.05	.22*
7. Support 1 year	.33**	-.02	-.08	-.12	-.04	.69**	.28**	.70**	.55**	-.08	-.02	.04	.07
8. Support 2.5 year	.34**	.07	.04	-.07	.02	.54**	.50**	.33**	.55**	-.09	-.11	.01	.07
9. Support 4.5 year	.27**	.21*	.04	-.02	-.06	.49**	.55**	.62**	.30**	.01	-.06	-.07	.06
10. Undermining 4 months	-.28**	.17	.12	.08	.04	.03	-.05	-.04	-.13	.25**	.58**	.57**	.42**
11. Undermining 1 year	-.24**	.24*	.27**	.15	.04	.06	.11	-.01	.07	.61**	.43**	.69**	.68**
12. Undermining 2.5 year	-.21*	.23*	.26**	.31**	.14	.11	.11	.02	.15	.49**	.65**	.48**	.61**
13. Undermining 4.5 year	-.15	.16	.19	.28**	.09	.01	.13	-.03	.23*	.43**	.65**	.71**	.42**

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

The upper triangle contains correlations between fathers' scores and the lower triangle contains correlations between mothers' scores; bold diagonal contains correlations between mothers' and fathers' scores

Multilevel Models

Supportive coparenting

Table 3 shows the results of the model in which relationship satisfaction and negative affectivity predict supportive coparenting. In the main effects model, we found that supportive coparenting significantly increased from 4 months to 2.5 year, but not from 4 months to 1 year and from 4 months to 4.5 years. Also, fathers rated their supportive coparenting as significantly lower than mothers did. In line with our expectations, prenatal relationship satisfaction predicted more supportive coparenting across all measurements from 4 months to 4.5 years. Unexpectedly, child negative affectivity did not predict supportive coparenting at 4 months, 1 year, 2.5 years, and 4.5 years.

Table 3 Parameter Estimates for the Multilevel Models of Supportive Coparenting Regressed on Prenatal Marital Satisfaction.

	Main effects model			Final model		
	β	SE	p	β	SE	p
Intercept	5.13	0.06	<.001	5.13	0.06	<.001
Age (1 year)	.07	0.06	.258	.07	0.06	.265
Age (2.5 years)	.17	0.06	.006	.16	0.06	.008
Age (4.5 years)	.07	0.08	.336	.07	0.07	.324
Parent Gender (Father)	-.21	0.04	<.001	-.22	0.04	<.001
Marital Satisfaction	.58	0.11	<.001	.56	0.11	<.001
Negative Affectivity	-.02	0.05	.676	-.12	0.06	.033
Parent Gender * Negative Affectivity				.22	0.07	.001

Note: Age was represented as three dummy variables with 4 months as the reference group; Parent Gender was represented as one dummy variable with Mother as reference group.

Interaction effects were included and tested step by step; significant interactions are included in the final model (see Table 3). First, the interaction between parent gender and negative affectivity was tested, and appeared significant ($\beta = .22, p = .001$; see Figure 1); we found that for mothers, child negative affectivity was unrelated to supportive coparenting ($\beta = -.07, p = .128$), whereas for fathers, more child negative affectivity was related to *more* supportive coparenting ($\beta = .11, p = .045$). Hence, we included this interaction in the final model. Next, we tested the interaction between parent gender and relationship satisfaction; the interaction revealed that the associations between relationship satisfaction and supportive coparenting did not differ for fathers and mothers ($\beta = .18, p = .222$). Next, we tested the interaction between relationship satisfaction and child negative affectivity and found a trend ($\beta = -.24, p = .063$). Given the lack of a significant result, we did not further probe this interaction effect and we did not include this effect in the final model. Finally, we tested the three-way interaction between parent gender, relationship satisfaction, and child

negative affectivity; we found that the different associations between negative affectivity and supportive coparenting for fathers and mothers were not dependent on prenatal relationship satisfaction ($\beta = -.17, p = .359$).

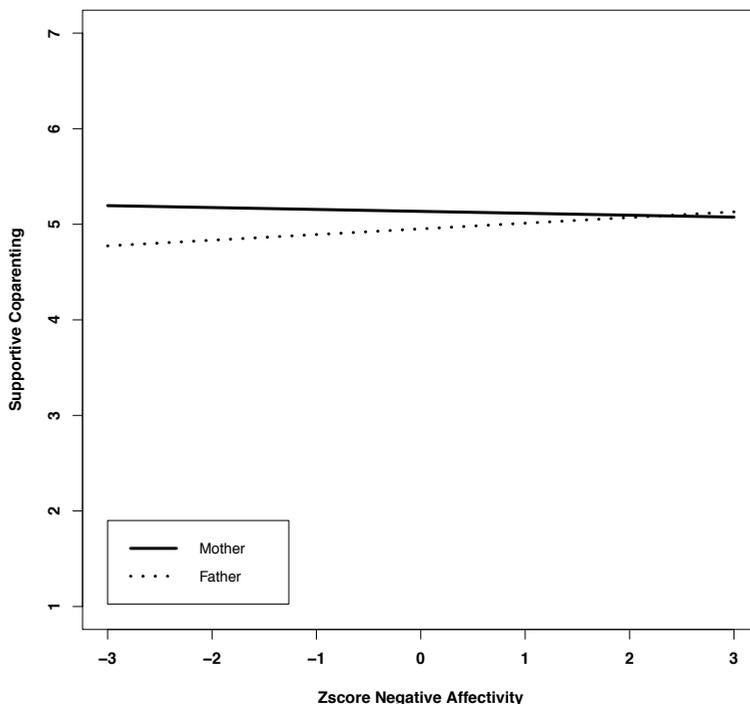


Figure 1. Interaction effect between child Negative Affectivity and Parent Gender as predictors of Supportive Coparenting.

Undermining coparenting

Table 4 shows the results of the multilevel analysis in which relationship satisfaction and negative affectivity predict undermining coparenting. For the main effects model, we found increases of undermining coparenting across all measurement occasions; this means that compared to 4 months, undermining coparenting was higher at all measurement occasions from 1 year to 4.5 years. Fathers rated themselves as less undermining than mothers. In line with our expectations, we found that higher prenatal relationship satisfaction was related to lower levels of undermining at 4 months, 1 year, 2.5 years and 4.5 years, and also that more child negative affectivity was related to more undermining coparenting at all measurement occasions.

Interaction effects were tested one by one. First, we tested the interaction between parent gender and child negative affectivity; this effect was not significant ($\beta = .05, p = .365$). Next, we tested the interaction between parent gender and relationship satisfaction;

the effect was not significant ($\beta = -.16, p = .190$). Next, we tested the interaction between relationship satisfaction and child negative affectivity; again, the effect was not significant ($\beta = -.00, p = .998$). Finally, we tested the three-way interaction between parent gender, relationship satisfaction and negative affectivity; this effect was also not significant ($\beta = -.18, p = .335$). Because of the absence of significant interaction effects, the main effects model in Table 4 is also the final model. Our results indicate that the association between child negative affectivity and undermining does not differ between fathers and mothers and does not depend on levels of prenatal relationship satisfaction.

After completing our analyses, we recalculated the models using a composite measure of fathers' and mothers' perception of child negative affectivity in order to reduce reporter bias. With these composite measures, all discussed results stayed the same. This supports the robustness and consistency of our findings and indicates that the correlations in our study are not solely due to the same person reporting on coparenting and child negative affectivity.

Table 4 Parameter Estimates for the Multilevel Models of Undermining Coparenting Regressed on Prenatal Marital Satisfaction.

	β	SE	p
Intercept	2.25	0.05	<.001
Age (1 year)	.13	0.05	.007
Age (2.5 years)	.35	0.05	<.001
Age (4.5 years)	.29	0.06	<.001
Parent Gender (Father)	-.16	0.03	<.001
Marital Satisfaction	-.53	0.09	<.001
Negative Affect	.18	0.04	<.001

Note: Age was represented as three dummy variables with 4 months as the reference group; Parent Gender was represented as one dummy variable with Mother as reference group.

DISCUSSION

In the current study, we aimed to further the understanding of the role prenatal relationship satisfaction plays in the association between child negative affectivity and coparenting. In an attempt to replicate earlier findings by McHale et al. (2004) and Schoppe-Sullivan et al. (2007), we investigated whether relationship satisfaction predicted coparenting and whether relationship satisfaction moderated the association between child negative affectivity and coparenting. We extended previous research by investigating the developmental period from infancy to early childhood and possible differences between fathers and mothers.

Our results show that 1) for fathers and mothers equally, higher prenatal relationship satisfaction predicts more supportive coparenting and less undermining coparenting; 2) only for fathers, higher child negative affectivity predicts more supportive coparenting; 3)

for fathers and mothers equally, higher child negative affectivity predicts more undermining coparenting; 4) no differences exist between couples with low and high relationship quality in the association between child negative affectivity and undermining coparenting; 5) no differences exist between fathers and mothers in the extent to which prenatal relationship satisfaction moderated the association between child negative affectivity and supportive and undermining coparenting.

The main aim of the current study was to test the model of Crockenberg and Leerkes (2003) proposing that couples with poor prenatal relationship satisfaction drift apart if they have a highly negative child, that is, are more undermining and less supportive coparents, whereas couples with a high prenatal relationship satisfaction pull together (i.e., are more supportive and less undermining) when they have a highly negative child. Indeed, McHale et al. (2004) and Schoppe-Sullivan et al. (2004) found that couples with high prenatal relationship satisfaction become more supportive and less undermining when they have a difficult child. We did not replicate these results. We found no moderating role of prenatal relationship satisfaction in the association between negative affectivity and undermining. Therefore, we conclude that the associations we found between child negative affectivity and coparenting are the same for all couples, regardless of relationship satisfaction.

The differences between our results (the lack of a moderation effect for relationship satisfaction) and previous results (McHale et al., 2004; Schoppe-Sullivan et al., 2007) may be explained by the fact that the two previous studies both used observations of coparenting in the triad, resulting in two overarching family codes for supportive and undermining coparenting, whereas we measured fathers' and mothers' supportive and undermining coparenting separately and with a questionnaire. Since the two previous studies did not distinguish between parent gender in coparenting behavior, their results could not reveal fathers' and mothers' separate coparenting behaviors in relation to child negative affectivity. Because several studies have found differences between the effect of mothers' and fathers' coparenting on child outcomes (e.g., Gordon & Feldman, 2008; Lindsey et al., 2005; Van Egeren, 2004), ignoring parents' gender in the study of coparenting may preclude the possibility to detect important gender-related coparenting processes.

Besides the moderating role of prenatal relationship satisfaction, we also investigated whether prenatal relationship satisfaction predicted coparenting behavior from early infancy until children were 4.5 years old. We found that for both fathers and mothers, higher prenatal relationship satisfaction was a strong and consistent predictor of more supportive and less undermining coparenting from 4 months to 4.5 years, as was expected. These results are in line with studies investigating prenatal relationship satisfaction and coparenting in early infancy (McHale et al., 2004; Schoppe-Sullivan et al., 2007). Thus, it appears that having a positive relationship satisfaction before the birth of the child sets the stage for positive coparenting dynamics, characterized by little undermining and high support. These effects persist into early childhood.

Contrary to our expectations, we found no differences between fathers and mothers in these associations, even though previous research did suggest differences in the way prenatal relationship satisfaction would affect fathers' and mothers' coparenting, with one study finding stronger effects for mothers (Pedro et al., 2015) and two studies finding stronger effects for fathers (Christopher et al., 2015; Van Egeren, 2004). Van Egeren (2004) and Christopher et al. (2015) used observational measures of coparenting in samples of 3-month-olds and 24-month-olds, while Pedro et al. (2015) used reports of the way parents perceived their *partner's* coparenting behaviors in a sample with 9- to 15-year-olds. Hence, it may be the case that differences in results are either due to differences in methodology, or due to differences in the age of children studied. Potential differences between fathers and mothers in the way their relationship satisfaction affects their coparenting behaviors need to be further investigated in future research.

We did find differences between fathers and mothers in the associations between their child's negative affectivity and their own supportive coparenting: fathers confronted with a highly negative child were more supportive to their partner, whereas mothers' support towards their partner did not depend on the level of negative affectivity of their child. In our previous study on the same sample we investigated the moderating role of parental anxiety disorder severity on the associations between child fearful temperament and coparenting when children were 4 months to 2.5 years old (Metz et al., 2016). Interestingly, in that study we did not find differences between mothers and fathers in the association between child fearful temperament (an aspect of negative affectivity) and coparenting. Therefore, it appears that only with the inclusion of prenatal marital satisfaction and with the broader construct of child negative affectivity (compared to fearful temperament in the previous study), there are differences between fathers and mothers in the association of negative affectivity and supportive coparenting.

The association between higher child negative affectivity and more support for fathers and the lack of an association for mothers were not in line with our hypotheses, as we expected higher child negative affectivity to predict *less* supportive coparenting (in both parents), in line with previous research (Davis et al., 2009; Laxman et al., 2013; Schoppe-Sullivan, et al., 2007). However, one previous study also found that more child negative affectivity was related to *more* supportive coparenting in both parents (Berkman et al., 2002). Interestingly, we only found this effect for fathers, which is in line with previous research showing that fathers' coparenting is affected more by child temperamental characteristics than mothers' coparenting (Gordon & Feldman, 2008; Lindsey et al., 2005; Van Egeren, 2004).

An explanation for the lack of a relation between mothers' supportive coparenting and child negative affectivity may be a ceiling effect: possibly, mothers are always highly supportive to their partner, whereas fathers' coparenting is more flexible and, therefore, fathers adjust their behavior to the family situation. This argument is in line with the idea

that “conventional social expectations give fathers greater leeway to choose whether and how to be involved in their children’s lives”, whereas mothers are expected to be equally involved regardless of the circumstances (Bornstein, Lamb, & Teti, 2002, p. 37). Hence, we propose that fathers’ coparenting efforts might be more adaptable to child characteristics than mothers’ coparenting efforts. Crockenberg and Leerkes (2003) have suggested that fathers’ involvement can serve as a buffer against the potentially negative impact of a temperamentally negative infant on parents. In line with Bornstein, Lamb and Teti’s (2002) reasoning, it might be that the unconditional care by mothers is only possible because fathers enable them to do so by regulating their engagement (i.e., support) based on family and child characteristics and thereby functioning as a buffer between mother and child.

With regard to undermining coparenting, we found that both mothers and fathers who perceived their child as higher in negative affectivity reported to show more undermining towards their partner throughout early childhood. These results are in line with our hypotheses and the general conclusion apparent from coparenting research that negative affectivity in the child relates to poorer coparenting quality (e.g., Laxman et al., 2013; Lindsey et al., 2005; Metz et al., 2016). It is interesting to note that we did not find any interaction effects for the relation between child negative affectivity and undermining coparenting: child negative affectivity predicted more undermining coparenting regardless of relationship satisfaction and for both fathers and mothers. Even though this association may partly be due to the fact that both coparenting and child negative affectivity were measured via parental reports, this still indicates that the perception parents have of their child’s temperament and their own coparenting is strongly related for all parents. Coparenting researchers have argued that parents’ own perceptions of coparenting quality may be an important indicator of family processes next to observations of coparenting quality (Feinberg, 2003; McHale, 1997). As McHale (1997) pointed out, this may be especially true for “certain coparenting processes that occur at low base-rates when families are under scrutiny by researchers”, such as undermining coparenting (p. 183). Moreover, it seems reasonable to assume that the ways parents perceive their coparenting and their child’s temperament are more influential determinants of their behavior than the way someone else (such as an observer) rates their behaviors. Hence, studying self-report has, besides several obvious drawbacks such as social desirability and subjectivity, several advantages and adds to the knowledgebase regarding coparenting.

Our study has several strengths. We used a longitudinal design with a fairly large sample, which enabled us to determine the associations between relationship satisfaction, child negative affectivity and coparenting from early infancy to early childhood. In addition, our study included mothers and fathers, which made it possible to address important and new questions regarding the differences between fathers and mothers in the studied associations. By using the advanced statistical technique of multilevel modeling, we were able to account for the interdependence within families. Finally, in line with recommendations

of Crockenberg and Leerkes (2003), we included a prenatal measure as a moderator in the association between child temperament and family functioning. By doing so, we were able to uncover whether couple characteristics that are not yet influenced by the child's temperament affect family functioning after birth. These results have important implications for prevention and practice, which will be discussed below.

Next to these strengths, our study has several limitations. First, our measures solely involve self-report by parents. Thus, correlations between child negative affectivity and coparenting are likely to be due in part to the fact that they were reported by the same person. However, as argued above, parents' perceptions of family characteristics are in itself meaningful determinants of their own behavior (Feinberg, 2003; McHale, 1997). Second, our sample involves relatively highly-educated, non-clinical families. Although our sample characteristics are comparable to most studies on coparenting, we do want to emphasize that associations between relationship satisfaction, child negative affectivity and coparenting may differ in more at-risk samples. This is especially true, because we found that couples who did not participate in the study had lower educational levels and shorter relationships, and couples who dropped out had children with higher scores on negative affectivity. It may be the case that, as argued above, mothers' supportive coparenting in our sample is always high, whereas in more at-risk samples, mothers' supportive coparenting is more variable and malleable and therefore more strongly related to child negative affectivity.

Our results carry several implications for research and practice. For research, the differences between fathers and mothers in the association between relationship satisfaction, negative affectivity and coparenting need to be studied more extensively. The same is true for the moderating role of prenatal relationship satisfaction, as results have been inconsistent so far. Especially observational studies of distinct father and mother coparental behaviors have been rare (Gordon & Feldman, 2008; Metz, Colonesi, Majdandžić, & Bögels, in preparation). Future observational studies are needed to understand whether the different results between our study and past research are due to differences between fathers versus mothers, or between observational versus questionnaire measures of coparenting. For practice, our results reveal prenatal relationship satisfaction as a highly stable and possibly meaningful predictor of later coparenting throughout early childhood. Given the high stability in these predictions, prenatal relationship functioning may be an important target for prevention interventions. Also, our findings imply that undermining coparenting may be especially sensitive to child negative affectivity, because undermining appeared to be related to child negative affectivity for all families regardless of parent gender and relationship satisfaction. The importance of coparenting in prevention has been demonstrated by the Family Foundations prevention program developed by Feinberg and colleagues (Feinberg & Kan, 2008; Feinberg, Jones, Kan, & Goslin, 2010). These researchers found that targeting the coparenting relationship before child birth related to more supportive coparenting and better child emotional adjustment in infancy and early childhood (Feinberg & Kan, 2008;

Feinberg et al., 2010). Also, undermining coparenting mediated the associations between program effects and child adjustment problems (such as anger and resistance to control) when children were 3 years old (Solmeyer, Feinberg, Coffman, & Jones, 2014). Thus, in line with our results, it appears that undermining coparenting may be an especially meaningful target in the prevention of child behavior problems.

CONCLUSION

The current study demonstrates that prenatal relationship satisfaction is an important predictor of coparenting from infancy to early childhood. This indicates that prenatal relationship satisfaction should be considered as a determinant of coparenting behaviors in research and may be an effective target in preventive interventions. We did not find support for the hypothesis that prenatal relationship satisfaction is a moderator in the association between child negative affectivity and coparenting. More research on these associations needs to be done in order to clarify which factors explain the discrepancy in findings between our and previous studies. In addition to these findings, we conclude that child negative affectivity relates to more undermining coparenting for all parents, regardless of their gender or their prenatal relationship satisfaction, whereas child negative affectivity only relates to more supportive coparenting of fathers. We hypothesize that fathers' supportive coparenting serves as a buffer to ensure a positive relationship between the mother and the child. Our results demonstrate the importance of distinguishing between mothers' and fathers' coparenting behaviors.