

Longitudinal Interrelations between Dyadic Coping and Coparenting Conflict in Couples

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Abstract During the past few decades, research has increasingly addressed the associations between the interparental relationship and coparenting. However, limited headway has been made to systematically examine the longitudinal and bidirectional effects in this link. In the present study we tested whether change in couples' dyadic coping predicted the trajectory of coparenting conflict over 1 year, or the reciprocal pathway, drawing data from a RCT intervention study in 150 parental couples. Couples were randomly assigned to (1) a couple-focused program (*CCET*), (2) a parenting training (*Triple P*), or (3) an untreated control group. The parents' perceptions of their dyadic coping skills and coparenting conflict were assessed by means of questionnaires 2 weeks prior to and 2 weeks after completion of the treatment, at 6-month, and at 1-year follow-up. Results indicated that for the total sample, independent of treatment, increase in mothers', but not fathers', reports of dyadic coping from pre- to post-assessment predicted their own decrease in coparenting conflict over time, after controlling for both partners' baseline levels, average age of children per family, and problematic behavior of one target child reported by

parents. In contrast, decrease in coparenting conflict from pre- to post-assessment was not related with the trajectory of dyadic coping. This pattern of findings suggests that enhancement of dyadic coping skills in parents may be a promising means to promote the parents' intimate relationship and, as a result, their supportive coparenting.

Keywords Parents · Parenting · Children · Families · Couples coping enhancement training

Introduction

Theoretical and empirical literature suggests that coparenting, i.e., how parents cooperate and coordinate in child-rearing and support each other in their parenting efforts, is a pivotal predictor of family functioning and offspring's well-being (Feinberg 2002; McHale and Lindahl 2011; Teubert and Pinquart 2010). One important dimension of coparenting is coparenting conflict; that is, how often the parents argue about child-rearing topics and how much they disagree in general parenting techniques (Margolin et al. 2001; McHale 1995). Within the past few years, a growing body of research has addressed the interdependence between coparenting and the parents' intimate relationship (the interparental relationship). However, to the best of our knowledge, only one previous investigation has examined the bidirectionality of the link between the interparental relationship and coparenting (Schoppe-Sullivan et al. 2004). It is important to enhance the knowledge about the longitudinal interrelations in this respect because it yields potential practical implications, for instance, with regard to the question of which domain (the interparental relationship or coparenting skills) should be targeted first in prevention or intervention programs.

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The debate about the empirical independence and interdependence between the interparental relationship and the parents' coparenting alliance has been reflected in the conceptual development of the coparenting construct from the outset (Feinberg 2003). Coparenting has conceptually been considered as a mediator explaining the association between the functioning of the interparental relationship and parenting skills (Margolin et al. 2001). That is, many investigators deem the interparental relationship as a predictor of coparenting whereby interparental conflict is seen as potentially compromising coparenting efforts (e.g., Katz and Gottman 1996). It is evident that distressed couples, rather than cooperating, are at risk for being hostile or ineffective in working as a team in child-rearing (McHale 1995). Conversely, parents who are satisfied in their close relationship tend to display more consistent and congruent parenting strategies and provide mutual support in topics surrounding child-rearing (e.g., Stroud et al. 2011).

In an experimental approach, Kitzmann (2000) observed triadic family interactions subsequent to (a) a pleasant conversation and (b) a conflictual discussion between parents (without the child being present). Parents showed significantly more democratic coparenting in the family interaction after the pleasant couple exchange and more nondemocratic coparenting after the conflictual interaction. In a similar vein, it was found that couples with high levels of relationship quality, assessed observationally during the third trimester of pregnancy, displayed more optimal coparenting than distressed couples (Schoppe-Sullivan et al. 2007).

Using observational data of triadic family interactions in a longitudinal study design Christopher et al. (2015) found that fathers' decreased relationship satisfaction and increased interparental conflict over the transition to parenthood predicted higher dysfunctional coparenting and lower father involvement in parenting over time. Declines in mothers' relationship satisfaction were indirectly linked with subsequent dysfunctional coparenting through lower maternal support in fathers' parenting. Cowan et al. (2010) concluded that couple-focused programs are promising as a means of increasing father involvement in parenting, which can be regarded as a form of coparenting. Therefore, they recommended integrating couple and fatherhood interventions to increase their impact on improving coparenting skills. A randomized controlled trial within the *Supporting Father Involvement (SFI) Project* (Cowan et al. 2007) addressed this issue by comparing the effects of a fathers-only intervention group to a couple-oriented group and a control group. Notably, SFI was not designed to directly target coparenting issues but to strengthen active father involvement and engagement in the family life. The findings suggest that both intervention formats improved fathers' involvement with their children compared to a control group, but the group tailored for both partners (not

only fathers) had additional benefits for maintaining couple relationship quality and reducing (co)parenting stress.

However, even though the functioning of the interparental relationship appears as a robust predictor of coparenting skills in couples, empirical evidence is mounting for the reverse direction as well. Hence, a stronger coparental relationship characterized by high levels of parental cooperation may influence the quality of the parents' intimate relationship (McHale and Lindahl 2011). Emerging longitudinal research reports that coparenting is prospectively associated with couple relationship outcomes (e.g., Belsky and Hsieh 1998; Schoppe-Sullivan et al. 2004). According to Feinberg (2002), coparenting might be a more promising target in couple relationship education (CRE) than the overall relationship. In clinical practice with families, it may be easier to gain parents' participation by emphasizing coparenting goals before addressing the problems genuinely linked with the interparental relationship.

Recent evaluations of coparenting programs, such as the *Family Foundations*, advance the promise of coparenting enhancement in improving parents' cooperation in parenting and decreasing child behavior problems (Feinberg et al. 2016; Feinberg and Kan 2008). Moreover, the potential of coparenting-focused approaches to enhance couple relationship quality has garnered empirical attention: For instance, an evaluation of a prenatal coparenting intervention found that 14 of 20 families receiving the treatment demonstrated beneficial outcomes in couple (dyadic) interactions, i.e., verbal aggression, negativity, and conflict between partners assessed by observational data. Although the lack of a control group and the small sample preclude definitive conclusions, this study supported that interventions targeting coparenting in expectant parents may also strengthen the interparental relationship (McHale et al. 2015). Petch et al. (2012) randomly assigned expectant parents to either a couple- and coparenting-focused education program (*Couple Care for Parents CCP*) or a mother-focused parenting program (*Becoming a Parent BAP*). The CCP program was superior in its effects on mothers' reports of adjustment of the interparental relationship postpartum relative to the BAP program, particularly in high-risk mothers.

One specific skill within the interparental relationship which might be crucial for successful coparenting is the couple's *dyadic coping*, i.e., how partners support each other in times of stress (Bodenmann 1997, 2005). Dyadic coping is defined as the way how the partners cope with common daily life stressors and how they try to solve them cooperatively together as a couple. In contrast to coparenting conflict, it is explicitly related to stress originated outside the close relationship (extra-dyadic stress), not related to children or child-rearing (e.g., workplace stress, stress with neighbors or friends). Dyadic coping has consistently been found to be a strong predictor of relationship

satisfaction (see meta-analysis by Falconier et al. 2015) and it has been shown to moderate the potential negative impact of stress on couples' functioning (Bodenmann et al. 2010). Previous research on dyadic coping in parents, in particular, indicates that it is positively associated with child adjustment (Zemp et al. 2016a), and negatively associated with child-related conflict (Gabriel and Bodenmann 2006). Thus, the study by Gabriel and Bodenmann (2006) suggests that partners with high dyadic coping skills are a source of support for each other in stressful situations and are also better able to cooperate in child-rearing. However, the findings preclude causal interpretations given the cross-sectional nature of this study.

In a randomized controlled trial (Bodenmann et al. 2008), the efficacy of a relationship distress prevention program aimed at enhancing dyadic coping in couples, called the *Couples Coping Enhancement Training* (CCET; Bodenmann and Shantinath 2004), was compared to the evidence-based parenting training *Positive Parenting Program* (Triple P; Sanders 1999) and an untreated control group ($n = 50$ couples each group). The findings indicated that the CCET had stronger effects on the couples' relationship quality, whereas Triple P was more effective with regard to parenting skills and the reduction of child behavioral problems. Multi-group path analyses revealed that, according to mothers' reports, CCET reduced child problematic behavior by fostering the relationship quality, whereas improved parenting mediated the benefits in the Triple P group. However, according to fathers' reports, CCET reduced dysfunctional parenting which accounted for the benefits in child adjustment (Zemp et al. 2016b).

The current study further analyzes the data from Bodenmann et al. (2008) to examine the longitudinal and bidirectional relations between dyadic coping and coparenting. Specifically, we test whether change in couples' dyadic coping from pre-assessment (T1: 2 weeks prior to the treatment) to post-assessment (T2: 2 weeks after completion of the treatment) alters the trajectory of coparenting conflict over time (i.e., over 1 year, from T1 through T4). Conversely, we investigate pre-post change in couples' coparenting conflict as a predictor of the trajectory of dyadic coping from T1 through T4 in a separate analysis. We hypothesize that higher increase in couples' dyadic coping from pre- to post-assessment is related to decrease in coparenting conflict over time (H1). Reflecting the reciprocal pathway, we also test the hypothesis that higher decrease in coparenting conflict from pre- to post-assessment is associated with increase in couples' dyadic coping over time (H2). We test for differences between treatment groups (CCET, Triple P, untreated control group) but do not expect that mechanisms vary across groups. Hence, we similarly assume that change in dyadic coping or coparenting conflict is associated with the time trajectory of

the other variable, independent of whether the change was induced by a treatment or by a natural change. We control for baseline levels of both partners' predictors (dyadic coping or coparenting conflict), average age of children per family, and problematic behavior of one target child reported by parents in all analyses.

Method

Participants

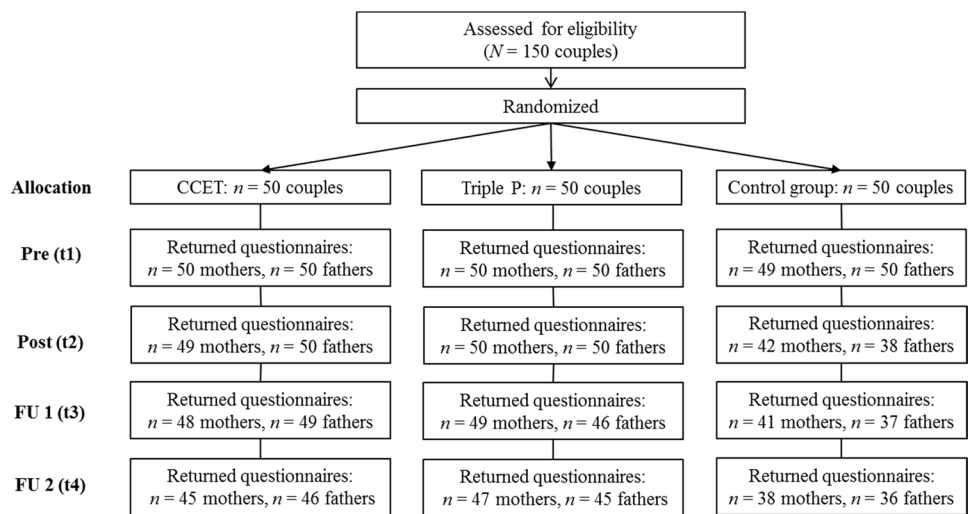
The participants constituted a sample of 150 couples. Inclusion criteria for study participation were being in a committed relationship since at least 1 year, cohabiting with spouse or partner, having at least one child aged 2 to 12 years, and good knowledge of German. Informed consent was obtained from all individual participants included in the study. At baseline assessments the average age was $M = 37.44$ years ($SD = 4.17$) among mothers and $M = 39.66$ years ($SD = 4.62$) among fathers, respectively. Ninety-two percent of the couples were married. Relationship duration ranged from 1 to 24 years ($M = 13.35$ years, $SD = 5.10$). The majority of parents (88%) had more than one child, on average 2.3 children ($SD = .90$, range = 1–6), and the average age of all children across all participating couples was $M = 6.13$ years ($SD = 2.91$). No significant differences were found in age, citizenship, education, income, marital status, duration of relationship, number of children, and age or gender of the target children (for whom parents reported the *Eyberg Child Behavior Inventory ECBI*, see below) between the three study groups.

Couples' randomized allocation to the three study groups (CCET, Triple P, untreated control group) and their flow through the study is depicted in Fig. 1. The dropout rates were somewhat higher in the control group than in the CCET or Triple P group. Reasons for dropouts were heterogeneous (i.e., moving away, accidents, separation, participation in another psychological treatment outside the study, or no longer interested in participation). The comparison between subjects with complete vs. incomplete data yielded no significant differences on the demographic variables or on the target variables at pre-assessments.

Procedure

Participants were recruited by means of advertisements published in several Swiss newspapers. The advertisements invited interested parents to participate in a study where the effects of two different treatments were examined: (a) a couple-focused intervention (CCET) and (b) a parenting-oriented intervention (Triple P). Eligible couples were randomly assigned to one of the three study groups ($n = 50$

Fig. 1 Couples' allocation to study groups and their flow through the study. Number of returned questionnaires relies on the number of participants who returned the set of questionnaires and completed at least one of the scales used in this study



to CCET, $n = 50$ to Triple P, and $n = 50$ to the untreated control group, respectively) in a single-blind design (i.e., participants did not know to which treatment condition they were assigned at baseline-assessments). Block randomization was used to implement the random assignment to conditions in order to ensure an equal allocation to the three study groups. The person responsible for the random assignment to conditions was not involved in the assessment of outcomes. All participants were asked to complete a set of questionnaires at four times (mothers and fathers separately): at pre-assessment (T1: 2 weeks prior to the treatment), at post-assessment (T2: 2 weeks after completion of the treatment), 6 months after baseline (T3), and 12 months after baseline (T4). All couples received an incentive of approximately \$100 (US). The study procedure has been approved by the ethical committee of the Gebert Ruef Foundation, according to the ethical guidelines of the Swiss Psychological Society.

Couples coping enhancement training (CCET)

The CCET is an evidence-based relationship distress prevention program (Bodenmann and Shantinath 2004). In addition to the enhancement of constructive communication and problem-solving skills, CCET also addresses individual and dyadic coping skills. Several didactic elements are used in this training: short lectures with video examples, video and live demonstrations by the workshop providers that model effective communication and problem solving skills, as well as supervision on the couple's behaviors in exercises according to a ratio of one trainer per two couples. CCET is offered as a weekend workshop in a group format of 4–8 couples per workshop but it does not differ from Triple P concerning the overall duration (15 h). Providers in the CCET group were accredited (advanced level graduate

students in clinical psychology) for the implementation of the program, that is, they had successfully passed a written exam and an evaluation of a videotaped coaching of couples. Each provider received 30 h of training over a 4-day period and 20 h of group supervision before delivering the program. Both program providers (Triple P and CCET) were equivalently trained and a high degree of standardization was achieved in CCET or Triple P by means of a detailed and highly structured manual and close supervision of the trainers. Based on the training provided, we assume that there were no differences with regard to the quality of delivering the two programs that might have influenced the treatments.

Positive parenting program (Triple P)

Triple P (Sanders 1999) aims at preventing and reducing children's problem behavior by enhancing parenting skills and self-efficacy in parents of children aged 0 to 16 years. It is a widely used and evidence-based parenting and family support system for all parents (universal prevention) as well as specific groups (selective prevention), or parents facing behavioral problems of their children (indicated prevention). In this study, both parents (mothers and fathers) participated in Level 4 of Triple P exclusively, which is offered as an 8-week preventive group program (*Group Triple P*) in Switzerland addressing parenting issues for all parents, independently of current problem behavior of their children. Hence, Level 4 group format in this study is not conceived as an intervention for parents with severe child problems (like in the original version of Triple P) but rather as a program for all parents willing to learn more about positive parenting. *Group Triple P* is used as a moderate intensity cost-effective universal prevention program in Switzerland. The program took 8 weeks to complete:

4 weeks of group sessions of 2.5 h duration each (enrolling 8–10 couples per workshop) and another 4 weeks of personal telephone contact subsequent to the four group sessions (four individual consultations per approximately 15–30 min).

Control group

The control group did not receive any intervention or treatment, but completed the analogue set of questionnaires at the same four time points as the treatment groups.

Measures

Coparenting conflict

Coparenting conflict was measured by both partners' reports on the German version of the *Parent Problem Checklist* (PPC; originally by Dadds and Powell 1991; German items by Kröger et al. 2009). This measure contains 16 items in total; 6 items focus on parental disagreement over parenting rules (e.g., *Disagreement over type of discipline*), 6 items are related to open interparental conflict over child-rearing issues (e.g., *Inability to resolve disagreements about child care*), and 4 items ask whether parents undermine each other in parenting (e.g., *Fighting in front of children*). We used the German items (Kröger et al. 2009) but we adhered to the original English scale regarding the response format. That is, parents first reported whether or not the issue [Item] had been a problem over the last 4 weeks by answering either *yes* or *no* (problem scale), and they also rated the extent to which each issue [Item] had caused difficulty on a 7-point scale (intensity scale) ranging from 1 (*not at all*) to 7 (*very much*). For the analyses of the present study only the intensity scale was used because the authors' of the German version focused on this scale exclusively and therefore psychometric validation is only available for the intensity scale (Kröger et al. 2009). A total score was computed by calculating the mean value across the items, where higher scores reflect higher levels of coparenting conflict. In the current study, internal consistency over all assessments (from T1 to T4) were $\alpha = .89/.89/.87/.92$ for mothers' reports and $\alpha = .89/.90/.90/.89$ for fathers' reports, respectively.

Dyadic coping

We used the common dyadic coping subscale of the *Dyadic Coping Inventory* (DCI; Bodenmann 2008) in this study. This subscale assesses how the partners cope with common daily life stressors together as a couple with 6 items (e.g., *We try to solve the problem together; We help each other to analyze the problem; We talk to each other about our*

feelings). Response options for each item ranged on a 5-point scale from *very rarely* (1) to *very often* (5). A total score was computed by calculating the mean value across the items, with higher scores indicating greater dyadic coping. The psychometric properties of the DCI have been examined in a large validation study with 2399 Swiss couples (Bodenmann 2008) and in various additional validation studies (see Nussbeck and Jackson 2016 for an overview). The internal consistencies were high and the construct and criterion validity were satisfactory. The examination of the test-retest reliability also revealed that the questionnaire is sensitive to change. In the current study, internal consistency over all assessments (from T1 to T4) were $\alpha = .84/.85/.84/.80$ for mothers' reports and $\alpha = .80/.80/.83/.80$ for fathers' reports, respectively.

Child problematic behavior (control variable)

The German version of the *Eyberg Child Behavior Inventory* (ECBI; Eyberg and Pincus 1999) was used to assess the parents' perceptions of child problematic behavior with 36 items (e.g., *Refuses to go to bed on time; Acts defiant when told to do something*). Both parents rated whether the behavior is a significant problem (problem scale; rated on a dichotomous scale indicating *yes* or *no*), and how often the problem behavior occurs (frequency scale; rated on a 7-point scale ranging from *never* to *always*). In the current study, we used the mean scores of mothers' and fathers' frequency scale as a control variable. If participants had more than one child (in 88%), parents were asked to select the child that they recently have been worrying about most (=target child) in order to reduce participant burden. Thus, the mean of parents' reports of the problematic behavior of the target children were used as a proxy to assess child-related stress that potentially affected couples' coparenting conflict and dyadic coping. The German version has good psychometric properties (Heinrichs et al. 2014). Internal consistency over all assessments (from T1 to T4) were $\alpha = .88/.90/.92/.93$ for mothers' reports and $\alpha = .92/.91/.93/.94$ for fathers' reports, respectively.

Data Analyses

We conducted two series of dyadic multilevel models, with coparenting conflict and dyadic coping as outcomes, using the multilevel MIXED method with maximum likelihood estimates in the IBM SPSS Statistics 22 package. Dyadic multilevel models account for the nested structure of the data and allow modeling interdependent mechanisms in parents, as effects of mothers' and fathers' predictors on both partners' individual outcomes can be estimated simultaneously. Effects of one individual's independent variables on their own dependent variables are called actor

effects (e.g., mothers' predictor on mothers' outcome), whereas influences on the other partner's dependent variables are called partner effects (e.g., mothers' predictor on fathers' outcome). Although our longitudinal dyadic data set contained three conceptual levels (repeated measures within participants within couples), we treated the data as two levels of random variation (repeated measures within participants) and accounted for the interdependence on the couple level by including a separate intercept for each gender. We chose the present analytic strategy above alternative strategies (e.g., 3-level models) because data of distinguishable dyads do not provide random variability at the participant level and time as a factor is fully crossed within each dyad by design (see Bolger and Laurenceau 2013 for further details).

Out of 1200 possible observations (150 couples \times 2 partners \times 4 times of assessment) 1105 valid observations could be analyzed, with the remainder (i.e., 95 observations) reflecting missing data. To investigate systematic trends over time, we recoded the time variable in such a way that the intercepts represented mothers' or fathers' level of coparenting conflict (or dyadic coping) at baseline (T1) and one unit on the time variable corresponded to 1 month. In order to test for differences between intervention groups, two dummy coded variables for the Triple P intervention group (Triple P = 1, otherwise = 0) and the control group (control group = 1, otherwise = 0) were included with CCET indicating the reference group.

Furthermore, as previous research found that parents' reports of coparenting differ depending on their children's age (Mahoney et al. 1997; Margolin et al. 2001) and children's problematic behavior (Feinberg 2003; Jenkins et al. 2005), thus potentially also altering associations between coparenting conflict and dyadic coping, we controlled for average age of children per family at the between-person level (level 2) and problematic behavior of the target child (mean of mothers' and fathers' reports) at each time point (level 1) in the models. Following recommendations of Raudenbush and Bryk (2002), person mean centered child problematic behavior on level 1 was used, so that effects reflected deviations from parent's own average perception of child problematic behavior. Continuous level 2 predictors and control variables were grand mean centered, so that effects represented deviations across mothers and fathers in average baseline levels and average change of coparenting conflict or dyadic coping, respectively. Outcome variables were not transformed.

Results

Means, standard deviations, and correlations among all target variables are listed in Table 1. Even though couples

were randomly assigned to one of the three study groups, mothers' reports of dyadic coping and coparenting conflict differed significantly between study groups at baseline: Mothers of the CCET group reported lower dyadic coping at T1 compared to mothers of the two other groups ($M_{CCET} = 2.60$; $M_{Triple\ P} = 2.96$; $M_{CG} = 3.08$; $F(2/146) = 5.99$, $p = .003$), and their reported coparenting conflict at T1 were higher in comparison with mothers of the control group ($M_{CCET} = 2.91$; $M_{CG} = 2.24$; $F(2/120) = 5.53$, $p = .005$). All other variables did not significantly differ between the study groups at baseline.

In the overall sample, high levels of dyadic coping were negatively linked with coparenting conflict for mothers and fathers over all assessments (from T1 to T4). Correlations between dyadic coping and coparenting conflict at each assessment separately (T1, T2, T3, and T4) ranged between $r = -.31$ and $r = -.45$ among mothers, and between $r = -.17$ and $r = -.42$ among fathers indicating that these two constructs are significantly related, but they also imply a certain degree of independence (Cohen 1988). Inter-correlations between mothers and fathers ranged between $r = .17$ and $r = .55$ and all but one were significant indicating high congruence in parents' perceptions.

In mothers, baseline assessments of dyadic coping and coparenting were associated with change scores from T1 to T2. Note that higher positive change scores in dyadic coping reflect higher increase in parents' perception of their dyadic coping from T1 to T2 and higher positive change scores in coparenting conflict reflect higher decrease in parents' perception of coparenting conflict from T1 to T2. Lower baseline levels of dyadic coping and higher baseline levels of coparenting conflict at T1 significantly correlated both with higher increase in dyadic coping and coparenting. In fathers, lower baseline levels of dyadic coping was linked with higher increase in dyadic coping from T1 to T2, and higher baseline levels of coparenting conflict correlated with higher decrease in coparenting conflict from T1 to T2. These associations may reflect that couples with lower baseline levels might particularly benefit from an intervention, as it has been shown in previous research (Cowan et al. 2014). However, statistical reasons (i.e., regression to the mean) could also underlie this pattern.

The means and standard deviations of the change scores in dyadic coping and coparenting conflict from T1 to T2 and differences between groups are depicted in Table 2. Mothers' perceived change in dyadic coping and coparenting conflict differed significantly between groups. Mothers of the CCET and Triple P group reported higher increase in dyadic coping from T1 to T2 compared to mothers of the control group (change scores: $M_{CCET} = .37$; $M_{Triple\ P} = .13$; $M_{CG} = -.21$; $F(2/138) = 5.99$, $p < .001$). Additionally, mothers of the CCET group reported higher decrease in coparenting conflict from T1 to T2 compared to mothers of

Table 1 Means, standard deviations, and correlations among target variables across all study groups ($N = 150$)

	Descriptives		Bivariate correlations									
	Mothers M (SD)	Fathers M (SD)	1	2	3	4	5	6	7	8	9	10
1. Dyadic coping (T1)	2.88 (.75)	2.77 (.61)	.55***	-.34***	.65***	-.24**	.59***	-.28**	.51***	-.24**	-.48***	-.14
2. Coparenting conflict (T1)	2.53 (.99)	2.80 (1.05)	-.45***	.42***	-.32***	.57***	-.29***	.41***	-.16	.50***	.07	.61***
3. Dyadic coping (T2)	3.00 (.72)	2.92 (.57)	.73***	-.24*	.53***	-.31***	.70***	-.44***	.58***	-.26**	.36***	-.07
4. Coparenting conflict (T2)	2.47 (1.03)	2.53 (.92)	-.22**	.59***	-.31***	.30***	-.26**	.62***	-.19*	.58***	-.06	-.31***
5. Dyadic coping (T3)	2.93 (.73)	2.81 (.61)	.67***	-.31***	.66***	-.21*	.41***	-.42***	.64***	-.28**	.11	-.08
6. Coparenting conflict (T3)	2.39 (1.03)	2.45 (.92)	-.28***	.52***	-.42***	.61***	-.44***	.50***	-.20*	.54***	-.16	-.13
7. Dyadic coping (T4)	2.84 (.66)	2.80 (.59)	.63***	-.29**	.60***	-.11	.71***	-.27**	.33***	-.17	.04	.00
8. Coparenting conflict (T4)	2.43 (1.10)	2.46 (.90)	-.19*	.65***	-.31***	.56***	-.30***	.65***	-.34***	.33***	.01	.09
9. Change score in dyadic coping (T1 to T2) ^a	.11 (.55)	.11 (.50)	-.42***	.33***	.32***	-.10	-.07	-.15	-.07	-.16	.17*	.10
10. Change score in coparenting conflict (T1 to T2) ^b	.10 (.89)	.29 (.93)	-.18*	.48***	.14	-.43***	-.08	-.16	-.15	.11	.43***	.17

Note. Correlations above the diagonal are fathers'; under the diagonal are mothers'; inter-correlations between genders are on the diagonal

^a Overall, higher change scores in dyadic coping reflect higher increase in parents' perception of their dyadic coping from T1 to T2. However, change scores include positive values (=increase in dyadic coping from T1 to T2) and negative values (=decrease in dyadic coping from T1 to T2)

^b Overall, higher change scores in coparenting conflict reflect higher decrease in parents' perception of their coparenting conflict from T1 to T2. However, change scores include positive values (=decrease in coparenting conflict from T1 to T2) and negative values (=increase in coparenting conflict from T1 to T2)

* $p < .05$; ** $p < .01$; *** $p < .001$ (two-tailed)

the two other groups ($M_{CCET} = .45$; $M_{Triple P} = -.05$; $M_{CG} = -.14$; $F(2/135) = 5.62$, $p < .005$). Next, we tested how many mothers and fathers perceived impairments in dyadic coping and coparenting conflict from T1 to T2 across groups (i.e., decrease in dyadic coping and increase in coparenting conflict, respectively). In mothers, 16.3% of the pre-post change scores in the CCET group, 32.0% in the Triple P group, and 71.4% in the control group were negative implying decrease in dyadic coping from T1 to T2. Concerning coparenting conflict, among mothers, 33.3% of the pre-post change scores in the CCET group, 40.0% in the Triple P group, and 50.0% in the control group were negative indicating increase in coparenting conflict from T1 to T2. In fathers, 28.0% of the pre-post change scores in the CCET group, 38.0% in the Triple P group, and 31.6% in the control group were negative implying decrease in dyadic coping from T1 to T2. In terms of coparenting conflict, 32.7% of the pre-post change scores in fathers of the CCET group, 34.8% in the Triple P group, and 55.3% in the control group were negative indicating increase in coparenting conflict from T1 to T2.

Change in Dyadic Coping as Predictor of Coparenting Conflict Over Time

We first tested whether the slope (=trajectory) of coparenting conflict from T1 through T4 was moderated by study group by including the interaction terms of *Time* and the two group dummy coded variables (Triple P and control group; CCET as reference group) for both, mothers and fathers, into the model. The overall model fit did not improve and all interaction terms were non-significant, suggesting that the slopes of coparenting conflict were similar for mothers (and fathers, respectively) regardless which treatment group they belonged to. Next, we tested in a 4-way interaction model whether the effects of pre-post change in dyadic coping on the slope of coparenting conflict varied significantly across groups (cf. Supplemental Materials). Again, none of the group dummy moderation effects were significant. Furthermore, the group differences in mothers' baseline levels did not remain significant once the other control variables were included in the analysis. Parameter estimates of the two models (including vs. excluding the group dummy variables) did only differ marginally.

Therefore, we excluded the group dummy coded variables and all related interaction terms from the final model for the sake of parsimony. In the final model, we controlled for baseline levels of both partners' predictors, average age of children per family at the between-person level (level 2), and problematic behavior of the target child (mean of mothers' and fathers' reports) at each time point (level 1). The equation for the final model for pre-post change in

Table 2 Change scores (means and standard deviations) in dyadic coping and coparenting conflict from T1 to T2, and differences between groups

	CCEET		Triple P		Control group		F(df = 2/N)	
	Mothers M (SD)	Fathers M (SD)	Mothers M (SD)	Fathers M (SD)	Mothers M (SD)	Fathers M (SD)	Mothers	Fathers
Change score in dyadic coping (T1 to T2) ^a	.37 (.52)	.18 (.50)	.13 (.53)	.07 (.53)	-.21 (.44)	.08 (.46)	15.17***	.72
Change score in coparenting conflict (T1 to T2) ^b	.45 (.78)	.36 (.92)	-.05 (1.06)	.35 (.99)	-.14 (.65)	.15 (.88)	5.62**	.66

^a Overall, higher change scores in dyadic coping reflect higher increase in parents' perception of their dyadic coping from T1 to T2. However, change scores include positive values (=increase in dyadic coping from T1 to T2) and negative values (=decrease in dyadic coping from T1 to T2)

^b Overall, higher change scores in coparenting conflict reflect higher decrease in parents' perception of their coparenting conflict from T1 to T2. However, change scores include positive values (=decrease in coparenting conflict from T1 to T2) and negative values (=increase in coparenting conflict from T1 to T2)

p* < .01, *p* < .001

dyadic coping (DC) as a predictor of the slope of coparenting conflict including the cross-level interaction terms (*Change in DC_{between} * Time*), which address our main hypothesis, is the following:

Coparenting conflict_{it} =

$$\begin{aligned}
 & (mothers)_i [\beta_1 (Time_{within}) + \beta_2 (CBP_{within}) \\
 & + \beta_3 (Mean\ age\ children_{between}) \\
 & + \beta_4 (Actor's\ change\ in\ DC_{between}) \\
 & + \beta_5 (Partner's\ change\ in\ DC_{between}) \\
 & + \beta_6 (Actors's\ baseline\ DC\ T1_{between}) \\
 & + \beta_7 (Partner's\ baseline\ DC\ T1_{between}) \\
 & + \beta_8 (Actor's\ change\ in\ DC_{between} * Time_{within}) \\
 & + \beta_9 (Partner's\ change\ in\ DC_{between} * Time_{within}) \\
 & + u_{m0i}] + (fathers)_i [\beta_{10} (Time_{within}) + \beta_{11} (CBP_{within}) \\
 & + \beta_{12} (Mean\ age\ children_{between}) \\
 & + \beta_{13} (Actor's\ change\ in\ DC_{between}) \\
 & + \beta_{14} (Partner's\ change\ in\ DC_{between}) \\
 & + \beta_{15} (Actor's\ baseline\ DC\ T1_{between}) \\
 & + \beta_{16} (Partner's\ baseline\ DC\ T1_{between}) \\
 & + \beta_{17} (Actor's\ change\ in\ DC_{between} * Time_{within}) \\
 & + \beta_{18} (Partner's\ change\ in\ DC_{between} * Time_{within}) \\
 & + u_{f0i} + r_{it}.]
 \end{aligned}$$

In this double random intercept model, mothers_i and fathers_i represent mothers' and fathers' intercepts, respectively. β_1 and β_{10} capture the effect of time on the within-person level (slopes) and β_2 and β_{11} control for child problematic behavior (CBP) on the within-person level. β_3 and β_{12} control for between-level couple differences in mean age of children, β_4 , β_5 , β_{13} and β_{14} indicate the actor and partner effects of change in dyadic coping on the between-person level, whereas β_6 , β_7 , β_{15} and β_{16} control for the effects of actor's and partner's baseline level of dyadic coping on the between-person level. β_8 and β_{17} reflect the effect of one's own change in dyadic coping on the slope of coparenting conflict over time, whereas β_9 and β_{18} represent the effect of one's partner's change in dyadic coping on the slope of coparenting conflict over time, respectively. β_4 , β_{13} and β_5 , β_{14} represent main effects to estimate effects on the intercept of the dependent variable, whereas β_8 , β_{17} and β_9 , β_{18} are interaction effects with time to estimate effects on the slope of the dependent variable. Significant cross-level interaction terms (β_8 , β_{17} and β_9 , β_{18}) indicate that slopes are altered depending on the actor's or partner's change in dyadic coping from T1 to T2. u_{m0i} and u_{f0i} represent the random intercepts for mothers and fathers, and r_{it} represents the residual for person *i* on time of assessment *t*.

Parameter estimates for the final model are reported in Table 3 and results are plotted in Figs. 2 (a and b). For both

Table 3 Parameter estimates for the final random intercept model for coparenting conflict and dyadic coping

	Coparenting conflict ^a				Dyadic coping ^b				
	Est.	SE	t	p	Est.	SE	t	p	CI95
Fixed effects									
Intercept	M 2.468	.071	34.989	<.001	2.965	.057	52.418	<.001	[2.854; 3.077]
	F 2.623	.064	41.154	<.001	2.880	.047	61.252	<.001	[2.787; 2.973]
Level 1—main effects									
Time	M .002	.007	.260	.795	-.013	.004	-3.025	.003	[-.022; -.005]
	F -.014	.007	-2.080	.038	-.008	.004	-1.823	.069	[-.016; .001]
Child problematic behavior	M .309	.081	3.802	<.001	-.123	.058	-2.113	.035	[-.238; -.009]
	F .334	.077	4.337	<.001	-.172	.053	-3.222	.001	[-.277; -.067]
Level 2—main effects									
Average age of children	M .040	.022	1.840	.068	.017	.019	.914	.363	[-.020; .054]
	F .027	.020	1.368	.174	.018	.015	1.167	.246	[-.012; .048]
Baseline level (actor effect)	M -.390	.123	-3.161	.002	-.218	.068	-3.202	.002	[-.353; -.083]
	F -.343	.138	-2.476	.015	-.093	.058	-1.623	.107	[-.208; .021]
Baseline level (partner effect)	M -.292	.155	-1.886	.061	-.158	.071	-2.218	.029	[-.299; -.017]
	F -.218	.110	-1.985	.049	-.220	.055	-3.988	<.001	[-.329; -.110]
Change (actor effect)	M -.118	.148	-.799	.425	.098	.073	1.354	.178	[-.045; .242]
	F -.256	.146	-1.751	.082	-.025	.065	-.388	.698	[-.153; .103]
Change (partner effect)	M -.260	.162	-1.601	.111	-.029	.079	-.365	.716	[-.184; .127]
	F -.290	.132	-2.195	.030	.062	.060	1.039	.301	[-.056; .180]
Cross-level interaction effects									
Time*change (actor effect)	M -.038	.012	-3.207	.001	-.001	.005	-.094	.925	[-.010; .009]
	F -.005	.013	-.388	.698	.003	.005	.508	.612	[-.007; .012]
Time*change (partner effect)	M -.012	.013	-.940	.348	-.009	.005	-1.825	.068	[-.019; .001]
	F .009	.011	.767	.443	.008	.005	1.578	.115	[-.002; .018]
Random effects (variances)									
Level 1 (within-person)									
Residual		.416		<.001	.150		17.530	<.001	[.134; .168]
Level 2 (between-person)									
Intercept	M .430	.068	6.282	<.001	.276	.043	6.384	<.001	[.203; .375]
	F .323	.056	5.800	<.001	.166	.028	5.868	<.001	[.119; .232]
-2 Restricted log likelihood	2401				1286				

Lower and upper 2.5% bounds of the confidence interval are reported. Actor effects are effects of one partner's variables on their own dependent variables. Partner effects are effects of one partner's variables on the other partner's dependent variables. Significant effects are printed in bold, marginally significant effects are in italic

M = mothers, F = fathers
N = 1105 observations

^a Coparenting conflict as outcome: higher change scores in dyadic coping reflect higher increase in parents' perception of their dyadic coping from T1 to T2; baseline level = dyadic coping at T1

^b Dyadic coping as outcome: higher change scores in coparenting conflict reflect higher decrease in parents' perception of their coparenting conflict from T1 to T2; baseline level = coparenting conflict at T1

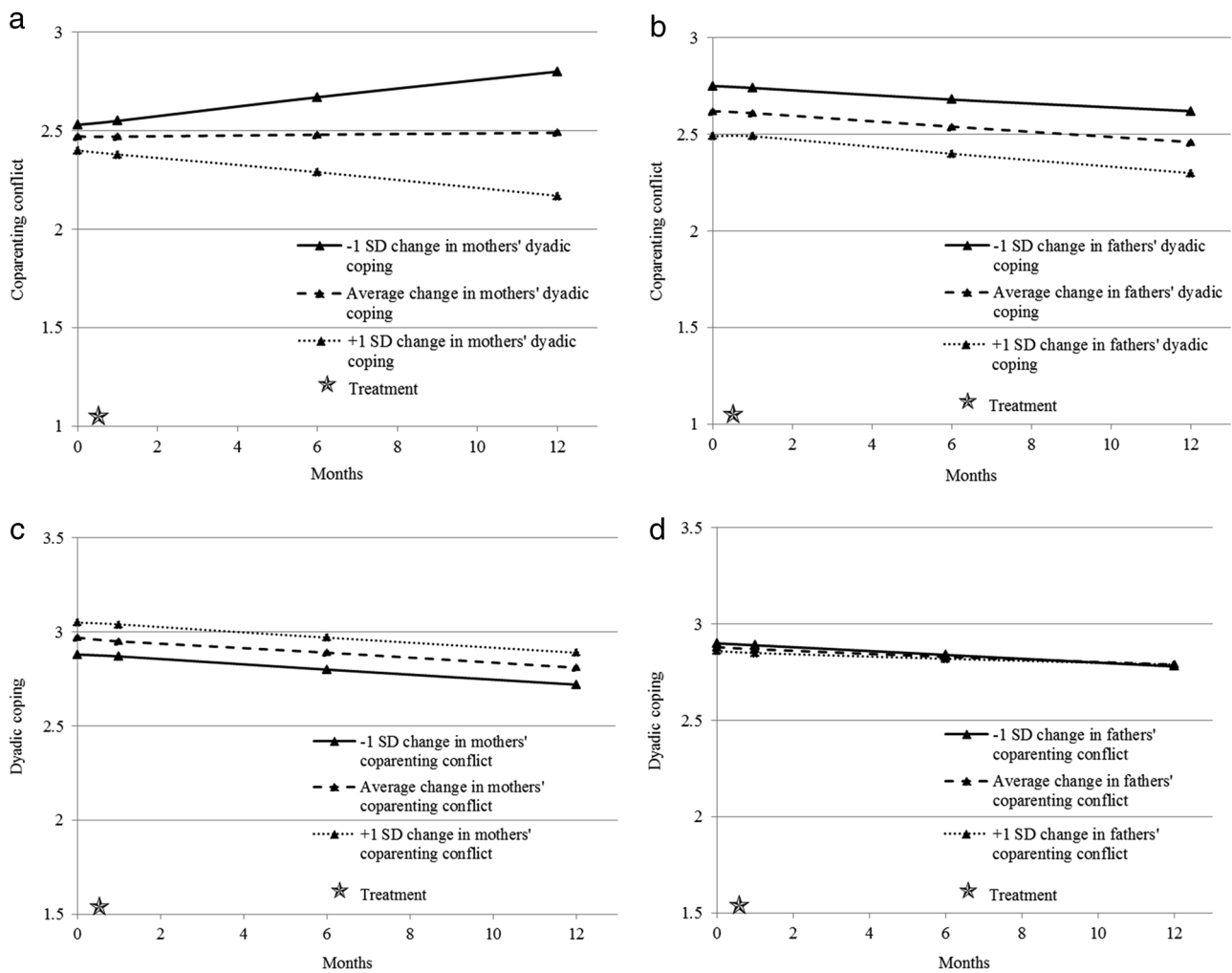


Fig. 2 Change in dyadic coping from pre- to post-assessments (T1 to T2) predicting trajectory of coparenting conflict over time (from T1 through T4), and vice versa, for mothers and fathers. Higher change scores in dyadic coping reflect higher increase in parents' perception of their dyadic coping from T1 to T2. Higher change scores in coparenting conflict reflect higher decrease in parents' perception of their coparenting conflict from T1 to T2. Triangles represent times of measurement with T1 = 2 weeks prior to the treatment (baseline), T2

= 2 weeks after the treatment, T3 = 6 months after baseline, and T4 = 12 months after baseline. **a** Pre-post change in mothers dyadic coping predicting mothers coparenting conflict over time. **b** Pre-post change in fathers dyadic predicting fathers coparenting conflict over time. **c** Pre-post change in mothers coparenting conflict predicting mothers dyadic coping over time. **d** Pre-post change in fathers coparenting conflict predicting fathers dyadic coping over time

mothers and fathers, higher problematic behavior of the target children was significantly related to higher coparenting conflict at all time points. Baseline levels of a person's own reports of dyadic coping at T1 were negatively associated with their own coparenting conflict (actor effects on the between-person level) for both, mothers and fathers. In addition, higher maternal baseline levels of dyadic coping as well as higher increase in mothers' dyadic coping from T1 to T2 were significantly associated with less coparenting conflict in fathers (partner effects on the between-person level).

With regard to our main hypotheses, we found support for H1 in mothers. That is, increased own dyadic coping altered the slope of coparenting conflict over time (actor

effect). More specifically, mothers who perceived higher increase in couple's dyadic coping from T1 (prior to the treatment) to T2 (after the treatment) reported a greater decrease in coparenting conflict over the course of 1 year (from T1 through T4). However, the partner effect (increase in fathers' reports of dyadic coping as a predictor of mothers' slope of coparenting conflict) was non-significant. Additionally, H1 was not confirmed for fathers. We found a main effect of time on the fathers' slopes of coparenting conflict indicating that fathers reported decreasing coparenting conflict over the course of the study (assuming constant values for all other variables included in the model). However, none of the cross-level interaction effects (actor or partner effect) were significant for fathers.

Change in Coparenting Conflict as Predictor of Dyadic Coping Over Time

Similar to the analyses described above, we first tested whether the effects of pre-post change in coparenting conflict on the slope (=trajectory) of dyadic coping varied significantly across groups. The overall model fit did not improve and all interaction terms were non-significant, suggesting that the slopes of coparenting conflict were similar for mothers (and fathers, respectively) regardless which treatment group they belonged to. Next, we tested in a 4-way interaction model whether the effects of pre-post change in coparenting conflict on the slope of dyadic coping differed between groups (cf. Supplemental Materials). Again, none of the group dummy moderation effects were significant and the group differences in mothers' baseline levels did not remain significant once the other control variables were included in the analysis. Next, we compared the parameter estimates of the two models including vs. excluding the group dummy variables. As we found only minimal differences between these models, we excluded the group dummy coded variables from the final model for the sake of parsimony.

Thus, the final model equation for dyadic coping as outcome was analogous to the equation described above, but with baseline levels and change in coparenting conflict instead serving as the predictors. Table 3 contains the parameter estimates for the final model and results are plotted in Fig. 2 (c and d). Higher problematic behavior of the target children were related with lower dyadic coping at all time points. One partner's baseline levels of coparenting conflict at T1 was associated with the other partner's dyadic coping (partner effects), and mothers' baseline levels were linked to their own dyadic coping (actor effect). None of the cross-level interaction effects were significant and, thus, H2 was not confirmed by our analyses.

Discussion

The goal of this study was to examine the reciprocal associations between dyadic coping and coparenting conflict using data from a RCT intervention study. We tested whether higher increase in couples' dyadic coping from pre- to post-assessment was linked to decrease in coparenting conflict over 1 year (H1), and, conversely, whether higher decrease in coparenting conflict from pre- to post-assessment was linked to increase in couples' dyadic coping over 1 year (H2). We found evidence for the first hypothesis, but only in mothers and only in reference to the actor effect: Higher pre-post increase in mothers' reports of dyadic coping predicted decrease in their own reports of coparenting conflict over 12 months, beyond controlling for

baseline levels of both partners' dyadic coping, average age of children per family, and problematic behavior of one target child reported by the parents. This effect did not differ between the study groups, thus was independent of whether mothers received a couple-focused program, a parenting training, or no treatment. However, this link was not confirmed for results in fathers or with regard to partner effects. We did not find empirical evidence in favor of the opposite direction (H2): Change in coparenting conflict was not linked with change in dyadic coping over time for either mothers or fathers.

Our findings in mothers are in line with previous research showing that a supportive interparental relationship contributes to good coparenting skills in parents (Christopher et al. 2015; Stroud et al. 2011). More specifically, the findings from the current study suggest that mothers experience less coparenting conflict in the longer run (over 1 year), when they perceive that the couple is better able to handle their everyday stressors, irrespective of whether this change was induced by a treatment or occurred naturally. We must however qualify that H1 was only partially supported; whilst we couldn't establish a partner effect in this regard, the actor effect in mothers, but not fathers, was significant. It is conceivable that effects of mothers' increase in dyadic coping on their own reports of coparenting conflict are stronger compared with fathers' perception because only mothers' self-perceived improvement may lead them to cooperate better with their partners. However, we cannot rule out that statistical reasons (i.e., shared method variance or limited statistical power) could underlie the finding that only the actor effect in mothers was significant. Larger samples might be necessary to detect partner effects above and beyond actor effects.

According to the current results, H1 was only supported in mothers' perception and this gender difference is noteworthy. There are several potential reasons which could explain why the impact of change in dyadic coping on coparenting conflict is more salient in mothers compared to fathers: First, differences between treatment groups emerged only in mothers. That is, mothers assigned to the CCET and the Triple P group reported higher pre-post increase in dyadic coping than mothers of the control group. Additionally, mothers of the CCET group reported higher pre-post decrease in coparenting conflict compared to mothers of the two other groups. In contrast, we did not find any treatment effects in fathers. It is thus possible that the gender effect in the link between dyadic coping and coparenting conflict is partly driven by the more marked change in the predicting variable among mothers.

Second, previous research concluded that females tend to react more sensitive to the different indicators for the quality and functioning of the intimate relationship than males (Kiecolt-Glaser and Newton 2001). Under conditions of

stress, in particular, women's desire to affiliate and connect with their partners to reduce negative arousal may be disproportionately stronger compared to men (Schulz et al. 2004; Taylor et al. 2000). In sum, they may perceive and report the subtle ups and downs in dyadic coping over time, and the consequences thereof for the intimate relationship, more accurately than men. Therefore, mothers might be generally more influenced by their perceived dyadic coping in their evaluations of the couple's every-day behavior, also with regard to child-rearing and coparenting topics.

Moreover, in many Western and European countries, mothers still hold the primary caregiving function for their children in the majority of the households. Given these traditional gender roles, they may benefit more from successful dyadic coping in terms of managing the family daily routine than fathers. Last, our finding could also be explained by the *gatekeeping hypothesis* (Allen and Hawkins 1999) postulating that the main caregiving parent (mostly mothers) has a major impact on the other parent's access and involvement in the parent–child relationship and caregiving responsibilities. If mother's support provision is a key determinant of father's engagement in parenting, it is conceivable that better skills in the intimate relationship (e.g., dyadic coping) make mothers feel more confident and willing to open the “gate” for fathers to children and parenting. In other words, it is plausible that when mothers experience that their partner is a reliable and helpful provider of support in times of stress, they may have more confidence in the paternal parenting skills, possibly resulting in reduced coparenting conflict with their partners.

Support was not found for H2 postulating that pre-post change in coparenting conflict predicts the couples' trajectory of dyadic coping over time. This result is at odds with the study by Schoppe-Sullivan et al. (2004) that found coparenting was a prospective predictor of marital behavior in observed (dyadic and triadic) interaction tasks, but not vice versa. However, caution is warranted when comparing the studies; whereas the present study used self-reports and focused on specific skills (dyadic coping and coparenting conflict), Schoppe-Sullivan et al. (2004) relied on observational data and coded the quality of marital and coparenting behavior more globally (e.g., positive and negative affect, sensitivity, cooperation etc. for marital behavior; warmth, interactiveness, anger etc. for coparenting). It is thus conceivable that methodological and/or content-related factors underlie the differences between the studies. Future research is needed to resolve the bases for this discrepancy.

Some practical implications of the current study merit consideration. Our findings in mothers indicate that the enhancement of couple's dyadic coping, for example through the *Couples Coping Enhancement Training* (CCET; Bodenmann and Shantinath 2004), is promising to foster pair bonding and to train the partners' mutual support,

which can have a positive influence on their coparenting. Since the interparental relationship precedes the coparenting and the parent–child relation, it may be wise to strengthen this core relationship in the family as a potential leverage point to positively affect the coparental alliance. Since traditional relationship education programs (CRE) usually address couples in their middle age, it is likely that a majority of them have children (Cowan and Cowan 2002), and children's well-being is often a major reason for parents to seek couple therapy (Doss et al. 2004). Against this backdrop, it is striking that family, (co)parenting, or child outcomes have long been neglected in CRE evaluation studies (Cowan and Cowan 2014; Zemp et al. 2016c). Only recently, headway has been made to systematically examine whether and how couple-focused interventions also affect parents' (co)parenting skills and children's well-being (Cowan et al. 2011; Cummings et al. 2008; Lundquist et al. 2014; Wood et al. 2014; Zemp et al. 2016b). However, there are also coparenting-focused programs emerging aimed at enhancing parents' coparenting skills directly. The main tenet of these programs is that children benefit best from parents that share the responsibility for their care collaboratively and cooperatively, and recent evaluations in this field appear promising (Adler-Baeder et al. 2016; Feinberg et al. 2016; McHale et al. 2015).

Now that a considerable number of evidence-based programs in all three domains (CRE, parenting trainings, coparenting-focused interventions) have been developed and evaluated successfully, the next important step is to more profoundly explore the determinants of the couples' willingness to work on either their intimate relationship or on (co)parenting at the outset. Further research is needed to shed light on the largely unresolved question of when or in which cases it is indicated to focus on relationship-, coparenting-, or parenting-related skills in clinical practice with parents. One of the major challenges for practitioners still appears to gain an access to the clientele which is the *conditio sine qua non* for providing effective and tailored therapeutic support.

Some limitations of this study compromise interpretation of our results. The most important is the exclusive reliance on self-report measures based on the parents' perspectives. Therefore, we have to acknowledge that effects may be inflated because of shared method variance. Second, caution is warranted when drawing causal inferences. Although research focusing on the within-level circumvents some of the problems of cross-sectional analyses for making causal inferences (e.g., temporal sequencing of events within subjects), we cannot rule out that unmeasured third-variables might explain the current findings. Third, we used change from pre- to post-assessments as predictor because the treatments in the two intervention groups were completed in between these two measurements. We cannot

establish from the present analyses whether associations were similar when taking into account changes in the longer run. Also, there were significant baseline differences in mothers between the study groups, even though couples were randomly assigned to the three groups in a single-blind design (i.e., participants did not know to which treatment condition they were assigned at baseline-assessments).

Fourth, albeit we statistically controlled for the average age and problematic behavior of children in a family, we could not take children's gender into account because the majority of parents (88%) had more than one child. This was also the reason why parents were asked to select a target child (i.e., the child that they recently have been worrying about the most) to report child problematic behavior. Fifth, this study focused on a specific skill in the intimate relationship (dyadic coping), which is closely related to coparenting conflict. It can be assumed that effects would have been less pronounced when considering a more global measure of relationship quality. Last, study participation did not hinge on the presence of elevated relationship distress or child problems. However, referring to the cut-off of ≥ 15 in the ECBI problem scale (Heinrichs et al. 2014), 40% of the mothers and 30% of fathers rated the problem behavior of the target child in the clinically elevated range at baseline assessments (no significant differences between study groups). For the purpose of recruitment, the parents were invited to participate in a study about two treatments to help parents to better manage everyday family life. It is plausible that couples experiencing some kind of stress related to children or child-rearing were predominantly attracted to participate.

With the above caveats in mind, our findings provided evidence that an increase in couples' dyadic coping reported by mothers predicted a decrease in mothers' coparenting conflict over 1 year, whereas the opposite direction (change in coparenting conflict as a predictor of change in dyadic coping) was not supported. We believe that adopting an approach more strictly addressing the mutual interdependence, thus testing reciprocal associations, within family systems will be a fruitful future direction. The present results indicate that strengthening dyadic coping skills in parents may be a promising tool to foster not only the parents' intimate relationship, but also their supportive cooperation in parenting demands. Hence, the functioning of the interparental relationship provides an important context for understanding child development, and its enhancement has a crucial potential to promote the well-being of all family members.

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Author Contributions M.Z.: assisted with the data analyses and wrote the paper. A.M.: analyzed the data, wrote part of the results and

method section, and collaborated in the editing of the final manuscript. E.M.C.: collaborated in the writing and editing of the final manuscript. G.B.: designed and executed the study, collaborated in the editing of the final manuscript.

Compliance with Ethical Standards We have complied with APA ethical standards in this research.

Conflict of Interest The authors declare that they have no competing interests.

Informed Consent All participants received informed consent prior to study participation.

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