A dyadic perspective on parent-child dyadic coping in children with a chronic condition☆

Reine C. van der Wal [a,*], Sanne L. Nijhof [b], Luca M. Leisten [a], Elise M. van de Putte [b], Cornelis K. van der Ent [c], Alinde W. Hindriks-Keegstra [d], Guy Bodenmann [e], Catrin Finkenauer [a], Merel M. Nap-van der Vlist [b]

[a] Faculty of Social and Behavioural Sciences, Utrecht University, the Netherlands
[b] Department of Pediatrics, Wilhelmina Children's Hospital, University Medical Center Utrecht, Utrecht University, Utrecht, the Netherlands
[c] Department of Pediatric Pulmonology, Wilhelmina Children's Hospital, University Medical Center Utrecht, Utrecht University, Utrecht, the Netherlands
[d] Department of Anesthesiology, University Medical Center Utrecht, the Netherlands
[e] Department of Psychology, University of Zurich, Zurich, Switzerland

ABSTRACT

Objective: In this study, we examined the extent to which parents and their children with a chronic condition communicate their stress to one another and whether stress communication is associated with different forms of dyadic coping.
Methods: In a sample of 239 parent-child dyads, self-reported stress communication and different forms of perceived dyadic coping (i.e., emotion-oriented, problem-oriented, and negative dyadic coping) were assessed using a cross-sectional design.
Results: We first found that children's stress communication was positively associated with more positive ($r = 0.28$, $p < .001$) and less negative dyadic coping responses by children ($r = -0.22$, $p < .001$). Children's stress communication was also associated with more positive ($r = 0.52$, $r = 0.45$, p's < 0.001), and less negative dyadic coping responses by parents ($r = -0.19$, $p < .001$). Using dyadic data of children with a chronic condition and their parents, we found that more stress communication of children was associated with healthier coping responses of both children (perceived emotion-oriented dyadic coping: $\beta = 0.23$, $p < .001$) and parents (perceived emotion-oriented dyadic coping: $\beta = 0.33$, $p < .001$; perceived problem-oriented dyadic coping: $\beta = 0.22$, $p < .001$).
Conclusion: This underscores the importance of communication and adaptive coping strategies of parents and children in the context of a child's chronic condition. These findings may help us find ways to support children and their parents to optimally communicate about and deal with their stress.

Children with chronic medical conditions, such as an autoimmune disease or medically unexplained physical symptoms, encounter challenges not experienced by their healthy peers [1]. They often display higher levels of psychosocial distress [2,3], mostly concerning their health and health-management, which may result in limitations in daily life participation. The parent-child relationship is one of the strongest sources of support for children facing psychosocial stress [4]. However, parents too experience stress related to their child's condition. Parents of children with a chronic condition experience increased parenting stress

and more problems with family functioning [5,6]. How do children deal with their own stress and the stress they perceive in the parent? And how do parents deal with their own stress and the stress they perceive in their child? Do they communicate their stress and does this affect the coping response they perceive in one another?

The way in which children and parents cope with stress together is called dyadic coping (DC) and is conceptualized in the Systemic Transactional Model of stress and coping in interdependent systems [7,8]. It describes an interdependent process between members of an

intimate couple or family where stress signals of one person are perceived, interpreted, and answered by another person [7,8]. To illustrate, a child may experience high levels of stress and may communicate this to the parent. When a child communicates stress verbally or nonverbally to the parent, the child's stress becomes a concern for both child and parent. This may encourage the parent to engage in efforts to help to resolve the stress and/or offering relief. Positive dyadic coping responses are, for example, being supportive, responding with empathy (i.e., emotion-oriented dyadic coping) or taking over tasks and providing practical support (i.e., problem-oriented dyadic coping). It could also be that the parent copes negatively with the child's communicated stress by withdrawing from the child and its stress (i.e., negative dyadic coping) [7]. In general, positive DC is beneficial for individuals' well-being and relationship quality, while negative DC is unfavorable for individuals' well-being and relationship quality [9–11].

Previous research on DC has mainly focused on romantic couples facing stress [9]. Research on DC related to children is a relatively new area of study [12]. Yet, children with a chronic condition and their parents also need to cope with stress. A recent study confirmed that children with a chronic condition and their parents indeed engage in DC [13]. This study found that negative DC in both children and parents was associated with lower self-reported quality of life of children, while parents' emotion-oriented DC was associated with a higher quality of life. However, due to the small sample size, only correlations were conducted and no dyadic associations between parents and children could be examined. Dyadic processes happening between children and their parents, however, ask for an analysis of interdependence in stress and coping, as both variables affect one another.

The main aim of the current study therefore is to examine the extent to which parents and children communicate their stress to one another, and whether stress communication by children with a chronic condition and their parents is associated with different forms of dyadic coping. To address these questions, we explored children's as well as parents' perceptions of dyadic coping responses and examine actor and partner effects using an Actor-Partner Interdependence Model (APIM) [14]. The use of APIM is emerging in the literature on parent-child interaction [15], but the current study is among the first to use it in the context of a child's chronic condition. We also explored differences between children with a chronic disease and children with medically unexplained symptoms. Moreover, given that parent-child communication changes throughout adolescence [16], we additionally explored age effects. A better understanding of stress communication, DC, and its associations with disease might advance interventions that seek to improve parents' and children's coping with a child's chronic condition.

1. Methods

1.1. Participants

This study used data from participants in the PROactive cohort study [17] and was not pre-registered. This study collects data from children with a chronic condition and one of their parents who visit the Wilhelmina Children's Hospital in the Netherlands. The goal is to collect prospective longitudinal data on fatigue, daily life participation, and psychosocial well-being across pediatric chronic conditions. To assess children in a relatively stable phase of their disease, they are included at least one year after the diagnosis. Children who present themselves with chronic fatigue or pain without medical explanation also are included. Data were collected from January 2018 through December 2022. The PROactive cohort study has a continuous longitudinal design and includes children with a chronic condition in a broad age range. Inclusion can take place between 2 and 18 years of age, depending on the moment of diagnosis or first presentation at the Wilhelmina Children's Hospital. After inclusion, children and parents yearly fill out a set of questionnaires. At the age of 12, 15, and 18, this set includes the DCI. This is a cross-sectional sample of all the data of children and parents that filled

out the DCI for the first time. At that time, they could be 12 ($N = 57$), 15 ($N = 97$), or 18 ($N = 79$) years of age, depending on their age at inclusion. The study was classified by the institutional review board as exempt of the Medical Research Involving Human Subjects Act (16–707/C and 17–078/C) and adhered to all local laws and the declaration of Helsinki.

A total sample of 239 unique parent-child dyads participated. Children (152 girls; 64%) had a mean age of 15.69 years ($SD = 2.32$; range 12 to 19 years). Parents (218 mothers; 91%) had a mean age of 47.83 years ($SD = 5.00$). One-hundred-and-five children presented themselves with medically unexplained symptoms (MUS) of chronic fatigue or pain, 76 suffered from an autoimmune disease (e.g., juvenile idiopathic arthritis (JIA) or inflammatory bowel disease (IBD)), 33 from a congenital heart disease, 20 from cystic fibrosis (CF), and five from a chronic kidney disease.

1.2. Procedure

Children and one of their parents were approached via email before an outpatient visit to the hospital. If they agreed to participate in the study, informed consent was obtained electronically from children and one parent. A web-based tool (www.hetklikt.nu) was used to allow parents and children to fill out questionnaires separately from each other. One reminder via email and one reminder via telephone was sent to participants if necessary. If there were any questions, a research team was available via email and telephone.

1.3. Measures

We used a parent-child version of the Dyadic Coping Inventory (DCI) [18]. The exact items were as follows, 1) stress communication: "I show my father/mother/child when I am not doing well or when I have problems", and "I tell my father/mother/child openly how I feel and that I need his/her support", 2) perceived emotion-oriented dyadic coping: "My father/mother/child listens to me so that I can tell him/her what really bothers me", 3) perceived problem-oriented dyadic coping: "When I feel stressed out, my father/mother/child provides good advice or practical help", and 4) perceived negative dyadic coping: "When I feel stressed out, my father/mother/child tends to withdraw". All items were measured on a scale from 1 (*very rarely*) to 5 (*very often*).

1.4. Statistical analyses

All analyses were conducted in RStudio. We additionally used an application by Stas and colleagues [19] for figures and tables. The data and analysis script can be found at github. First, we used Spearman's rank correlations, to explore correlations between stress communication and perceived dyadic coping (Table 1). Second, we explored the difference between children with a chronic disease (known somatic underlying pathology) and children with medically unexplained symptoms (chronic condition without known underlying pathology) using a MANOVA. We also tested mean differences between children's age groups. Third, we tested measurement invariance of our used measures [20]. We established configural and metric invariance with satisfactory model fit [21], and partial scalar invariance by releasing the constraints on the intercepts of perceived emotion-oriented, problem-oriented, and negative dyadic coping between children and parents [22]. Strict invariance was not established but following Van de Schoot et al. [23] groups can still be compared. We therefore continued examining our main questions.

For our main aim, in order to account for the non-independence of observations, we used Actor-Partner Interdependence Models (APIM) [14]. We used a structural equation modelling approach for distinguishable dyads [19]. This model treats the parent-child dyad as unit of analysis, instead of children and parents as separate individuals, and therefore allows for the testing of actor and partner effects. Three APIM

Table 1
Spearman's correlations between main study variables.

	M	SD	1	2	3	4	5	6	7
Child									
1. Stress communication	3.77	0.84							
2. Perceived emotion-oriented dyadic coping of parent	4.18	0.75	0.52**						
3. Perceived problem-oriented dyadic coping of parent	3.94	0.79	0.45**	0.54**					
4. Perceived negative dyadic coping of parent	1.98	0.94	−0.19**	−0.15*	−0.20**				
Parent									
5. Stress communication	3.02	0.68	0.01	0.04	−0.01	0.14*			
6. Perceived emotion-oriented dyadic coping of child	3.61	0.77	0.28**	0.27**	0.18**	−0.02	0.37**		
7. Perceived problem-oriented dyadic coping of child	3.13	0.77	0.06	0.13*	0.07	−0.01	0.21**	0.41**	
8. Perceived negative dyadic coping of child	2.32	0.89	−0.22**	−0.10	−0.15*	0.19**	0.11*	−0.28**	−0.19*

Note. *indicates $p < .05$. **indicates $p < .01$.

models were run in which the predictor was stress communication, and the outcome variables were the three dimensions of perceived dyadic coping. As the different forms of perceived dyadic coping were related to each other, all models included the other forms of perceived dyadic coping as covariates. In the Appendix we report the results without controlling for other forms of dyadic coping (Table A5).

2. Results

2.1. Quantitative differences in dyadic coping between parents and children

Means, standard deviations, and Spearman's rank correlation co-efficients can be found in Table 1. Children reported significantly higher stress communication ($M = 3.77$, $SD = 0.84$) than their parents ($M = 3.02$, $SD = 0.68$, $p < .001$, $r = 0.01$). Moreover, children perceived higher emotion-oriented ($M = 4.18$, $SD = 0.75$) and higher problem-oriented ($M = 3.94$, $SD = 0.79$) DC by their parents, and lower negative DC ($M = 1.98$, $SD = 0.94$, $p < .001$) than parents perceived of their children (emotion-oriented DC, $M = 3.61$, $SD = 0.77$, $p < .001$, $r = 0.27$; problem-oriented DC, $M = 3.13$, $SD = 0.77$, $p < .001$, $r = 0.07$; negative DC, $M = 2.32$, $SD = 0.89$, $p < .001$, $r = 0.19$, respectively). Children's stress communication was positively associated with more positive (emotion-oriented DC, $r = 0.28$, $p < .001$) and less negative dyadic coping responses by children ($r = −0.22$, $p < .001$). Children's stress communication was also associated with more positive (emotion-oriented DC, $r = 0.52$, $p < .001$; problem-oriented DC, $r = 0.45$, $p < .001$), and less negative dyadic coping responses by parents ($r = −0.19$, $p = .003$). In other words, children perceived more parental coping as a response to their stress communication than parents perceived coping from their children and children were more likely to withdraw as a response to their parents' stress communication than vice versa. When controlling for age, the correlations remained largely the same (Table A1).

2.2. Differences in perceived dyadic coping between children with a chronic disease and children with medically unexplained symptoms

We then explored whether chronic diseases differ from medically unexplained symptoms in terms of stress and coping. There were no mean differences between children with a chronic disease and children with medically unexplained symptoms on any of the four study variables ($F(1, 237) = 0.58$, $p = .79$). Means, standard deviations, and MANOVA test statistics can be seen in Table A2.

2.3. Differences in perceived dyadic coping between children's age groups

There were significant mean differences between children of different age groups ($F(2, 236) = 1.69$, $p = .046$). Specifically, children in different age groups differed in their mean stress communication; the older the less children communicated their stress to their parents (12-

years: $M = 4.01$, $SD = 0.81$; 15-years: $M = 3.70$, $SD = 0.80$, 18-years: $M = 3.65$, $SD = 0.88$; $F(2, 236) = 2.69$, $p = .02$). Means, standard deviations, and MANOVA test statistics regarding age differences can be seen in Table A3.

2.4. Actor and Partner effects of stress communication on perceived dyadic coping

Emotion-oriented supportive dyadic coping. We first tested the effects of children's and parents' stress communication on their own (actor) and the other's (partner) perception of emotion-oriented DC (Fig. 1). We found significant actor effects for children and parents and one significant partner effect for children. Children's stress communication was positively associated with their perception of their parents' emotion-oriented DC (actor effect: $\beta = 0.33$, 95% CI [0.20, 0.39], $p < .001$) and their parents' perception of children's emotion-oriented DC (partner effect: $\beta = 0.23$, 95% CI [0.10, 0.32], $p < .001$). In other words, children with higher stress communication perceived their parents to show more emotion-oriented coping and were themselves perceived to show more emotion-oriented DC by their parents. Additionally, parents' stress communication was positively associated with their perception of children's emotion-oriented DC (actor effect: $\beta = 0.31$, 95% CI [0.23, 0.48], $p < .001$) but not with their children's perception of parents' emotion-oriented DC (partner effect: $\beta = 0.03$, 95% CI [−0.08, 0.14], $p = .63$). All APIM model estimates can be found in Table A4 and A5.

Problem-oriented dyadic coping. We tested the effects of children's and parents' stress communication on their own (actor) and the other's (partner) perception of problem-oriented DC (Fig. 2). We found a significant actor effect for children but not for parents. We did not find any partner effects. Children's stress communication was positively associated with their perception of their parents' problem-oriented DC (actor effect: $\beta = 0.22$, 95% CI [0.09, 0.33], $p < .001$), indicating that children with higher stress communication perceived their parents to show more problem oriented DC. Children's stress communication was not associated with their parents' perception of their children's problem-oriented DC (partner effect: $\beta = −0.10$, 95% CI [−0.22, 0.03], $p = .15$). Parents' stress communication was not associated with their own perception of their children's problem-oriented DC (actor effect: $\beta = 0.08$, 95% CI [−0.06, 0.23], $p = .24$), nor with their children's perception of the parents' problem-oriented DC (partner effect: $\beta = 0.00$, 95% CI [−0.13, 0.13], $p = .99$).

Negative dyadic coping. We tested the effects of children's and parents' stress communication on their own (actor) and the other's (partner) perception of negative DC (Table 2 and A3, Fig. 3). We found a positive actor effect of parents' stress communication on their perception of their children's negative DC (actor effect: $\beta = 0.15$, 95% CI [0.02, 0.37], $p = .03$), indicating that parents with higher stress communication perceived their children as higher in negative DC. Additionally, we found a significant positive partner effect of parents' stress communication on children's perception of parents' negative DC (partner effect: $\beta = 0.15$, 95% CI [0.02, 0.39], $p = .03$) and a negative partner effect of
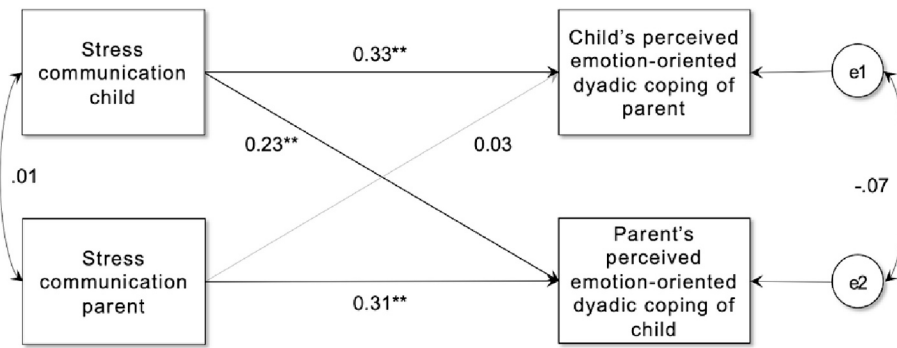
Fig. 1. APIM depicting associations between stress communication and perceived emotion-oriented DC among parents and children ($N = 239$ dyads). Standardized coefficients, predictors correlation, and residual correlations are provided. *$p < .05$; **$p < .01$. Covariates are not included in the figure.
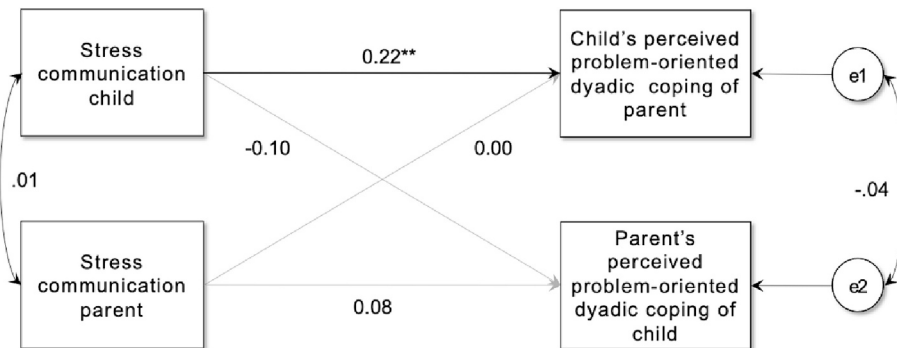

Fig. 2. APIM depicting associations between stress communication and perceived problem-oriented DC among parents and children ($N = 239$ dyads). Standardized coefficients, predictors correlation, and residual correlations are provided. *$p < .05$; **$p < .01$. Covariates are not included in the figure.

Fig. 3. APIM depicting associations between stress communication and perceived negative DC among parents and children ($N = 239$ dyads). Standardized coefficients, predictors correlation, and residual correlations are provided. *$p < .05$; **$p < .01$. Covariates are not included in the figure.
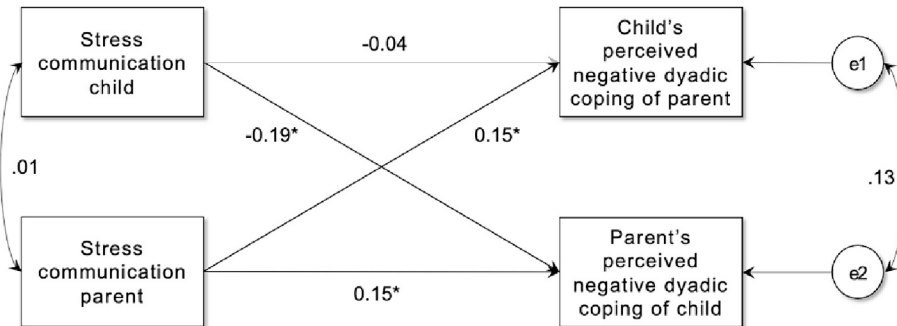
children's stress communication on parents' perception of their children's negative DC (partner effect: $\beta = -0.19$, 95% CI [-0.36, -0.04], $p = .02$). Thus, children of parents with higher stress communication perceived their parents' negative DC as higher, while parents of children with higher stress communication perceived their children's negative DC as lower. Children's stress communication was not associated with their own perception of their parents' negative DC (actor effect: $\beta = -0.04$, 95% CI [-0.22, 0.12], $p = .57$).

3. Discussion

The current study examined parent-child stress communication and DC for children with a chronic condition and their parents. First, we found that children reported more stress communication than their parents, and that children perceived less negative DC from their parents, but more problem-oriented and emotion-oriented DC than vice versa.

The novelty of the present study lies in the collection and analyses of dyadic data, enabling us to explore relationship processes taking place between parents and children with a chronic condition. These analyses revealed that children's and parents' stress communication were associated with their perception of their parents' DC, as well as their parents' perception of their children's DC. Children who communicated their stress more, felt more supported by their parents, both emotionally as well as practically (actor effects). Interestingly, children's stress communication was also positively associated with their parents' perception of children's emotion-oriented and negative DC (partner effects), indicating that children who communicate more stress are also perceived by their parents as more emotionally supportive and less withdrawing. For parents, higher stress communication was associated with higher perceived emotional (but not practical) support from their children, and higher negative DC (actor effect). Finally, parents who communicated more stress perceived their children to engage in more

negative DC (partner effect).

These findings seem to underline the important benefits of a safe family environment in which children openly communicate their stress [24,25]. Indeed, previous research demonstrates that children's adjustment to stressful situations, for example parental divorce, is harmed by avoidance of stress communication and restraint expression of thoughts and feelings [26]. At the same time, too much stress communication from parents towards children, may lead to an unhealthy parent-child relationship, particularly regarding parentification [27]. Communication about stress and the need for help should not be confused with mere communication about symptoms like pain or fatigue. Focusing solely on symptoms can have adverse effects on a child's outcomes [28]. On the other hand, we believe that there is a difference between talking about symptoms and communicating the fact that one experiences stress and needs help coping with this stress. Hence, stress communication within the parent-child relationship requires a healthy balance and clear boundaries between family subsystems [29]. While parents are expected and requested to react to children's stress communication and to offer problem-oriented and emotion-oriented DC (expectations of society), children are not in the same role. It therefore makes sense that we found more and stronger actor effects for children than for parents concerning positive forms of DC. At the same time, more research is needed to examine whether 'sticking to role expectations' is indeed linked to better parent-child relationship quality and child functioning.

For clinicians, it is important to recognize that children with a chronic condition are affected not only by their own stress, but also by the stress they perceive in the parent. Helping children and their parents to jointly deal with stressful situations and openly communicate about their stress, may not only empower children, and benefits their quality of life, but it may also improve the well-being of parents. Initiating a conversation about stress and stress communication within the parent-child relationship can be beneficial, for example using conversation tools based on positive health [30]. Coping interventions designed to facilitate communication between parents and children regarding disease-related stressors, may further strengthen the parent-child relationship and promote healthy dyadic coping [31,32].

Interestingly, the standard deviations of parents and children for perceived negative dyadic coping were larger than for the other forms of dyadic coping (see Table 1). This is consistent with research on dyadic coping in adults [33]. The relatively large variation in negative coping may imply that individual differences in personality traits (e.g., empathy, agreeableness), psychosocial factors (anxiety, depressive symptoms), demographics factors (age, gender, socio-economic status, migration background), or disease characteristics (e.g., severity and duration of the disease) play a more important role in negative coping than in other forms of DC. Examining how personality traits, psychosocial factors, demographics, and/or disease characteristics as well as social expectations interact in predicting negative DC in parent-child relationships is an interesting avenue for future research.

Finally, in this study, we included children with both somatic chronic conditions as well as children with chronic medically unexplained symptoms, which are two quite different groups. In some ways however, these two groups show similarities. For example, approximately 20% of children with a chronic somatic disease experience severe fatigue and their fatigue scores are comparable to children with chronic fatigue syndrome (CFS) [34]. Largely the same psychosocial factors are associated with fatigue in children with a chronic somatic disease as in children with CFS [35,36]. Furthermore, we did not find differences between these two groups regarding stress communication and dyadic coping responses, justifying analyzing our population as a whole. This finding can be seen as an indication that coping strategies reflect dyadic processes between individuals and their environment (family context), rather than being coping strategies of a particular disease (see Systemic Transactional Model, STM) [7,8].

3.1. Limitations and future research

Although this study was conducted with a relatively large sample and two data sources (parents and children) were used, several considerations of this study deserve attention. First, we measured the three forms of parent-child dyadic coping with single items, albeit derived from the validated and widespread used DCI [18]. Although we tested measurement invariance, single-item measures are more vulnerable to random measurement errors, which are more likely to be cancelled out with multiple items. Second, the cross-sectional design of the study prevents drawing conclusions about directionality or possible feedback loops between stress communication and different forms of dyadic coping. Children may, for example, disclose stress to their parents, and children may perceive their parents to react supportive and helpful which encourages them to disclose more. Yet, since the Systemic Transactional Model expects that stress communication and dyadic coping responses between parents and children are a continuous, co-occurring process, longitudinal studies investigating the development of dyadic coping in parent-child relationships in which children have a chronic condition would be promising. Another limitation is that the sample largely relied on girls and mothers. For the generalizability of the findings, it is important that future research includes more boys and especially fathers (only 9% in this sample). Although self-report data from two sources (parents, children) were collected, observational data would shed more detailed light on the stress communication and dyadic coping process [37] in parents and children dealing with a chronic condition.

Important avenues for future research are to develop and validate a new dyadic coping questionnaire or to adapt the Dyadic Coping Inventory (DCI) and to compare dyadic coping responses of children with a chronic condition to a healthy sample of children of the same age, thereby creating a so-called norm group. Although we did not find large differences in stress communication or dyadic responses in different age groups, probably due to limited power, it would also be interesting to further study age differences and developmental trajectories. The ultimate goal of this line of research would be to develop interventions that aid parents and children in ways to communicate stress related to the disease in an open and safe manner and to enhance dyadic coping skills like it is done in couples (Couples Coping Enhancement Training, CCET) [38], or the program by Kayser and Scott [39].

4. Conclusion

When coping with a chronic condition, the interactions between parents and children are of crucial importance. Families need to cope with different stressors, including those brought along by the disease and the mutual impact it has on children's and parents' lives. This study sheds light on the potential pivotal role of parent-child communication when coping with these stressors. Open communication, where children with a chronic condition express their stress and seek help, seems to be associated with positive outcomes for the child, parent, and parent-child relationship.

Financial interests

Non-financial interests

Ethical approval

This study was classified by the Institutional Review Board as exempt from the Medical Research Involving Human Subjects Act (16–707/C and 17–078/C). Informed consent to use the data from the questionnaires and to extract data from the child's medical records was obtained from both the child and his/her parent(s).

CRediT authorship contribution statement

Reine C. van der Wal: Writing – review & editing, Writing – original draft, Methodology, Investigation, Formal analysis, Data curation, Conceptualization. **Sanne L. Nijhof:** Writing – review & editing, Supervision, Resources, Methodology, Investigation, Funding acquisition, Conceptualization. **Luca M. Leisten:** Writing – review & editing, Writing – original draft, Formal analysis, Data curation. **Elise M. van de Putte:** Writing – review & editing, Investigation, Funding acquisition, Conceptualization. **Cornelis K. van der Ent:** Writing – review & editing, Funding acquisition, Conceptualization. **Alinde W. Hindriks-Keegstra:** Writing – review & editing, Funding acquisition, Conceptualization. **Guy Bodenmann:** Writing – review & editing, Writing – original draft, Formal analysis, Conceptualization. **Catrin Finkenauer:** Writing – review & editing, Writing – original draft, Supervision, Methodology, Investigation, Funding acquisition, Formal analysis, Conceptualization. **Merel M. Nap-van der Vlist:** Writing – review & editing, Writing – original draft, Resources, Project administration, Methodology, Investigation, Funding acquisition, Formal analysis, Data curation, Conceptualization.

Declaration of competing interest

None.

Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.jpsychores.2024.111668.

References

[1] D.M. Eminson, Medically unexplained symptoms in children and adolescents, Clin. Psychol. Rev. 27 (7) (2007) 855–871.

[2] E.E. Berkelbach van der Sprenkel, S.L. Nijhof, G.W. Dalmeijer, N.C. Onland-Moret, S.A. de Roos, H.M.B. Lesscher, E.M. van de Putte, C.K. van der Ent, C. Finkenauer, G.W.J.M. Stevens, Psychosocial functioning in adolescents growing up with chronic disease: the Dutch HBSC study, Eur. J. Pediatr. 181 (2021) 763–773, https://doi.org/10.1007/s00431-021-04268-9.

[3] H. Maurice-Stam, S.L. Nijhof, A.S. Monninkhof, H.S.A. Heymans, M.A. Grootenhuis, Review about the impact of growing up with a chronic disease showed delays achieving psychosocial milestones, Acta Paediatr. 108 (12) (2019) 2157–2169, https://doi.org/10.1111/apa.14918.

[4] K.L. Fingerman, Y.P. Cheng, L. Tighe, K.S. Birditt, S. Zarit, Relationships between young adults and their parents, in: A. Booth, S. Brown, N. Landale, W. Manning, S. McHale (Eds.), Early Adulthood in a Family Context, Springer, New York, 2012, pp. 59–85, https://doi.org/10.1007/978-1-4614-1436-0_5.

[5] M.K. Cousino, R.A. Hazen, Parenting stress among caregivers of children with chronic illness: a systematic review, J. Pediatr. Psychol. 38 (8) (2013) 809–828, https://doi.org/10.1093/jpepsy/jst049.

[6] T.M. Palermo, C.R. Valrie, C.W. Karlson, Family and parent influences on pediatric chronic pain: a developmental perspective, Am. Psychol. 69 (2) (2014) 142–152, https://doi.org/10.1037/a0035216.

[7] G. Bodenmann, Dyadic coping - a systemic-transactional view of stress and coping among couples: theory and empirical findings, Eur. Rev. Appl. Psychol. 47 (1997) 137–140.

[8] G. Bodenmann, Dyadic coping and its significance for marital functioning, in: T.A. Revenson, K. Kayser, G. Bodenmann (Eds.), Couples Coping with Stress: Emerging Perspectives on Dyadic Coping, American Psychological Association, 2005, pp. 33–49, https://doi.org/10.1037/11031-002.

[9] M.K. Falconier, J.B. Jackson, P. Hilpert, G. Bodenmann, Dyadic coping and relationship satisfaction: a meta-analysis, Clin. Psychol. Rev. 10 (2015) 571, https://doi.org/10.1016/j.cpr.2015.07.002.

[10] A.M. Stefanut, M. Vintilă, O.I. Tudorel, The relationship of dyadic coping with emotional functioning and quality of the relationship in couples facing Cancer—a Meta-analysis, Front. Psychol. 11 (2021) 594015.

[11] M.J. Traa, J. De Vries, G. Bodenmann, B.L. Den Oudsten, Dyadic coping and relationship functioning in couples coping with cancer: a systematic review, Br. J. Health Psychol. 20 (1) (2015) 85–114.

[12] M. Roth, K. Weitkamp, S.A. Landolt, G. Bodenmann, Couples' Dyadic Coping in the Context of Child-Related Stressors: A Systematic Review across Three Decades, Couple and Family Psychology: Research and Practice, 2022, https://doi.org/10.1037/cfp0000237.

[13] M.M. Nap-van der Vlist, R.C. van der Wal, E. Grosfeld, M.A. Grootenhuis, M.M. van den Heuvel-Eibrink, J.F. Swart, S.L. Nijhof, Parent-child dyadic coping and quality of life in chronically diseased children, Front. Psychol. 12 (2021) 701540.

[14] W.L. Cook, D.A. Kenny, The actor–partner interdependence model: a model of bidirectional effects in developmental studies, Int. J. Behav. Dev. 29 (2) (2005) 101–109.

[15] E.E. Coates, Q. Tran, Y. Le, V. Phares, Parenting, coparenting, and adolescent adjustment in African American single-mother families: an actor-partner interdependence mediation model, J. Fam. Psychol. 33 (6) (2019) 649–660, https://doi.org/10.1037/fam0000552.

[16] L. Keijsers, F. Poulin, Developmental changes in parent-child communication throughout adolescence, Dev. Psychol. 49 (12) (2013) 2301–2308, https://doi.org/10.1037/a0032217.

[17] M.M. Nap-van der Vlist, J.W. Hoefnagels, G.W. Dalmeijer, N. Moopen, C.K. van der Ent, J.F. Swart, S.L. Nijhof, The PROactive cohort study: rationale, design, and study procedures, Eur. J. Epidemiol. 37 (9) (2022) 993–1002.

[18] G. Bodenmann, Dyadisches coping Inventar (DCI). [dyadic coping inventory], in: Test Manual, Huber, 2008.

[19] L. Stas, D.A. Kenny, A. Mayer, T. Loeys, Giving dyadic data analysis away: a user-friendly app for actor–partner interdependence models, Pers. Relat. 25 (1) (2018) 103–119.

[20] O. Bulut, Testing for Measurement Invariance in R, Retrieved from, https://okan.cloud/posts/2020-12-21-testing-for-measurement-invariance-in-r/, 2020.

[21] L. Hu, P.M. Bentler, Cutoff criteria for fit indexes in covariance structure analysis: conventional criteria versus new alternatives, Struct. Equ. Model. Multidiscip. J. 6 (1) (1999) 1–55.

[22] J.-B.E. Steenkamp, H. Baumgartner, Assessing measurement invariance in cross-national consumer research, J. Consum. Res. 25 (1) (1998) 78–90.

[23] R. Van de Schoot, P. Lugtig, J. Hox, A checklist for testing measurement invariance, Eur. J. Dev. Psychol. 9 (4) (2012) 486–492.

[24] W. Lutz, E. Hock, M. Kang, Children's communication about distressing events: the role of emotional openness and psychological attributes of family members, Am. J. Orthop. 77 (1) (2007) 86–94, https://doi.org/10.1037/0002-9432.77.1.86.

[25] F. Meriggi, F. Andreis, N. Liborio, C. Codignola, A. Rizzi, T. Prochilo, L. Rota, B. Di Biasi, P. Bertocchi, C. Abeni, C. Ogliosi, F. Aroldi, A. Zaniboni, Parents with Cancer: searching for the right balance between telling the truth and protecting children, Palliat. Support. Care 15 (1) (2017) 88–97, https://doi.org/10.1017/S1478951516000444.

[26] I.N. Sandler, J.Y. Tein, S.G. West, Coping, stress, and the psychological symptoms of children of divorce: a cross-sectional and longitudinal study, Child Dev. 65 (6) (1994) 1744–1763.

[27] L.M. Hooper, J. DeCoster, N. White, M.L. Voltz, Characterizing the magnitude of the relation between self-reported childhood parentification and adult psychopathology: a meta-analysis, J. Clin. Psychol. 67 (10) (2011) 1028–1043.

[28] S.E. Williams, R.L. Blount, L.S. Walker, Children's pain threat appraisal and catastrophizing moderate the impact of parent verbal behavior on children's symptom complaints, J. Pediatr. Psychol. 36 (1) (2010) 55–63.

[29] P. Minuchin, Families and individual development: provocations from the field of family therapy, Child Dev. 56 (2) (1985) 289–302, https://doi.org/10.2307/1129720.

[30] S. De Jong-Witjes, M.C. Kars, M. van Vliet, M. Huber, S.E. van der Laan, E.N. Gelens, E.M. van de Putte, Development of the my positive health dialogue tool for children: a qualitative study on children's views of health, BMJ Paediatr. Open 6 (1) (2022).

[31] M. Douma, H. Maurice-Stam, B. Gorter, Y. Krol, M. Verkleij, L. Wiltink, M.A. Grootenhuis, Online psychosocial group intervention for parents: positive effects on anxiety and depression, J. Pediatr. Psychol. 46 (2) (2021) 123–134.

[32] L. Scholten, A.M. Willemen, B.F. Last, H. Maurice-Stam, E.M. van Dijk, E. Ensink, M.A. Grootenhuis, Efficacy of psychosocial group intervention for children with chronic illness and their parents, Pediatrics 131 (4) (2013) e1196–e1203.

[33] A.K. Randall, C. Tao, G. Leon, N.D. Duran, Couples' co-regulation dynamics as a function of perceived partner dyadic coping, Anxiety Stress Coping 34 (6) (2021) 597–611.

[34] M.M. Nap-van der Vlist, G.W. Dalmeijer, M.A. Grootenhuis, C.K. van der Ent, M.M. van den Heuvel-Eibrink, N.M. Wulffraat, S.L. Nijhof, Fatigue in childhood chronic disease, Arch. Dis. Child. (2019), https://doi.org/10.1136/archdischild-2019-316782.

[35] C.L. Werker, S.L. Nijhof, E.M. van de Putte, Clinical practice: chronic fatigue syndrome, Eur. J. Pediatr. 172 (2013) 1293–1298.

[36] M.M. Nap-van der Vlist, G.W. Dalmeijer, M.A. Grootenhuis, K. van der Ent, M.M. van den Heuvel-Eibrink, J.F. Swart, E.M. van de Putte, S.L. Nijhof, Fatigue among children with a chronic disease: a cross-sectional study, BMJ Paediatr. Open (2021), https://doi.org/10.1136/bmjpo-2020-000958. PMID: 33665374; PMCID: PMC7893660.

[37] R. Kuhn, T.N. Bradbury, F.W. Nussbeck, G. Bodenmann, The power of listening: lending an ear to the partner during dyadic coping conversations, J. Fam. Psychol. 32 (6) (2018) 762.

[38] G. Bodenmann, S.D. Shantinath, The couples coping enhancement training (CCET): a new approach to prevention of marital distress based upon stress and coping, Fam. Relat. 53 (5) (2004) 477–484.

[39] K. Kayser, J.L. Scott, Helping Couples Cope with women's Cancers: An Evidence-Based Approach for Practitioners, Springer, 2008.