



# Joint physical custody, parent–child relationships, and children’s psychosomatic problems

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## Abstract

**Aim** The prevalence of psychosomatic complaints among children and adolescents appears to be increasing. At the same time, the numbers of joint physical custody families are rising across Western countries. This study aimed to investigate the relationship between post-separation care arrangements (joint physical custody vs. sole physical custody) and children’s risks of psychosomatic problems, while considering the potential mediating role of parent–child relationships.

**Subject and methods** Based on data from the Family Models in Germany (FAMOD) study, stepwise linear regression models and seemingly unrelated regression models were estimated for a sample of 473 children aged seven to 14 living in either sole physical custody or joint physical custody families.

**Results** Children in joint physical custody families reported significantly fewer psychosomatic problems than children in sole physical custody families. Furthermore, living in a joint physical custody arrangement was associated with better parent–child relationships, although only the mother–child relationship was significantly related to children’s psychosomatic complaints, and partially mediated the association between physical custody arrangements and children’s psychosomatic complaints. No corresponding association could be found with respect to the father–child relationship.

**Conclusion** The risk of psychosomatic problems was distributed unequally among post-separation families, as children living in joint physical custody arrangements suffered from fewer psychosomatic problems than children living in sole physical custody arrangements. Because part of this association was explained by the quality of the mother–child relationship, children’s relationships with other family members appear to be important factors to consider when seeking to promote children’s health in post-separation care arrangements.

**Keywords** Health · Joint physical custody · Parent–child relationships · Post-separation families · Psychosomatic problems · Sole physical custody

## Introduction

Psychosomatic complaints are quite common among children and adolescents (Kelly et al. 2010), and the prevalence of these problems appears to have increased in recent years (Hjern 2006; Ottová-Jordan et al. 2015). Generally defined as “physical symptoms or illnesses that result from the interplay of psychosocial and physiological processes” (Hagekull and Bohlin 2004), psychosomatic problems include a broad spectrum of complaints, such as headaches, back pain,

abdominal pain, and sleeping problems (Hjern 2006; Janson 2001). Psychosomatic problems can have an immediate impact on children’s overall well-being, by, for example, constraining their participation in activities of daily life (Kelly et al. 2010). Moreover, research has also shown that experiencing psychosomatic problems during childhood and adolescence can have long-term effects on individuals, including reducing their educational attainment in adulthood (Huurre et al. 2005).

Compared to children living in nuclear families, children living in post-separation families have, on average, lower scores on a range of health outcomes (Amato 2010; Cavanagh and Fomby 2019; Härkönen et al. 2017). Theoretical approaches that aim to explain the poorer health of children in post-separation families usually concentrate on five factors: the children’s loss of contact with the non-

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residential parent, adjustments by the residential parent, experiences of economic hardship, exposure to interparental conflict, and stressful life events (Amato 1993). However, closer examinations of children in post-separation families have also found considerable variability in how well children adjust to parental union dissolution (Amato 1993; Amato 1994; Havermans et al. 2017).

One factor that may account for this observed heterogeneity is variation in children's living arrangements following parental separation or divorce (Havermans et al. 2017). Joint physical custody is an emerging parental care arrangement in which children spend substantial amounts of time with both of their parents after family dissolution by living alternately in the two parental households. Although there is no official definition of the term, many empirical studies refer to joint physical custody when children spend between 30% and 50% of their time with each parent (Steinbach 2019). Thus, joint physical custody can be distinguished from sole physical custody, which is still the norm in many Western countries (Juby et al. 2005). Sole physical custody is defined as a care arrangement in which children live mostly or exclusively with one parent (in most cases, with the mother), and have either no or only limited contact with the other parent (Cancian et al. 2014).

Explanations of why practicing joint physical custody may have a positive impact on children's health typically refer to the benefits of maintaining close relationships with both parents after family dissolution (Fransson et al. 2014). For instance, researchers have argued that frequent parent–child contact in joint physical custody arrangements may reduce the sense of loss the children experience (Turunen 2017), and may allow the children to profit more effectively from both of their parents' financial and emotional resources (Bauserman 2002). However, researchers have also called attention to the potentially negative effects that joint physical custody may have on the health of children. Through high levels of instability (Spruijt and Duindam 2009; Turunen 2017), looser attachments to both parents (Emery 2016), and exposure to high levels of interparental conflict (Turunen 2017), living in two parental households could increase children's stress levels (Bauserman 2002; Fransson et al. 2014), which could, in turn, negatively affect their health.

Given the high separation and divorce rates (Härkönen 2014) and the growing numbers of joint physical custody families in Western countries (Melli and Brown 2008; Spruijt and Duindam 2009), the potential impact of joint physical custody on the health of children in post-separation families has become a relevant topic for public health (Bergström et al. 2019; Fransson et al. 2016; Hagquist 2016; Låftman et al. 2014; Nilsen et al. 2020; Turunen et al. 2017). Because this new physical custody arrangement represents a serious option for increasing numbers of separated or divorced parents, there is a pressing need for researchers to examine the relationship between joint physical custody and children's

risks of psychosomatic problems, given that previous research has shown that different physical custody arrangements may be associated with certain health benefits (Bauserman 2002; Steinbach 2019). Moreover, it is important to test the mechanisms through which joint physical custody may affect children's health complaints to expand our understanding of this new parental care arrangement.

In practice, however, only a very small number of empirical studies have investigated the association between post-separation care arrangements and children's psychosomatic health. The findings of the few existing studies on this topic have suggested that psychosomatic health is distributed unequally among children living in different physical custody arrangements. Whereas these studies revealed either no differences or only relatively small differences between children living in joint physical custody families and children living in nuclear families in terms of their psychosomatic problems (Hagquist 2016; Låftman et al. 2014), children in joint physical custody families generally suffered from significantly fewer psychosomatic problems than children in sole physical custody families (Bergström et al. 2015; Fransson et al. 2018b; Låftman et al. 2014; Nilsen et al. 2020). However, evidence on the role of parent–child relationships is somewhat less clear. Although research has established that the quality of parent–child relationships is strongly related to children's psychosomatic problems (Bergström et al. 2015; Hagquist 2016), different studies have reached contradictory conclusions on whether parent–child relationships mediate the association between physical custody arrangements and children's psychosomatic problems. On the one hand, Hagquist (2016) provided some evidence that parent–child relationships mediate the association between physical custody arrangements and children's psychosomatic health by showing that the association weakened after controlling for parent–child relationships. On the other hand, Bergström et al. (2015) did not find any evidence for the mediating role of parent–child relationships on the association between children's living arrangements and their levels of psychosomatic problems. Due to this inconclusive and incomplete knowledge, additional empirical studies are needed to shed more light on the relationships between post-separation care arrangements, parent–child relationships, and children's psychosomatic problems.

## The present study

This study aims to contribute to the body of research on this topic by investigating the association between physical custody arrangements and children's psychosomatic problems in a sample of 473 children between the ages of seven and 14 living in Germany. The first objective is to uncover potential differences in the prevalence of psychosomatic problems between children living in joint physical custody and sole

physical custody arrangements. As joint physical custody is often associated with stronger parent–child bonds (Melli and Brown 2008; Spruijt and Duindam 2009), the second objective is to test whether the mother–child relationship and the father–child relationship mediate the association between physical custody arrangements and children’s psychosomatic complaints. In addition, this study makes an important contribution to the body of literature on this association by being the first empirical study to differentiate between the effects of the mother–child and the father–child relationship. Furthermore, all previous research on this topic is limited to Norway and Sweden—two countries in which the prevalence of joint physical custody is comparatively high (30% of all post-separation families in Norway (Kitterød and Wiik 2017) and 40% in Sweden (Fransson et al. 2018a)). Consequently, this analysis is the first study to examine the association between joint physical custody and children’s psychosomatic health with data from a country where the numbers of joint physical custody families remain relatively low (Steinbach et al. 2021), with only 4% to 5% of all post-separation families practicing this new physical custody arrangement (Walper 2016; Walper et al. 2020).

## Methods

### Data

The statistical analyses are based on data from the Family Models in Germany (FAMOD) study ([https://search.gesis.org/research\\_data/ZA6849](https://search.gesis.org/research_data/ZA6849)), a national convenience sample of 1554 nuclear and post-separation families with at least one child under the age of 15. The study was funded by the German Research Foundation (DFG), and the data were collected in 2019. The main objective of the FAMOD study was to investigate the well-being of parents and children in post-separation families across Germany, with a special focus on joint physical custody arrangements. Because families practicing joint physical custody remain quite rare in Germany, and because these families cannot be identified using official statistics, joint physical custody families were oversampled in the FAMOD study. As a result, FAMOD is the only national survey that includes sufficient numbers of joint physical custody families, and is, therefore, the only dataset that can be used to investigate this new physical custody arrangement in the German context.

The FAMOD sample was stratified by (a) family model (nuclear, sole physical custody, and joint physical custody families) and (b) age of a selected target child (0–6 years and 7–14 years). Another prerequisite for being considered in the FAMOD survey was that the target child had to have contact with both of his or her biological parents in the case of a post-separation family. All respondents were recruited with

the help of professional interviewers from Kantar Public who identified families practicing joint physical custody and who used snowball procedures to identify rare subgroups (e.g., joint physical custody families with young children).

FAMOD employs a multi-actor design, and thus provides researchers with information from four different groups of respondents: a residential parent (anchor), a selected child between the ages of seven and 14 (target child), the target child’s non-residential parent, and the residential parent’s partner. The anchor questionnaire collected information on a wide range of topics, including the residential parents’ socio-demographic characteristics, their health and well-being, and information about the separation or divorce from the target child’s other biological parent. The child questionnaire concentrated on different dimensions of child well-being (e.g., psychological, social, and cognitive well-being), the child’s relationships with other family members, and various aspects of the family dissolution. For the purposes of the present study, information from both the residential parent and the target child was used. Another special feature of the FAMOD survey is its use of a residential calendar (Sodermans et al. 2014), through which parents in post-separation families could give detailed information about the amounts of time children were living with each biological parent after family dissolution. One major advantage associated with the use of such a residential calendar is that it allows researchers to clearly distinguish between sole physical custody and joint physical custody arrangements without having to rely on the parents’ self-assessments (Kantar Public 2020; Steinbach et al. 2020).

### Analytical sample

The Family Models in Germany study includes 670 interviewed target children between the ages of seven and 14. After removing from the sample all children living in nuclear families ( $n = 136$ ), children whose physical custody arrangement could not be determined ( $n = 37$ ), and children whose biological parents did not have any contact with each other ( $n = 24$ ), the final analytical sample consisted of a total number of 473 children. All missing values on the mediator variables and the control variables were imputed by means of multiple imputation (using a chained equation procedure with 50 imputations).

### Measures

**Child’s psychosomatic problems** The dependent variable is the child’s psychosomatic problems, which is based on the target children’s self-reports. Using eight items that cover a wide range of psychosomatic complaints, the children were asked how often they had (1) headaches, (2) stomachaches, and (3) sleeping problems; how often they felt (4) dizzy, (5) exhausted

or tired, (6) nauseous, and (7) restless or nervous; and how often they (8) lacked an appetite or had problems eating. These items, which had response categories ranging from 1 = “never” to 5 = “very often,” were combined to form a mean scale, with higher values indicating that the child had more psychosomatic problems (Cronbach’s  $\alpha = 0.86$ ).

**Physical custody arrangement** The independent variable is the physical custody arrangement that a given post-separation family practiced. To identify the type of physical custody arrangement, the study drew on information from the residential calendar provided by the child’s residential parent on the child’s living arrangements during a typical month. If a child was living less than 30% of the time with one parent, the family was identified as practicing sole physical custody (0). Correspondingly, if a child was living at least 30% of the time with each parent, the family was identified as practicing joint physical custody (1) (see also Steinbach 2019).

**Mother–child and father–child relationships** The quality of the mother–child relationship and the father–child relationship was assessed using the children’s self-reported answers to the questions: “How good or bad is your relationship with your mother?” and “How good or bad is your relationship with your father?” Both variables had response categories ranging from 1 = “very bad” to 5 = “very good,” with higher values suggesting a better relationship between the child and the respective parent.

**Control variables** The child’s socio-demographic characteristics were gender (0 = “male” or 1 = “female”), age (ranging between seven and 14 years), and number of stepparents (0 = “no stepparents”; 1 = “one stepparent”; and 2 = “two stepparents”). The mother’s educational level and the father’s educational level were measured as: 0 = “low educational level” (i.e., no school-leaving certificate or the lowest formal qualification of Germany’s tripartite secondary school system); 1 = “medium educational level” (i.e., intermediary secondary qualification); and 2 = “high educational level” (i.e., at least a certificate fulfilling the entrance requirements for studying at a university of applied sciences). The time since the parental separation was measured using the year in which the data was collected and the year in which the parents’ relationship ended. In total, the time since the parental separation ranged between zero and 15 years. The quality of the interparental relationship was assessed by a question posed to the residential parent: “How well do you get along with the biological father [mother] of [name target child]?” The response categories for this item ranged between 1 = “very well” and 5 = “very poorly/badly.” For the statistical analysis, the scale was recoded, with higher values indicating a better relationship between the mother and the father. To measure the children’s relationships with their peers, three items were used that are based on an

instrument developed by Masten et al. (1985) for assessing the extent to which children feel rejected by their peers: “Others are mean to me”; “Often, others don’t let me do things with them”; and “Often, others don’t pay attention to me.” These items had response categories ranging from 1 = “not at all correct” to 5 = “completely correct,” and were combined to form a mean scale, with higher scores indicating better relationships with peers (Cronbach’s  $\alpha = 0.77$ ). The descriptive statistics for all variables are displayed in Table 1.

## Statistical analysis

Data analysis was carried out using STATA software version 15.0. To determine the relationship between the physical custody arrangements and the children’s psychosomatic problems, stepwise linear regression models were estimated (see Table 2). The first regression model shows the correlation between the physical custody arrangements and the children’s levels of psychosomatic problems while controlling for the children’s and the parents’ socio-demographic characteristics. This set of control variables was chosen because previous research has identified these variables as being important for the analysis of post-separation custody arrangements. The second model further considers the variables that measure different family relationships and the children’s relationships with their peers. To test whether the association between the physical custody arrangements and the children’s psychosomatic problems was mediated by parent–child relationships, seemingly unrelated regression models were estimated (see Fig. 1).

## Results

### Psychosomatic problems in different physical custody arrangements

The descriptive results in Table 1 show that children in post-separation families reported comparatively low levels of psychosomatic complaints, with a mean value of 1.7 on a scale ranging from 1 to 5. The differences in the levels of psychosomatic problems between children living in sole physical custody families (1.8) and children living in joint physical custody families (1.6) were also relatively small (difference of just 0.2 scale points). Across both physical custody arrangements, the most common psychosomatic complaints were found to be headaches (1.9), stomachaches (2.0), and exhaustion or tiredness (2.1). In contrast, the least common problems that the children reported were feelings of dizziness (1.4) and a lack of appetite or eating problems (1.4).

The results of the linear regression models in Table 2 show that there was a statistically significant relationship between the physical custody arrangements and the children’s

**Table 1** Descriptive sample statistics: means, median values, and percentages

	All post-separation families			Sole physical custody families			Joint physical custody families		
	$\bar{x}$ (SD)	$\tilde{x}$	%	$\bar{x}$ (SD)	$\tilde{x}$	%	$\bar{x}$ (SD)	$\tilde{x}$	%
Child’s psychosomatic problems (1: never – 5: very often)	1.7 (0.0)	1.6		1.8 (0.0)	1.8		1.6 (0.0)	1.5	
Feeling exhausted or tired	2.1 (0.0)	2.0		2.3 (0.1)	2.0		2.0 (0.1)	2.0	
Stomachaches	2.0 (0.0)	2.0		2.1 (0.1)	2.0		2.0 (0.0)	2.0	
Headaches	1.9 (0.0)	2.0		2.0 (0.1)	2.0		1.8 (0.0)	2.0	
Restless or nervous	1.8 (0.0)	2.0		1.9 (0.1)	2.0		1.6 (0.1)	1.0	
Sleeping problems	1.6 (0.0)	1.0		1.7 (0.1)	1.0		1.5 (0.1)	1.0	
Nauseous	1.6 (0.0)	1.0		1.6 (0.0)	1.0		1.5 (0.0)	1.0	
Lack of appetite or eating problems	1.4 (0.0)	1.0		1.5 (0.0)	1.0		1.4 (0.0)	1.0	
Feeling dizzy	1.4 (0.0)	1.0		1.5 (0.0)	1.0		1.3 (0.0)	1.0	
Physical custody arrangement									
Sole physical custody			56.9						
Joint physical custody			43.1						
Child’s gender									
Male			44.2			42.4			46.6
Female			55.8			57.6			53.4
Child’s age (7–14 years)	11.0 (0.1)	11.0		10.9 (0.1)	11.0		11.2 (0.2)	12.0	
Child’s stepparents									
No stepparents			24.3			20.2			29.7
One stepparent			41.4			41.9			40.7
Two stepparents			34.3			37.9			29.6
Mother’s educational level									
Low educational level			16.7			21.6			10.3
Medium educational level			44.4			45.0			43.6
High educational level			38.9			33.4			46.1
Father’s educational level									
Low educational level			22.4			27.5			15.5
Medium educational level			42.9			43.8			41.8
High educational level			34.7			28.7			42.7
Time since parental separation (0–15 years)	5.8 (0.2)	5.0		6.5 (0.2)	6.0		4.8 (0.2)	4.0	
Mother–child relationship (1: very bad – 5: very good)	4.5 (0.0)	5.0		4.4 (0.0)	5.0		4.7 (0.0)	5.0	
Father–child relationship (1: very bad – 5: very good)	4.3 (0.0)	4.0		4.1 (0.1)	4.0		4.6 (0.0)	4.0	
Interparental relationship (1: very poorly – 5: very well)	3.4 (0.0)	4.0		3.3 (0.1)	3.0		3.6 (0.1)	4.0	
Relationships with peers (1: not at all correct – 5: completely correct)	4.3 (0.0)	4.3		4.2 (0.0)	4.3		4.4 (0.0)	4.7	
Number of observations	473			269			204		

Family Models in Germany (FAMOD)

psychosomatic problems after adjusting for the children’s and the parents’ socio-demographic characteristics in model 1, with the children in joint physical custody arrangements reporting fewer psychosomatic problems than the children in

sole physical custody arrangements ( $\beta = -0.16; p < .001$ ). Although the estimated effect size of the physical custody arrangements decreased significantly after controlling for family relationships and the children’s relationships with their

**Table 2** Linear regression models: the determinants of children’s psychological problems in post-separation families

	Model 1			Model 2		
	B	SE	$\beta$	B	SE	$\beta$
Joint physical custody (ref.: sole physical custody)	-0.18***	0.05	-0.16***	-0.11*	0.05	-0.10*
Child is female (ref.: male)	0.11*	0.05	0.10*	0.12**	0.04	0.11**
Child’s age	0.02	0.01	0.06	0.04***	0.01	0.16***
Child’s stepparents (ref.: no stepparents)						
One stepparent	0.02	0.07	0.02	-0.03	0.06	-0.03
Two stepparents	0.05	0.08	0.04	-0.03	0.07	-0.03
Mother’s educational level (ref.: low educational level)						
Medium educational level	0.01	0.08	0.01	0.07	0.07	0.07
High educational level	0.02	0.08	0.02	0.10	0.07	0.09
Father’s educational level (ref.: low educational level)						
Medium educational level	-0.04	0.07	-0.04	-0.10	0.06	-0.09
High educational level	0.02	0.08	0.02	-0.06	0.07	-0.05
Time since parental separation	0.01	0.01	0.06	0.00	0.01	0.01
Mother–child relationship				-0.18***	0.04	-0.20***
Father–child relationship				0.02	0.03	0.03
Interparental relationship				0.04	0.03	0.07
Relationships with peers				-0.33***	0.03	-0.42***
Constant	1.50***	0.15		3.35***	0.25	
Adjusted R <sup>2</sup>	0.04			0.28		
N	473			473		

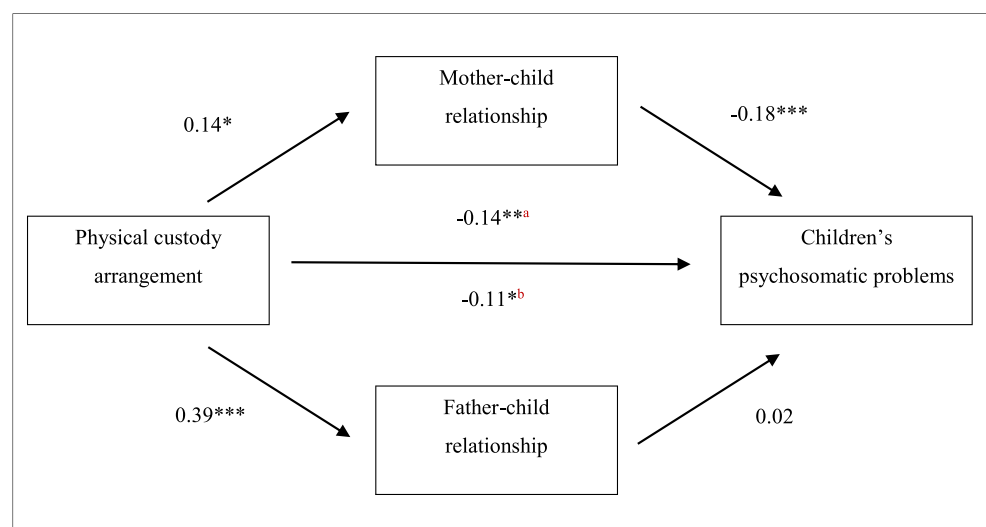
Family Models in Germany (FAMOD); \*\*\* $p < .001$ , \*\* $p < .01$ , \* $p < .05$

peers in model 2, the association remained significant ( $\beta = -0.10$ ;  $p < .05$ ). Taken together, the results suggest that the risk of psychosomatic problems was not distributed equally among post-separation care arrangements, and that the children in joint physical custody families suffered from significantly fewer psychosomatic problems than the children in sole physical custody families.

### The mediating role of parent–child relationships

To determine whether the parent–child relationships mediated the association between the physical custody arrangements and the children’s psychosomatic problems, mediation analyses were carried out. The results of the seemingly unrelated regression models in Fig. 1 show that the physical custody

**Fig. 1** Seemingly unrelated regression models: the mediating effects of parent–child relationships on the relationship between the physical custody arrangements and children’s psychosomatic problems (*unstandardized coefficients*). Note: Family Models in Germany (FAMOD); \*\*\* $p < .001$ , \*\* $p < .01$ , \* $p < .05$ . <sup>a</sup>Total effect of physical custody arrangements on children’s psychosomatic problems. <sup>b</sup>Direct effect of physical custody arrangements on children’s psychosomatic problems



arrangements were significantly related to both the mother–child ( $B = 0.14$ ;  $p < .05$ ) and the father–child relationship ( $B = 0.39$ ;  $p < .001$ ), with joint physical custody predicting better parent–child relationships. However, the results also indicate that it was only the mother–child relationship that had a significant impact on the children’s psychosomatic problems ( $B = -0.18$ ;  $p < .001$ ), whereas the father–child relationship was unrelated to the children’s levels of psychosomatic problems. Additional calculations reveal that the total effect of the physical custody arrangements was  $-0.14$  ( $z = -2.82$ ;  $p < .01$ ), with an indirect effect via the mother–child relationship of  $-0.03$  ( $z = -2.16$ ;  $p < .05$ ). Consequently, 18.3% of the total effect of the physical custody arrangements on the children’s psychosomatic complaints was explained by the quality of the mother–child relationship, which indicates a partial mediation.

### Control variables

Regarding the control variables that were considered in the analysis, the results of model 2 suggest that only a few of the socio-demographic characteristics were statistically significantly related to the children’s levels of psychosomatic problems. For instance, girls reported noticeably more psychosomatic complaints than boys ( $\beta = 0.11$ ;  $p < .01$ ). Moreover, the age of the children was negatively related to their psychosomatic health, that is, the older the children, the more psychosomatic problems they reported ( $\beta = 0.16$ ;  $p < .001$ ). Furthermore, the children’s relationships with their peers were strong predictors of their experiences of psychosomatic problems, as having better peer relationships was significantly and strongly related to having fewer psychosomatic problems ( $\beta = -0.42$ ;  $p < .001$ ). Finally, no significant associations were found between the children’s psychosomatic problems and the presence of stepparents, their mother’s and their father’s educational levels, the time since their parents’ separation, and the quality of the interparental relationship.

### Conclusions

As divorce and separation rates are at high and stable levels across almost all Western countries, increasing numbers of parents are confronted with the need to choose the post-separation care arrangement they want their children to grow up in. Joint physical custody, a new parental care arrangement in which children divide their time approximately equally between their parents by living alternately with the mother and the father, has become a viable alternative to sole physical custody arrangements, and a serious option for growing numbers of post-separation families. Because joint physical custody is likely to affect children’s health, researchers are showing an increasing interest in studying this new care arrangement, including from a public health perspective (Bergström et al. 2015; Fransson et al. 2018b; Hagquist 2016; Låftman et al.

2014; Nilsen et al. 2020). To further enhance our understanding of the implications of joint physical custody for the health of children, this study investigated the associations between physical custody arrangements, parent–child relationships, and children’s risk of experiencing psychosomatic problems in a sample of 473 German children between the ages of seven and 14 living in post-separation families who practiced either joint physical custody or sole physical custody.

The results of the statistical analysis have provided evidence for the assumption that the risk of psychosomatic problems is unequally distributed among post-separation families, with children living in joint physical custody arrangements reporting significantly fewer psychosomatic problems than children living in sole physical custody arrangements. This association was significant even when controlling for the children’s and the parents’ socio-demographic characteristics, the children’s family relationships, and the children’s relationships with their peers. Furthermore, the analysis suggested that part of the association between the physical custody arrangements and the children’s psychosomatic complaints was explained by the quality of the mother–child relationship, as joint physical custody was shown to be related to better mother–child relationships, which, in turn, predicted lower levels of psychosomatic problems in the children. However, the father–child relationship was not found to be significantly related to the children’s psychosomatic complaints.

The findings of this study are generally in line with those of earlier studies, which demonstrated that children in sole physical custody families experience more psychosomatic problems than their counterparts in joint physical custody families (Bergström et al. 2015; Fransson et al. 2018b; Låftman et al. 2014; Nilsen et al. 2020). However, previous research did not differentiate between the effects of the mother–child and the father–child relationship (Bergström et al. 2015; Hagquist 2016). Consequently, this work contradicts the findings of earlier studies on the relevance of parent–child relationships by showing that it is only the mother–child relationship that can explain part of the association between the physical custody arrangements and the children’s psychosomatic complaints.

This study has some strengths, including that it used children’s self-reported levels of psychosomatic problems, and information from a residential calendar. Moreover, the study considered a wide range of psychosomatic problems, and separated the effects of the mother–child and the father–child relationship. Nevertheless, the results of this study have to be interpreted while keeping a number of limitations in mind. First, because the Family Models in Germany study was conceptualized as a convenience sample, the findings of this study are not representative of post-separation families in Germany. However, Steinbach et al. (2020) were able to demonstrate that the distributions of a number of the residential parents’ socio-demographic characteristics (e.g., their ages or educational levels) were quite comparable to those of respondents in other

surveys that are representative for parents in Germany. Second, based on the cross-sectional design of the FAMOD survey, the causal relationship between the post-separation care arrangements and the children's psychosomatic problems could not be determined. For instance, high levels of psychosomatic problems in their children may prevent parents from practicing joint physical custody in order to protect the children from experiencing the higher stress levels that may accompany living in two parental households. Similarly, this study cannot comment on the causal relationship between joint physical custody and the quality of parent–child relationships. Although there are reasons to assume that joint physical custody may lead to better parent–child relationships—and, in particular, to better father–child relationships (Bastais and Pasteels 2019)—it is also possible that parents who had a good relationship with their children prior to family dissolution were more likely to opt for a joint physical custody arrangement; especially if the children had a close relationship with their father.

Third, the use of cross-sectional data did not allow to test whether selection processes can account for the lower prevalence of psychosomatic complaints in children living in joint physical custody arrangements. For instance, parents who practice joint physical custody have been found to be a positively selected group in terms of various characteristics that may have a positive influence on their children's health. These characteristics include high educational and income levels (Cancian et al. 2014; Kitterød and Lyngstad 2012; Sodermans et al. 2013), a greater ability to cooperate with each other (Turunen 2017), and lower levels of interparental conflict (Kitterød and Lyngstad 2012; Sodermans et al. 2013). Fourth, this study may have underestimated the relationship between the father–child relationship and the children's levels of psychosomatic problems, as the great majority of the children in this study were living mostly with their mothers. For instance, only 5.7% of the children included in the analytical sample had their main residence at their father's household, whereas 74.6% of the children mainly lived with their mother. The remaining 19.7% of the children had no main residence due to the fact that they were living in a symmetric joint physical custody arrangement (i.e., an arrangement in which the children live half of the time with each parent). As a result, future studies should include more families in which the child's main residence is with the father to test whether the father–child relationship is more important for children's psychosomatic health when the father is the residential parent.

In sum, this study has made a notable contribution to the literature by providing insights into the consequences that joint physical custody may have for the health of children, as well as insights into the mechanisms through which living with both parents after family dissolution may affect children's health; i.e., the children's relationships with their parents. Moreover, by considering the mother–child and the father–child relationship as separate factors in the analysis, this study has closed a particular research gap. The findings

of this study also have important implications for praxis. First, it should be noted that living in a joint physical custody arrangement does not seem to harm the health of children in post-separation families. On the contrary, this study has shown that children living in joint physical custody arrangements reported fewer psychosomatic complaints than their counterparts living in sole physical custody arrangements. Nevertheless, it is important to keep in mind that other research has found that factors such as high interparental conflict levels (Augustijn 2021; Elam et al. 2016; Kalmijn 2016) and the father's pre-separation involvement in childrearing (Poortman 2018) may alter the otherwise positive relationship between joint physical custody and children's health.

Second, legal policies and intervention programs that aim to improve children's health in post-separation families should consider that factors other than the children's living arrangements may affect their health, including the quality of the parent–child relationships. Good parent–child relationships may be valuable resources that help children adjust to their parents' separation or divorce, and that could, in turn, improve their health. Therefore, intervention measures should aim to create opportunities for children and parents to develop and maintain good and intimate relationships, as these relationships might have a protective effect on the children's health. Third, due to the strong association that was found between the children's relationships with their peers and their psychosomatic complaints, intervention programs should not neglect the relevance of positive peer relationships for children's health and well-being.

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**Availability of data and materials** The data that support the findings of this study are openly available at GESIS Data Archive ([https://search.gesis.org/research\\_data/ZA6849](https://search.gesis.org/research_data/ZA6849), DOI: <https://doi.org/10.4232/1.13571>).

## Declarations

**Conflicts of interest** The author has no conflicts of interest to declare that are relevant to the content of this article.

**Ethics Approval** The study was not presented to a research ethics committee because an approval was not requested by the German Research Foundation (DFG) due to the de-identified and public nature of the data.

**Consent to participate** Informed consent was obtained from all individual participants included in the study.

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