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Metz, M.

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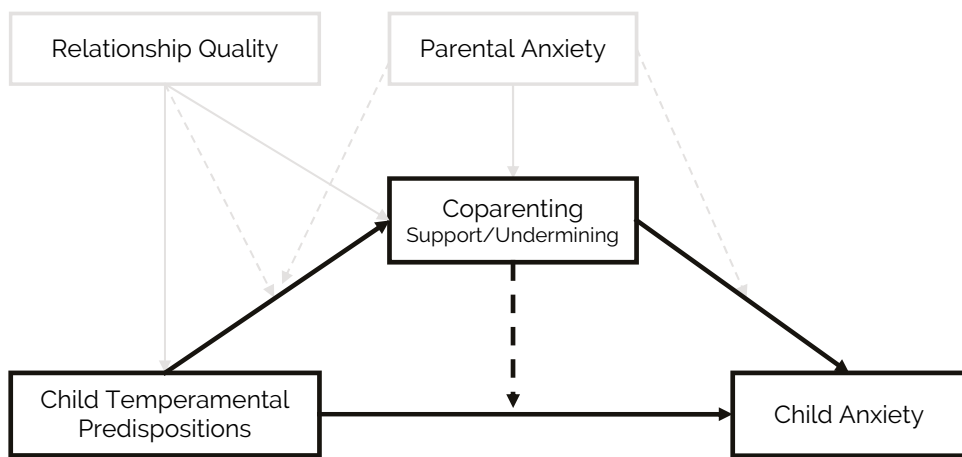
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Graphical representation of the associations tested in this thesis (adjustment of the model by Majdandžić et al., 2012). Dashed lines represent moderation effects. Lines in black are the effects that are tested in Chapter 4. Lines in grey are tested in other chapters.

CHAPTER

**When Father Steps Forward
and Mother Steps Back:
the Moderating Role of
Simultaneity in Coparenting in
the Development of Anxiety
in 4- to 30-Month-Olds**

4

ABSTRACT

Objective

Infants' negative affectivity is the strongest predictor of child anxiety. Coparenting might influence this development by weakening this association in the case of supportive coparenting, or by strengthening this association in the case of undermining coparenting. When parents act together they can display coparenting behaviors simultaneously (both parents being supportive or undermining), or divergently (only one parent being supportive or undermining). We investigated whether coparenting at 1 year moderated the relation between infant negative affectivity at 4 months and child anxiety at 2.5 years.

Methods

Supportive, neutral, and competitive coparenting behaviors were assessed at a micro-level in observations of 116 couples when changing the clothes of their infant. Since parents' undermining coparenting was sporadic, only simultaneous and divergent supportive coparenting were investigated. Infant negative affectivity and child anxiety were rated by both parents.

Results

Children's negative affectivity predicted child anxiety. Only parents' divergent supportive coparenting moderated the relation between negative affectivity and anxiety: only mothers being supportive strengthened the association, while only fathers being supportive weakened this association.

Conclusions

Interaction patterns in which fathers step forward, by being supportive in their coparenting, and mothers step back, by leaving space for father, might serve as a protective factor in the development of child anxiety for infants at risk.

INTRODUCTION

Relationships are important determinants of child development: positive mother-child relationships and secure attachment predicted positive child outcomes (e.g., Colonesi et al., 2011; Renken, Egeland, Marvinney, Mangelsdorf, & Sroufe, 1989; Rutter, 1990) and positive father-child interactions were associated with less child internalizing problems (Möller, Nikolić, Majdandžić, & Bögels, 2016; Rinaldi & Howe, 2012). More recently, researchers have begun to study not only the content of interactions, but also the way in which people interact (Harrist & Waugh, 2002). For example, researchers found that whether parents and their child were displaying positive affect at the same time (i.e., mutual positive affect) predicted children's self-control and communicative competence when children were 3 years old (Lindsey, Cremeens, Colwell, & Caldera, 2009), and the display of mutual negative affect in mother-child interactions predicted more internalizing problems in 5-year-olds (Harrist, Pettit, Dodge, & Bates, 1994). These studies illustrate that not only the content of interactions matters with regard to child development, but also the qualitative patterns of interactions.

Next to the dyadic mother-child and father-child relationship, another important relationship in the family environment is the coparenting relationship. Coparenting is defined as “the ways that parents and/or parental figures relate to each other in their role as parents” (Feinberg, 2003, p. 96). Minuchin (1974) argued that, because parents regulate the family through their joint family management, coparenting interactions serve as the executive subsystem of the family. Thus, that parents regulate the way the family interacts through coparenting might be one of the mechanisms that influences child development. Coparenting is generally divided into supportive coparenting (i.e., affirming the partner's competencies as a parent and respecting the partner's parenting contributions; Feinberg, 2003) and undermining coparenting (i.e., criticism, disparagement and blaming of the partner's parenting; Belsky, Woodworth, & Crnic, 1996; McHale, 1995).

A meta-analysis demonstrated that supportive coparenting is related to less internalizing problems in children (such as anxiety and depression), whereas undermining coparenting is related to more internalizing problems in children (Teubert & Pinquart, 2010). Research relating coparenting to specific disorders, however, is rare. Coparenting has been hypothesized to play a role in the maintenance of anxiety disorders in families (Majdandžić, De Vente, Feinberg, Aktar, & Bögels, 2012), because a coparenting relationship characterized by high levels of undermining and low levels of support can provide an unsafe family environment, which may induce anxiety in the child. On the other hand, a coparenting relationship characterized by high levels of support and low levels of undermining might protect children from the development of anxiety. As early child anxiety increases the risk of later child anxiety disorder, the development of more anxiety problems, and depression, knowledge regarding the development of anxiety is important (Beesdo-Baum & Knappe, 2012). The quality of the coparenting relationship is an early

influence on children and may therefore be an influential factor in the development of child anxiety.

Research addressing the relations between coparenting and measures of child anxiety is scarce; most research has addressed child temperament. To our knowledge, only one study directly studied child anxiety and found that undermining coparenting in infancy related to less teacher-reported child anxiety at 4 years (McHale & Rasmussen, 1998). Temperamental negative affectivity (prone to the experience of negative emotions, often denoted difficult temperament; e.g., Watson & Clark, 1984) has been identified as a risk factor for the development of later child anxiety (Fox, Henderson, Marshall, Nichols, & Ghera, 2005; Hirshfeld, et al., 1992). Studies of child temperament and coparenting found that child negative affectivity in 3.5-month-olds to 3-year-olds is related to less supportive coparenting and to more undermining coparenting, and vice versa. These results were found both concurrently (e.g., Gordon & Feldman, 2008; Metz, Majdandžić, & Bögels, 2016; Schoppe-Sullivan, Mangelsdorf, Brown, & Sokolowski, 2007) and longitudinally (e.g., Davis, Schoppe-Sullivan, Mangelsdorf, & Brown, 2009; Laxman et al., 2013). One study with 3- to 5-year-olds found no direct associations between observed and self-report measures of coparenting and child temperament (Stright & Bales, 2003). In sum, global, content-based measures of coparenting have been related to negative affectivity; however, relationships between coparenting and child anxiety remain relatively unexplored.

Besides main effects between child temperament and coparenting, several studies have identified coparenting behaviors as a moderator in the association between temperamental characteristics and developmental outcomes. In a study of the development of 1- to 5-year-olds across the birth of a sibling, children high in negative affectivity showed an increment in internalizing behaviors (behaviors such as being shy, withdrawn, or moody) only when their parents were high on undermining before the birth of the second child (Kolak & Volling, 2013). No associations were found between negative affectivity and internalizing problems in children with parents low on undermining. Similar results have been found for child temperamental dysregulation (Altenburger, Lang, Schoppe-Sullivan, Dush, & Johnson, 2015) and externalizing behavior problems (Schoppe-Sullivan, Weldon, Cook, Davis & Buckley, 2009). The associations between coparenting and child temperamental characteristics are in line with the goodness-of-fit theory which entails that developmental outcomes can be predicted by an interaction between infant temperament and the infant's environment (Thomas & Chess, 1977). Also, Minuchin (1974) suggested that coparenting may be a determining factor in the (mis)match between infant temperament and family adjustment. In addition, the direct effects between coparenting and child outcomes are generally small (Teubert & Pinquart, 2010). Therefore, coparenting should not only be considered as a main effect, but also as a moderator in the study of child anxiety.

As a consequence of the focus on broad coparenting dimensions in coparenting research, studies on coparenting have thus far provided limited insight into the interaction patterns between mothers and fathers that constitute the quality of the coparenting relationship.

Definitions and operationalizations of coparenting strongly focus on the quality of the relationship and this quality is usually defined in terms of ‘supportive’ or ‘undermining’ coparenting (Belsky, Woodworth, & Crnic, 1996; Feinberg, 2003; McHale, 1995). Thus, up until now, coparenting research focused on the content of coparenting interactions (i.e., positive or negative), and not on the way coparents interact in terms of observable interaction patterns, such as timing of behaviors between partners (are they concurrent, consecutive, or unrelated) and flexibility. Therefore, in the current study we underwent a first attempt at inspecting the ways in which coparenting partners interact through measures of coparenting simultaneity and how this affects the development of anxiety in children.

A commonly used measure in research on interactional dynamics is synchrony, which can be defined as “an observable pattern of dyadic interaction that is mutually regulated, reciprocal, and harmonious” (Harrist & Waugh, 2002). Synchrony is a term that is used in several ways: some researchers refer to synchrony in terms of simultaneous or concurrent behaviors, whereas others refer to synchrony in terms of consecutive behaviors, for example, mother smiles and the infant follows this behavior with smiling as well (Harrist & Waugh, 2002). In the current study, we investigated the simultaneous, concurrent type of synchrony. Simultaneity between parents and their child has been found to be related to developmental outcomes such as self-regulation, symbol use and the capacity of empathy in childhood and adolescence (Feldman, 2007). Research on romantic relationships and general cooperation found that more simultaneous behaviors relate to more affective relationships, higher relationship satisfaction, and higher quality cooperation (Harrist, Pettit, Dodge, & Bates, 1994; Hove & Risen, 2009; Julien, Brault, Chartrand, & Bégin, 2000; Thomassin & Suveg, 2014; Valdesolo, Ouyang, & DeSteno, 2010). For example, couples who simultaneously changed their body position and body openness during conversation were more satisfied with their relationship than couples who differed in the timing of these behaviors (Julien, et al., 2000). An interesting result from research on simultaneity is that not only was the experience of this type of synchrony related to positive affiliation between persons, but that also the *perception* of the co-occurrence of behaviors in others by a third person was related to a more positive interpretation of the relationship by the observers (Miles, Nind & Macrea, 2009).

Even though simultaneity has been investigated in parent-child interactions and in interactions between romantic partners, to our knowledge the role of the co-occurrence of behaviors between parents in the presence of their child has not yet been studied. On the one hand, the results of previous research suggest that children who perceive their parents’ coparenting behaviors as highly simultaneous might obtain a positive view of their parents’ relationship, which in turn could affect their feelings of safety and reduce anxiety. On the other hand, highly simultaneous coparenting interactions may predict poorer child outcomes because it could indicate high dependence of partners on each other. Also, low flexibility in parent-child interactions has been indicated as a risk factor for the development of internalizing behavior problems (Hollenstein, Granic, Stoolmiller, & Snyder, 2004).

Highly simultaneous (and inflexible) coparenting might signal that parents are less capable of adjusting their behaviors to their child or that they are unable to give space to each other to interact with the child at an individual level.

The goal of the current study was to investigate whether coparenting behaviors and the simultaneity of coparenting contribute to the stability or change in the development from child negative affectivity to later child anxiety and to investigate the moderating role of coparenting in this development. Using longitudinal questionnaire data and observational measures of coparenting during a home visit when children were 1 year old, we investigated several associations. First, we investigated parents' observed coparenting in relation to infant negative temperament and to child anxiety. Second, as a qualitative measure of coparenting, we investigated parents' simultaneity in their coparenting behaviors in relation to infant negative temperament and child anxiety. We distinguished specific patterns of simultaneity in coparenting: simultaneous coparenting occurred when parents displayed the same coparenting behavior at the same moment in time, whereas divergent coparenting occurred when parents displayed different coparenting behaviors at the same moment in time. Third, we studied coparenting (behavior and simultaneity) as a moderator of the relation between infant negative affectivity and later child anxiety. In order to construct measures of coparenting simultaneity, we observed coparenting behaviors on a micro-level, as suggested by Gordon and Feldman (2008). In addition to coparenting, we coded infant emotionality to control for effects of the infant's emotional state during the task.

We firstly hypothesized that high infant negative affectivity relates to the later level of child anxiety, and that supportive coparenting behaviors at 1 year relate to less child anxiety at 2.5 years, whereas undermining coparenting behaviors relate to more later child anxiety. Secondly, we expected that for families with low coparenting quality (in terms of infrequent supportive behaviors and frequent undermining coparenting behaviors), the relationship between child negative affectivity and later child anxiety would be stronger than for families with high coparenting quality (in terms of frequent supportive coparenting behaviors and infrequent undermining coparenting behaviors). Lastly, we explored the direct effect and the moderating effect of coparenting simultaneity in relation to the development of child anxiety for the first time.

METHOD

Participants

In the current study (The Social Development of Children), 116 mothers, fathers and their first-born infants participated (60 girls)¹. The study is part of an ongoing longitudinal study on the antecedents of social anxiety in young children. Through advertisements in magazines

¹ In the longitudinal study of which our study is part, total *N*'s are: 4 months *N* = 139; 1 year *N* = 132; 2.5 years *N* = 124. Only families with data for measures used in the current study were included.

and flyers distributed by midwives, we recruited couples expecting their first child. Families received a gift voucher after finishing every measurement. The ethical committee approved the research and all participants provided written informed consent. One-hundred-sixteen families participated at child age 4 months ($M = 4.19$ months, $SD = 0.32$), 102 at 1 year ($M = 12.35$ months, $SD = 0.70$), and 106 at 2.5 years ($M = 30.07$ months, $SD = 0.44$). Dropout was mainly due to couples indicating that the research took too much of their time.

Fathers' age when children were 4 months old ranged from 22 – 59 years ($M = 33.80$, $SD = 5.35$), mothers' age ranged from 20 – 42 years ($M = 31.00$, $SD = 3.94$). Fathers and mothers were generally highly educated ($M = 6.92$, $SD = 0.96$ and $M = 7.18$, $SD = 1.02$ respectively), measured on a scale from 1 (*finished primary school*) to 8 (*finished university*). When children were 4 months old, 95% of couples were married, 2% of couples filled out “other”, and 5% did not fill out their marital status. At 1 year, 94% of couples were married, 1% of couples was divorced, 1% filled out “other”, 4% did not fill out their marital status. At 2.5 years, 84% of couples were married, 2% of couples were divorced, 3% of couples filled out “other”, and 11% did not fill out their marital status. Results of the models reported further on were the same for only married couples and all couples combined; therefore, we report all results for the whole sample.

Procedure

In the longitudinal study, parents participated in a prenatal measurement including an interview and several questionnaires. When children were 4 months, 1 year and 2.5 years old, fathers and mothers separately came to the research lab with their infant to conduct structured tasks, completed a home visit with several tasks, and filled out a number of questionnaires about their child and their parenting behaviors. In the current study, we used questionnaire data about temperament from the 4 month measurement, observations of coparenting from the home visit at 1 year, and questionnaire data about child anxiety from the 2.5 year measurement.

Measures

Negative affectivity

At 4 months, fathers and mothers completed the Revised Infant Behavior Questionnaire (IBQ-R; Gartstein & Rothbart, 2003). The IBQ-R assesses infant temperament from 3 months to 1 year and consists of 14 scales with 191 items which are rated on a 7-point Likert scale from 1 (*never*) to 7 (*always*). Parents were asked how often, during the past seven days, their child displayed specific behaviors. For the current study we created the dimension negative affectivity by averaging the following scales: sadness (14 items; e.g., “Did the baby seem sad when the caregiver was gone for an unusually long period of time?”), distress to limitations (16 items; e.g., “When placed on his/her back, how often did the baby fuss or protest?”), fear (16 items; e.g., “How often during the last week did the baby startle

to a sudden or loud noise?”), falling reactivity (reversed, 13 items; e.g., “When frustrated with something, how often did the baby calm down within 5 minutes?”), and soothability (reversed, 11 items; e.g., “When patting or gently rubbing some part of the baby’s body, how often did s/he soothe immediately?”). Cronbach’s α across these five scales of negative affectivity was .76 for mothers and .79 for fathers. Fathers’ and mothers’ scores for negative affectivity were significantly correlated ($r(93) = .40, p < .001$); therefore, a father-mother composite score was created.

Child anxiety symptoms

At 2.5 years, fathers and mothers completed the Dutch version of the revised Preschool Anxiety Scale (PAS-R, Broeren & Muris, 2008; Edwards, et al., 2010) to measure children’s anxiety symptoms. Using 30 items, the PAS-R measures five anxiety disorders: social, generalized, separation, specific phobias, and OCD. In line with DSM-V criteria, the two items measuring OCD were not included. This is also in line with previous use of the scale (Broeren, Muris, Diamantopoulou, & Baker, 2013; Edwards et al., 2010). The average of the remaining 28 items was used as a measure of child anxiety. Examples of items are “My child is afraid of loud noises” and “My child worries about doing the right thing”. Items were rated on a Likert scale from 1 (*not at all true*) to 5 (*very often true*). The scale has good construct validity and internal consistency (Broeren & Muris, 2008; Edwards et al., 2010). Cronbach’s α was .89 for mothers’ ratings and .93 for fathers’ ratings. Mothers’ and fathers’ ratings of their child’s anxiety were significantly correlated, $r(88) = .53, p < .001$; therefore a composite score was used.

Coparenting

Coparenting behaviors were assessed at 1 year using a task in which parents were asked to change the infant’s clothes. In order to assess parents’ coparenting in a natural but controlled setting, parents were instructed to change their child together into a clown’s suit, including trousers, a jacket (opening at the front), and a hat. Parents were instructed to dress up the child together, and to act the same way they would normally do. Changing clothes tasks have been used previously in coparenting research (e.g., Schoppe-Sullivan, Mangelsdorf, Brown & Sokolowski, 2007; Umemura, Christopher, Mann, Jacobvitz, & Hazen, 2015), in order to involve parents in a task that has a joint goal and thereby induces collaboration (Schoppe-Sullivan et al., 2007). Parents could freely choose whether they wanted to put the clothes over the child’s own clothing, or to first undress the child. Parents varied in the time it took them to dress their child from 51 seconds to 185 seconds ($M = 99.00, SD = 28.9$). Couples of trained graduate students conducted the home visits and videotaped the interaction with a handheld digital camera.

Coding coparenting

Coparenting behaviors were micro-coded using Observer XT 10.5 software (Noldus, Trienes, Hendriksen, Jansen, & Jansen, 2000), which allows for 1-second exactness. Coders assigned scores based on event-sampling, providing data on the duration of behaviors. Coding of the observations started as soon as the test leader finished the task instructions. Coding ended when parents put the last piece of clothing on the child and the test leader began to talk again in order to continue with the next task. Data were coded by three trained graduate level students (training reliability = $\kappa > .80$) and the first author. Observers coded both mothers and fathers in the same interaction. The order in which families were coded was randomized.

To our knowledge, the only previous study using micro-coding for coparenting was Gordon and Feldman (2008). We based our coding system on the system described by Gordon and Feldman (2008), which included the categories of Competitive, Neutral/Passive, and Mutual. Within Neutral/Passive, we distinguished neutral and passive behaviors as separate categories, and we added the behavioral category of cooperation. The behavioral categories were coded as follows:

- 1) Competitive – Competitive behaviors are behaviors that are clearly and explicitly negative towards the partner and interfere with the partner’s social attempts towards the child, such as disagreeing with the partner’s initiatives, ignoring or excluding the partner, and competing for the child’s attention.
- 2) Passive – Passive behaviors occurred when the parent was not engaged in the task (for example, on the phone or talking about the groceries). Because passive behaviors did not occur in our sample (for mothers in 0% of observations, $n = 0$; for fathers in 0.57% of all observations, $n = 2$), passive behaviors were not included in further analyses.
- 3) Neutral – Neutral behaviors occurred when the parent was engaged in the task, but was not performing any coparenting initiatives (for example, the parent is watching while their partner dresses the child).
- 4) Mutual – Mutual behaviors are behaviors that are clearly positive towards the partner and reinforce the presence of the partner, such as involving the partner in the interaction (“Daddy, can you put on the hat?”), giving compliments to the partner (“Mommy is always so good at making you smile!”), and talking about the triad (“Now, you, mommy and I are going to changes your clothes!”).
- 5) Cooperation – we extended the above described behavioral categories of Gordon and Feldman (2008) with the category of cooperative behaviors in order to create a mutually exclusive and exhaustive coding system, because some common behaviors were not captured in the described categories. Cooperative behaviors are behaviors that show responsivity to the partner, but that are not explicitly positive, such as asking and answering questions, agreeing, and going along with the partner’s initiatives.

Mutual behaviors were uncommon in our sample (2.35% of the time of all interactions). Because the categories of Mutual and Cooperative are both supportive coparenting behaviors (i.e., affirming the partner's competencies as a parent and respecting the partner's parenting contributions; Feinberg, 2003), we aggregated the two categories of Mutual and Cooperation into Supportive coparenting, $r(102) = -.057, p = .571$. This resulted in three categories, in line with Gordon and Feldman's (2008) coding system: Competitive, Neutral, and Supportive. For further analyses, we calculated the percentage of the total duration of the observation that the behavior occurred for every behavioral category. Due to the low occurrence of competition (0.89% of the time of all interactions), we used a dichotomous score of competition in the correlation analyses. This score reflected whether the behavior did or did not occur in the family. In the multivariate analyses, we did not include the dichotomous measure of competition.

Twenty-three percent ($n = 24$) of the data were double coded by all four coders to determine interrater reliability. Reliability was calculated across all coding categories together. Reliability of the coding scheme for coparenting behavior was good for mothers and for fathers ($\kappa = .69$ and $\kappa = .72$, respectively).

Simultaneity measures

We calculated the extent to which parents showed simultaneous coparenting behaviors using neutral and supportive coparenting behaviors. Coparenting simultaneity was computed using the nesting procedure (i.e., temporal co-occurrence) of Observer XT. Three types of simultaneity were identified:

- 1) *Simultaneous support (both parents supportive)* when both father and mother were performing supportive coparenting at the same moment in time (e.g., father holds the child's legs while mother puts on the pants, or mother dresses the child while father at the same time says "You are going to be a very beautiful clown, you see?!").
- 2) *Only mother supportive (mother supportive – father neutral)* when mother was supportive while father was neutral (e.g., mother puts on the child's pants because father asked her to do so while father is sitting next to mother and child, or mother asks father "Can you hold the hat?" while father is waiting for mother to put on the pants).
- 3) *Only father supportive (mother neutral – father supportive)* when mother was neutral while father was supportive (e.g., father answers a question mother asked while mother waits for father's answer, or father asks mother "Should I put on the trousers now?" while mother is sitting next to father and child).
- 4) *Simultaneous neutral (both parents neutral)* when both father and mother were present at the task, but were not initiating any collaborative behaviors (e.g., father and mother are discussing who should pick up the phone, or father and mother are watching the child as the child is exploring the clothes).

We did not include the ‘simultaneous neutral’ category in the analyses, because we were interested in the presence of simultaneity in coparenting, not in the absence of coparenting. For further analyses, for every type of simultaneity, we calculated the percentage of the total duration of the observation that the behavior type occurred.

Coding infant emotionality

During the coparenting task, we coded infants’ emotionality per observation in order to control for infants’ level of affect and pleasure during the dressing-up, because the infants’ state could influence the coparenting behavior of the parents. Infants’ emotionality was coded on a three-point scale: 1) *negative affect*: infant is crying, screaming or verbally stating that they do not enjoy the task, 2) *neutral affect*: infant is not expressing strong positive or negative emotions, and 3) *positive affect*: infant is laughing, smiling or verbally stating that they enjoy the task. Infant emotionality was coded by two trained undergraduate students using 28% ($n = 29$) of the data. Inter-rater reliability was excellent (intraclass correlation = .98).

Data Analyses

First, Pearson’s correlations were performed to test the associations between the study variables: child negative affectivity, child anxiety, cooperative coparenting, simultaneous coparenting (both supportive) and divergent coparenting (mother supportive – father neutral, and mother neutral – father supportive). For the dichotomous measure of competitive coparenting, we ran point-biserial correlations. Next, path analyses were performed to test relationships between negative affectivity, coparenting behaviors and simultaneity, and child anxiety, as well as moderation effects of coparenting behaviors and simultaneity on these relations. Path models were analyzed in R (version 3.3.0) using the lavaan package (Rosseel, 2012).

In the path models, paths were included based on our hypotheses that child negative affectivity predicted subsequent child anxiety, and that coparenting behaviors predicted subsequent child anxiety. To test the moderating role of coparenting in the relationship between infant negative affectivity and child anxiety, we included an interaction effect between negative affectivity and coparenting as a predictor of child anxiety. Thus, construction of path models was theory driven rather than data driven (i.e., paths were included based on hypotheses and not based on their statistical significance).

Before constructing the path models, missing data were inspected. Only families who completed the home visit at 1 year and at least one other measurement were included in the current study, resulting in a total of 102 families that were included in the path models.

We constructed three path models: one model testing the hypothesized associations for mothers’ and fathers’ supportive coparenting, one model testing the hypothesized associations for simultaneous coparenting, and one model testing the hypothesized

associations for divergent coparenting interaction patterns. Because all models were fully saturated, no fit indices were calculated and only significant paths were interpreted in the analyses. Full Information Maximum Likelihood (FIML) estimation was used to estimate the models. FIML assumes that missing data are missing at random; our data met this criteria (MCAR test, $\chi^2(65) = 83.9, p = .057$). All predictor variables were standardized before entering them into the path models. Model paths were considered significant at the $\alpha = 0.05$ level.

RESULTS

Descriptive analyses

The observed level of infant emotionality was unrelated to supportive coparenting, for mothers, $r(102) = .13, p = .212$ and for fathers, $r(102) = .15, p = .144$, and to coparenting simultaneity: for simultaneous coparenting, $r(102) = .13, p = .184$; for mother supportive – father neutral, $r(102) = -.05, p = .621$; and for mother neutral – father supportive, $r(102) = .02, p = .863$. Infant emotionality in the observations also did not relate to parent reports of the infants' negative affectivity, $r(102) = -.05, p = .660$, and to infants' level of anxiety, $r(102) = .07, p = .543$. Infant emotionality was therefore not included in further analyses.

Table 1 Descriptives of Proportions of Observed Coparenting Behaviors, Proportions of Coparenting Simultaneity, Child Negative Affectivity, and Child Anxiety

	<i>M</i>	<i>SD</i>	<i>Range</i>
Mother			
Supportive Coparenting	47.37	16.63	6.56 – 82.68
Neutral Coparenting	51.77	16.63	17.32 – 92.13
Competitive Coparenting	0.86	1.52	0.00 – 7.31
Father			
Supportive Coparenting	46.67	16.48	3.03 – 86.12
Neutral Coparenting	52.37	16.35	12.91 – 96.97
Competitive Coparenting	0.38	0.97	0.00 – 4.33
Child			
Negative Affectivity	2.69	0.41	1.89 – 3.82
Child Anxiety	1.73	0.40	1.05 – 2.86
Simultaneity			
Both parents supportive	39.85	17.15	0.00 – 77.39
Mother supportive – father neutral	04.75	03.45	0.00 – 17.76
Mother neutral – father supportive	04.48	03.49	0.00 – 15.26
Both parents neutral			

Descriptive statistics of the study variables are presented in Table 1. Competitive coparenting of mothers and fathers occurred in 36.27% and 18.63% of all observations, respectively. Neutral and supportive behaviors were observed in all (100%) observations. The correlations between the study variables are presented in Table 2. The score for supportive coparenting was highly correlated for mothers and fathers ($r(102) = .95, p < .001$); therefore, we constructed a composite score of mothers' and fathers' scores for supportive coparenting. This composite score was used in all further analyses. In addition, the correlations revealed that supportive coparenting and simultaneous coparenting were highly correlated, $r(102) = .98, p < .001$; therefore, we only presented the path model for the composite score of mothers' and fathers' supportive coparenting. In addition, supportive coparenting correlated with divergent coparenting; therefore, we added supportive coparenting as a covariate in the path model of divergent coparenting.

Table 2 Correlations between Proportions of Coparenting, Coparenting Simultaneity, Child Negative Affectivity, and Child Anxiety

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
Proportions										
1. Mother Supportive Coparenting										
2. Mother Neutral Coparenting	-.99**									
3. Mother Competitive Coparenting	-.04	-.05								
4. Father Supportive Coparenting	.95**	-.95**	.03							
5. Father Neutral Coparenting	-.93**	.93**	-.03	-.97**						
6. Father Competitive Coparenting	.01	-.03	.22*	-.02	-.06					
Simultaneity										
7. Simultaneous support	.96**	-.96**	-.01	.98**	-.95**	.00				
8. Mother supportive – Father neutral	-.25**	.26**	-.05	-.12	.15	-.02	-.32**			
9. Mother neutral – Father supportive	.04	-.03	-.09	.19	.22*	-.02	-.24**	.29**		
Child										
10. Negative affectivity	.03	-.04	.19	.06	-.08	-.01	.10	-.24*	-.54*	
11. Child anxiety	-.01	.00	.14	.02	-.01	-.17	-.01	.09	.02	.27*

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

Preliminary analyses were conducted to investigate whether infant gender and parents' SES were related to measures of coparenting, child negative affectivity and child anxiety. Mothers of boys showed a significantly higher percentage of support than mothers of girls, $F(1, 99) = 5.18, p = .025$. Also, both mothers and fathers of boys showed a significantly lower percentage of neutral coparenting than mothers and fathers of girls, $F(1,99) = 5.06, p = .027$, and $F(1,99) = 4.35, p = .040$, respectively. Mothers' and fathers' supportive coparenting did not differ significantly, $t(101) = 1.32, p = .191$. Also, parents' neutral coparenting did

not differ significantly, $t(101) = -0.98, p = .330$. Correlation analyses revealed that when mothers had a higher educational level, mothers and fathers showed more supportive coparenting, $r(102) = .20, p = .040$ and $r(102) = .21, p = .030$, respectively, and mothers and fathers showed less neutral coparenting, $r(102) = -.20, p = .041$ and $r(102) = -.22, p = .024$, respectively, and parents displayed more simultaneous supportive coparenting, $r(102) = .20, p = .048$. Also, when mothers' income was higher, children were perceived as lower in negative affectivity, $r(102) = -.20, p = .049$. No significant relations were found with parents' age, fathers' educational level, and fathers' income ($p > .05$). Path models were conducted with and without child gender, mothers' educational level, and mothers' income level as control variables. Results stayed the same with and without control variables. For reasons of parsimony, we report the models without these control variables.

Path models

Supportive coparenting

The path model for supportive coparenting is presented in Figure 1. Negative affectivity was significantly related to child anxiety ($p = .006$). The hypotheses that infant negative affectivity would be related to less cooperative coparenting and that supportive coparenting in turn would be related to less child anxiety were not supported ($p = .748$ and $p = .972$, respectively). Also, supportive coparenting did not moderate the association between child negative affectivity and child anxiety ($p = .114$).²

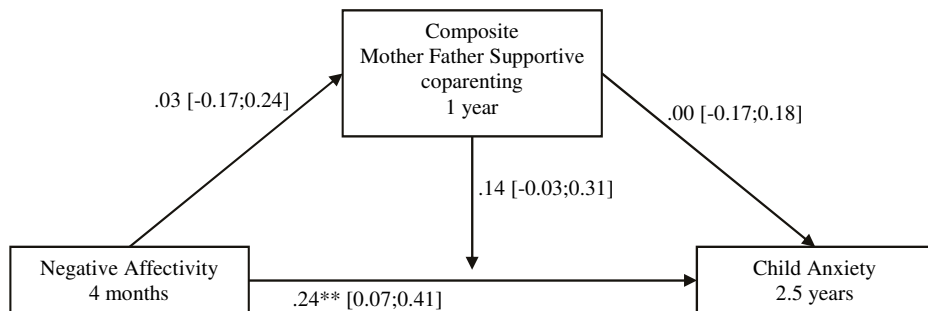


Figure 1. Path model examining the moderation of the composite score of mothers' and fathers' supportive coparenting in the relation between infant negative affectivity and child anxiety. Estimates are standardized beta coefficients (95% confidence intervals are given between brackets). * $p < .05$ ** $p < .01$

Divergent coparenting

In the second model (Figure 2), infant negative affectivity was again related to more toddler anxiety ($p = .002$). In this model, we found that more infant negative affectivity significantly

2 Results for the model of simultaneous coparenting were highly comparable to the results in the model of supportive coparenting.

predicted less divergent coparenting of the type ‘mother supportive – father neutral’ ($p = .016$) and also less divergent coparenting of the type ‘mother neutral – father cooperative’ ($p = .016$). We did not find main effects from ‘mother supportive – father neutral’ and ‘mother neutral – father supportive’ to child anxiety ($p = .273$ and $p = .726$, respectively); however, we did find moderation effects.

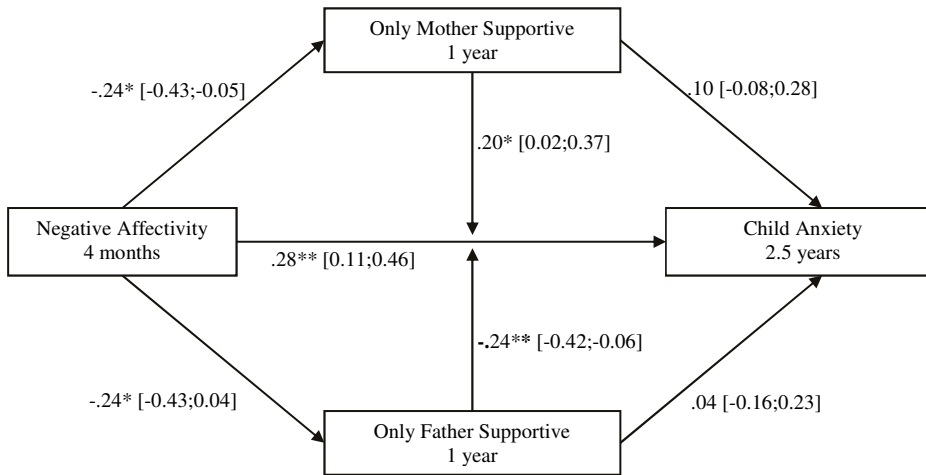


Figure 2. Path model examining the moderation of divergent coparenting behaviors (consisting of only mothers' supportive coparenting while father is neutral, and only fathers' supportive coparenting while mother is neutral) in the relation between negative affectivity and child anxiety. Estimates are standardized beta coefficients (95% confidence intervals are given between brackets). The composite score of mothers' and fathers' support is accounted for in the statistical model, but is not displayed in the graphical representation. * $p < .05$ ** $p < .01$

We found that both divergent coparenting of the type ‘mother supportive– father neutral’ and of the type ‘mother neutral – father supportive’ moderated the association between negative affectivity and child anxiety ($p = .030$ and $p = .009$, respectively). Probing of the interaction with ‘mother supportive – father neutral’ demonstrated that in families scoring 2 *SD* below the mean on this measure of divergent coparenting, negative affectivity and child anxiety were unrelated ($\beta = -.12$, $p = .592$). In contrast, in families with average scores and scores 2 *SD* above the mean on ‘mother supportive – father neutral’, negative affectivity was related to more child anxiety ($\beta = .28$, $p = .002$, and $\beta = .67$, $p = .001$, respectively). Thus, in families with coparenting interaction patterns characterized by ‘mother supportive – father neutral’, infant negative affectivity predicted more subsequent child anxiety than in families not characterized by this divergent coparenting.

Probing of the interaction with divergent coparenting characterized by ‘mother neutral – father supportive’ demonstrated that for families with scores 2 *SD* below the mean and

average scores, negative affectivity was related to more child anxiety ($\beta = .76, p < .001$ and $\beta = .28, p = .002$, respectively). In contrast, in families with scores 2 *SD* above the mean on ‘mother neutral – father supportive’, negative affectivity was unrelated to child anxiety ($\beta = -.20, p = .313$). Thus, in families with divergent coparenting characterized by the pattern ‘mother neutral- father supportive’, infant negative affectivity did not predict later child anxiety; however, in families in which this pattern occurred less, infant negative affectivity predicted more child anxiety.

DISCUSSION

The current study aimed to investigate whether coparenting predicts child anxiety and whether coparenting moderates the relationship between infant negative affectivity and child anxiety. Coparenting was conceptualized both in the regular way of fathers’ and mothers’ coparenting behaviors, and in terms of dyadic simultaneity between fathers’ and mothers’ coparenting behaviors. The main results were: (I) infant negative affectivity predicted later child anxiety; (II) the extent to which mothers and fathers supported each other while dressing up their 1-year old infant did not independently relate to either earlier infant negative affectivity, or later child anxiety, and did not moderate the relationship between negative affectivity and child anxiety; (III) simultaneous coparenting did not relate to infant negative affectivity or child anxiety and did not moderate the relationship between negative affectivity and later child anxiety; (IV) for the two patterns of divergent coparenting, we found moderation effects: a high occurrence of patterns characterized by mother supportive while father was neutral related to stronger associations between infant negative affectivity and child anxiety, whereas a high occurrence of patterns characterized by mother neutral while father was supportive related to weaker associations between infant negative affectivity and child anxiety.

In line with previous studies (Fox, et al., 2005; Hirshfeld, et al., 1992), we found that parents’ perceptions of infant negative affectivity at 4 months predicted perceptions of child anxiety in toddlerhood. Because of this relative stability from infant negative affectivity to later child anxiety, it is important to find mechanisms that can serve to discontinue the relationship from early negative affectivity to later anxiety. This is especially true because early childhood anxiety poses a risk factor for later childhood anxiety disorder, as well as for the diagnosis of another anxiety disorder, depression or substance abuse (Beesdo-Baum & Knappe, 2012). Our results provide some evidence that coparenting is one of the mechanisms that can serve to discontinue the development from infant negative affectivity to child anxiety. In further interpretation of our results, it should be noted that both the measures of infant negative affectivity and child anxiety were assessed as parents’ reports and should therefore be understood as parents’ perceptions of their child’s temperament and anxiety level.

Negative affectivity in infancy was not directly related to fathers' and mothers' individual coparenting behaviors, nor to simultaneous coparenting (i.e., mother and father cooperative at the same time), but it did predict less divergent coparenting. This may be explained by the fact that it is easier to parent a child who is low in negative affectivity than to parent a child high on negative affectivity (Davis et al., 2009; Laxman et al., 2013). That is, when children are relatively easy, parents may be more comfortable at handling the child on their own, thereby creating a pattern of taking turns (i.e., more divergent coparenting), rather than being involved in coparenting behaviors at the same time.

Unexpectedly, we did not find direct effects between coparenting and later child anxiety. However, given the small effects found in a meta-analysis on the associations between coparenting and child outcomes (Teubert & Pinquart, 2010), our results are not surprising. To our knowledge, only one other study investigated whether coparenting predicts child anxiety. This study found that global observations of undermining coparenting in infancy predicted more teacher-reported child anxiety at 4 years (McHale & Rasmussen, 1998). Our study differed in several ways from that of McHale and Rasmussen (1998): the children's age (4 months to 2.5 years in our study, compared with 9 months to 4 years in their study); the measurement of coparenting (micro-level observational data, compared to global observations); the task in which coparenting was assessed (a dress-up task, compared to a play task); and the measurement of child anxiety (parent ratings, compared to teacher-report). An explanation for the differences between the study results could be that global observational measures of coparenting as used by McHale and Rasmussen (1998) relate differently to child anxiety than the micro-level coding that we used. Global ratings assign one score to the whole triad, whilst in our study we attempted to investigate the interactive nature of mothers' and fathers' behaviors. Notably, McHale and Rasmussen (1998) only found associations between observed coparenting behaviors and teacher reports of child anxiety, but not with parent reports of children's internalizing problems, which is consistent with our findings.

We found an indirect effect between coparenting and child anxiety: we found a moderation effect for both patterns of divergent coparenting. Coparenting patterns characterized by mothers' cooperation during fathers' neutral behavior increased the risk of infant negative affectivity to develop into later child anxiety, whereas coparenting patterns characterized by mothers' neutral behavior during fathers' cooperation decreased this risk. Our results are in line with previous research on maternal gatekeeping, that is, maternal behaviors that inhibit a collaborative effort between men and women in family work (Allen & Hawkins, 1999). Studies have found that mothers who engage in gatekeeping behaviors create a sense of identity by dominating childcare because these mothers feel that childcare is their territory, which makes it difficult for these mothers to share childcare with their partner (Dienhart, 2001; Mendez, Loker, Fefer, Wolgemuth, & Mann, 2015). Accordingly, maternal gatekeeping has been related to less father involvement with infants in triadic

situations (Cannon, Schoppe-Sullivan, Mangelsdorf, Brown, & Sokolowski, 2008). Given the protective role of fathers' cooperative coparenting during mothers' neutral behavior as apparent from our results, maternal gatekeeping may be an underlying risk factor that can explain our results. In addition, these results strengthen our conclusion based on the result that high infant negative affectivity decreased the percentage of divergent coparenting interactions, that it might be the turn taking between parents that functions as a protective factor in the development of child anxiety. More specifically, it seems that the fact that father takes his turn is particularly important in this relationship, rather than that mother takes her turn in coparenting.

The moderation effects for divergent coparenting also point to a specific role of the father in the development of child anxiety (Bögels & Phares, 2008). Our results suggest that when mothers leave opportunity for fathers to be active and cooperative, or fathers themselves initiate coparenting while mothers are neutral, this can protect children from developing anxiety over time. Fathers' lack of active involvement in childcare may serve as a risk factor also because fathers have been suggested to matter more in the development of anxiety than mothers (Bögels & Perotti, 2011; Bögels & Phares, 2008). According to Bögels and Perotti (2011), fathers are evolutionarily specialized in the external protection of the family (such as the approach of dangerous and unfamiliar situations or humans), whereas mothers were specialized in the internal protection of the family (such as comforting and nurturing). In line, children have been found to interpret fathers' signals about threats as more salient than mothers' signals: 10-15-month-old infants expressed more anxiety in a visual cliff experiment when fathers gave anxious signals compared to mothers' anxious signals (Möller, Majdandzic, & Bögels, 2014). Being exposed to coparenting situations that are characterized by an interaction pattern in which fathers are supportive while mothers are neutral may protect against child anxiety development, because the exposure to fathers' behaviors, initiatives, and ways of handling coparenting interactions and childcare may serve as a salient example for children in handling new and anxiety-provoking situations. It should be noted that the occurrence of divergent coparenting of the type where father is cooperative was fairly low (<5%); hence, it appears that even rare behaviors can significantly predict child developmental outcomes. The negative association between simultaneous and divergent coparenting illustrates that families who display divergent behaviors are more diverse in the coparenting patterns they display. Thus, we suggest that those families in which divergent coparenting behaviors occur next to simultaneous behaviors are the families with protective characteristics when it comes to child anxiety.

In line with our finding that coparenting behaviors mainly function as a moderator rather than as a direct predictor of child anxiety, previous studies have also demonstrated that coparenting relates indirectly, rather than directly, to temperament and later behavior problems (Schoppe-Sullivan et al., 2009; Kolak & Volling, 2013). This evidence for the moderating role of coparenting underlines Minuchin's (1974) idea of coparenting as the

executive subsystem of the family which serves as a guiding and organizing role in the family: negative affectivity may be affected (or re-organized) by the coparenting dynamics, and the development of child anxiety is explained through these indirect effects.

Our study had several strengths. To our knowledge, this study was the first to investigate simultaneity in coparenting. We found that dyadic measures of divergent coparenting especially add to the knowledge about how coparenting relates to child anxiety. The measures of fathers' and mothers' separate coparenting behaviors capture how mothers and fathers behave towards each other, but they do not capture how the family system behaves. In line with Gordon and Feldman (2008), we therefore conclude that measures at the micro-level can contribute to the study of coparenting and child outcomes. By using a longitudinal research design spanning the period from infancy to toddlerhood, we demonstrated that coparenting plays a role in the development of child anxiety. In addition, we included parent reports of both fathers and mothers, and included a clinical measure of children's anxiety symptoms when they were 2.5 years old.

Some limitations of the current study should be taken into account when interpreting the results. First, changing clothes was used to observe coparenting and this is a parenting task that is usually performed by mothers (Geary, 2010). For a situation in which mothers' and fathers' involvement is more equally distributed, such as playing, results may be different. It could be that the impact of fathers' involvement is more salient in typical maternal tasks and that our results are therefore limited to these 'mother-dominated' areas of childcare. Note however that the child was dressed up to look funny for a picture, which is not the typical maternal dressing her baby situation, but rather exposing the baby to the outside world, which might be more a paternal role (Bögels & Phares, 2008; Paquette, 2004). Second, it is important to keep in mind that our sample concerns a relatively highly educated and non-clinical sample. In samples with more risk factors (such as poverty, severe marital problems, or severe parental psychopathology), it may be that simultaneous rather than divergent coparenting behaviors relate to better child outcomes. In our sample, the rate of supportive behaviors and simultaneous behaviors is very high; in an at risk sample, simultaneous coparenting patterns may be more rare and, therefore, more salient. Third, we were unable to include competitive coparenting in the path models, due to low occurrence in the current study. Fourth, both child temperament and anxiety were reported by parents rather than through independent sources such as through observation, which could be a confounding factor in the stability of child negative affectivity into later anxiety. However, we aimed to minimize the disadvantages of parental report by averaging fathers' and mothers' ratings in order to compute a more reliable measure of children's behaviors. In addition, it is likely that it is especially parents' perceptions of their child's behaviors that influence their coparenting, rather than 'objective' anxiety measures.

Based on our findings, we suggest several avenues for future research. Given the relations we found between coparenting and child anxiety, we suggest that future studies need to look

further into both the risk and protective functions coparenting behaviors can have on the development of child anxiety. Also, the differences in mothers' and fathers' coparenting behaviors should be looked into further. Future research should attempt to replicate our finding that mothers' coparenting behaviors serve as a risk factor, whereas fathers' coparenting behaviors serve as a protective factor in the development of child anxiety. In order to achieve this goal, research should not only focus on the global, triadic measures of coparenting, but also consider separate measures of mothers' and fathers' behaviors and especially dyadic measures that capture characteristics of the family system, rather than individual behaviors. Future research should look into these differences in order to replicate our effects and to investigate whether these patterns are meaningful. Also, coparenting should be investigated in samples or in tasks in which the extreme coparenting behaviors of mutuality and competition may be more often expressed, since we were not able to capture these behaviors in the current study. It may be that these more extreme positive and negative coparenting behaviors carry additional explanatory value in the development of child anxiety.

Our results carry clinical implications. Treatment practices of child anxiety should take into account that the way parents interact, and not only the positive or negative content of their interactions, can influence children's development of anxiety. Based on our results, clinicians may teach parents to let fathers engage more in coparenting; that is, being supportive also when the mother is not supportive at that moment. Also, clinicians' awareness of the possible detrimental effects of maternal gatekeeping may be important in the treatment of child and family functioning (Cannon et al., 2008).

CONCLUSION

Coparenting is often referred to as the 'executive subsystem of the family'. Indeed, the way parents interact with each other in the presence of their child indirectly influences the development of anxiety. When fathers are supportive in coparenting interactions, while mothers are neutral, this appears to protect highly negative infants from developing anxiety. Conversely, when mothers are supportive, while fathers are neutral, this seems to exacerbate the development from negative affectivity into later child anxiety. Fathers' support in the coparenting relationship therefore seems to be a protective factor in the development of child anxiety, whereas mothers' support may pose a risk factor in the development of child anxiety.