Genus

ORIGINAL ARTICLE Open Access

What difference does it make? Parental relationship quality and child wellbeing in step- and nuclear families

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Abstract

This study adopts a dyadic perspective to explore how parental partnership quality relates to the wellbeing of children living with both biological parents versus those with a biological parent and a stepparent. We apply multivariable linear regression and a mediation analysis on dyadic data from the German Panel Analysis of Intimate Relationships and Family Dynamics (pairfam) to understand the relationship between family structure, step- and biological parents' partnership quality, and children's self-reported wellbeing, operationalised over the Strength and Difficulties Questionnaire (SDQ-scores). We differentiate two separate dimensions of parental partnership quality, namely the frequency of conflict and esteem between the (step-) parents. The results show that children living with a stepparent exhibit higher total difficulties scores as compared to children living with both their biological parents. However, parental conflict occurs less and esteem more frequently in stepfamilies than in nuclear families. Mediation analysis indicates that frequency of esteem between parents partially mediates the impact of family structure on SDQ-scores. Our analysis suggests that the negative effect of living with stepparents on children's social and behavioural problems is slightly mitigated by increased parental esteem in these unions.

Keywords: Family structure, Stepfamilies, Child wellbeing, Mediation analysis, Family diversity, Partnership quality, Family climate

Introduction

Latest since Sara McLanahan's presidential address at the 2004 Population of America Conference, investigations on the role of family diversity in child outcomes are probably among the most controversial, contested, and ideologically charged in family demography and family sociology. Until then, proponents of the Second Demographic Transition Theory (SDT) took a rather positive view of family diversity, seeing its development as an expression of freedom, emancipation, and self-realisation (Lesthaeghe, 2014; van de Kaa, 1987). McLanahan (2004) challenged this perspective when she made the provocative point that while adults may have benefited from the SDT by gaining autonomy and freedom, children's wellbeing may have deteriorated with the decline of the nuclear family model. From this perspective, it follows that the nuclear

family is the most favourable environment for child development, while divorce, separation, and living in a diverse family constellation are potentially harmful.

A large body of research has emanated from this controversy that tried to unravel how living in a single-parent household, a stepfamily, or a cohabiting union affects child outcomes (Brown, 2010; Magnuson & Berger, 2009). At the same time, it led to a reflection of the complex mechanisms that relate family structure and child outcomes, spurring a critical discussion on the shortcomings of the data, measures, and methods which were conventionally used to unpack allegedly causal relations (Härkönen et al., 2017; McLanahan et al., 2013). A relevant lesson from this controversy is that the nuclear family may not be the panacea it is thought to be, but whether children benefit from living in a nuclear family model depends crucially on the interaction of parents and the quality of their relationship (Goldberg & Carlson, 2014; Hess, 2021).

Parental partnership quality, including factors such as emotional support, effective communication, and conflict resolution, is essential for fostering child wellbeing. On the one hand, research has demonstrated that persistent conflict and tension between parents can impact children directly by transmitting dysfunctional behaviour (Bandura, 1977), or indirectly when it spills over into the parent–child relationship, reducing parental attentiveness and warmth (Erel & Burman, 1995). On the other hand, emotional support between parents, characterised by empathy, fairness, and affection, is beneficial for children (Goldberg & Carlson, 2014). These dynamics are equally relevant in stepfamilies, where the quality of the stepparent–parent relationship might play an important role in the child's sense of stability and security in the new family unit. However, there is still a lack of insights into these dynamics in stepfamilies.

This paper studies the role of family structure in child outcomes and examines whether the association is mediated by parental relationship quality. Numerous studies have examined whether children in stepfamilies and nuclear families differ on various facets of child outcomes, such as behavioural problems (Hveem et al., 2022), substance abuse (Needle et al., 1990), delinquency (Comanor & Phillips, 2002), or school performance (Ginther & Pollak, 2003). We go beyond prior research in the following ways: First, only a few studies addressed the role of parental partnership quality for child outcome (see however Gold & Edin, 2021; Jensen, 2022). As a result, many studies have overlooked a crucial dimension of family climate – one that can be either detrimental or beneficial to child development – and this may serve as an underlying mechanism mediating the relationship between family structure and child outcomes. Hence, it is important to consider such intermediate variables to better understand the channel through which family characteristics affect children's wellbeing. In this paper, we differentiate two separate dimensions of parental partnership quality, namely the frequency of conflict and esteem between the (step-) parents.

Second, most previous studies have relied on parents' reports of their children's wellbeing. We have dyadic data that enables us to use children's self-reports. This is particularly important in the context of union dissolution, where parents' assessments of their children's wellbeing may be strongly influenced by feelings of guilt over the divorce and separation (Moore, 2020), as well as by the uncertainty that comes with repartnering and concerns about whether the child will be able to establish a relationship with the new partner and thus with the stepparent.

Finally, it should be emphasised upfront that we pay great attention to conceptual clarity and make a distinction between the family and the child's perspective. A child may live in a stepfamily, but at the same time with both of their biological parents in the same household unit, if one of the parents brings a child from a prior union into the household and has another child with the new partner. The focus of this study is on whether the child lives with both biological parents or whether the child lives with a stepparent.

Theory, prior research, and hypotheses

Linking family structure and child wellbeing

A robust body of literature has explored the association between family structure and child wellbeing (Brown, 2010; Härkönen et al., 2017; Raley & Sweeney, 2020). Most of the findings indicate that child wellbeing (measured over various indicators, such as behavioural problems, substance abuse, delinquency, school performance) is generally higher among those children living with two biological married parents than those living with two biological cohabiting parents, single parents, or stepparents (Brown, 2004; Magnuson & Berger, 2009; Manning & Lamb, 2003). Several explanations for these patterns have been proposed in the literature. Parental separation, parental repartnering, and multiple partnership transitions of the resident parent can be a stressful event for the child and increase conduct problems and emotional symptoms (Kleinschlömer & Krapf, 2023; Kuhlemann & Krapf, 2022). Further, selection into separation as well as marriage matters. Specific unobserved traits, for example, the preposition to develop depressive symptoms that may influence parental separation, may also influence child outcomes (ibid.). Similarly, parental conflict and separation can affect child outcomes and may also be a primary reason why some couples choose cohabitation over marriage.

Moreover, there are structural disadvantages that may partially account for differences in child wellbeing across family types. Unlike children whose two biological parents live in the same household, children living with a biological parent and a stepparent are often more reliant on alimony payments, which in most countries, including Germany, are often not paid at all or not paid in full (Hubert et al., 2020). As a result, household resources may be more limited in stepfamilies than in nuclear families, reducing the socio-economic resources available to each child (be it time, attention, or money) (Berger & McLanahan, 2015). Economic hardship and financial worries may be stressors that explain some differences in partnership quality between nuclear and stepfamilies (Conger et al., 2010; Hao, 1996; Hardie et al., 2014; Tach, 2015).

The normative fabric of a society also plays a crucial role in shaping the wellbeing of children across different family forms. While nuclear families are an established institution, providing members with a clear normative and legal script for behaviour, stepfamilies do not benefit from such institutional clarity. In this sense, stepfamilies have been described as an 'incomplete institution', lacking widely accepted norms and expectations, which can lead to role ambiguity and challenges in family functioning (Braithwaite et al., 2021; Cherlin, 1978). For example, the lack of a clear framework for stepparents' obligations and rights may create ambiguity in their role toward stepchildren. This ambiguity is further heightened by the increasing prevalence of shared physical custody arrangements, where biological fathers often remain actively involved in decisions affecting the child (Heintz-Martin et al., 2015; Jensen, 2022). As a result, stepparental behaviours may

be guided more by individual negotiation and agreement than that of the behaviour of parents in nuclear families. Negotiation can increase conflict, leading to poorer relationship quality, but it may also offer an opportunity to reach more flexible agreements (Fine, 1996; Mason et al., 2002).

Studies have indeed demonstrated that partnership quality may be enhanced in stepfamilies. Further, stepfamilies have been found to practice more gender egalitarian division of household labour than nuclear families (Heintz-Martin et al., 2015). Moreover, the new partnership may buffer the negative effects of separation and increase parental wellbeing, which in turn may positively affect their parenting behaviours (Gloor et al., 2021). Thomson et al. (2004) show that repartnering mitigates some of the negative effects of union dissolution, as both mothers and children report more positive interactions if mothers repartnered compared to if they remained single.

The role of parental relationship quality for child wellbeing

A crucial factor in analyzing child wellbeing is the quality of the partnership between the couple with whom the child resides. The quality of a couple's relationship has often been defined by the frequency, severity, and content of conflict. Whether this affects the child depends on their degree of involvement, their cognitive understanding of the situation, and perceived emotional security in their relationship with their (step-)parent(s) (Davies & Cummings, 1994; Grych & Fincham, 1993).

There is an extensive and long-standing body of research on the link between parental relationship quality and children's behavioural problems (Cummings & Davies, 2002; Grych & Fincham, 1993). The quality of the parental interaction may affect children directly by modelling functional or dysfunctional behavioural patterns (Bandura, 1977). According to social learning theory, children learn their parents' behaviour through imitation. Many studies confirm that children raised in family environments dominated by discordant parents are more likely to replicate dysfunctional behaviours. For example, Foshee et al. (1999) show that having witnessed physical violence between parents plays a major role in fostering aggressive conflict-response styles in adolescents and their acceptance of relational violence.

Parental partnership quality also affects children indirectly, as parents' interactions and behaviours interfere with the quality and style of their parenting (Hess, 2021). According to the *spillover hypothesis*, parents' emotionality caused by the quality of dyadic interactions with their partner will be reflected in the parent–child interaction (Erel & Burman, 1995). Increased interparental conflict, especially destructive conflict, leads to heightened stress levels and decreased emotional warmth between parents, which may cause them to be less attentive and sensitive toward their children (ibid.). In contrast, the *compensation hypothesis* suggests that lower partnership quality is associated with increased attention and devotion by one or both parents to compensate for the negative experience of parental discord (Brenning et al., 2017; Kouros et al., 2010). According to this perspective, when partnership quality is high, the parent–child relationship worsens, as the child may be perceived as an intrusion in the partnership (Erel & Burman, 1995). However, most studies show a positive association between interparental partnership quality and the parent–child relationship, thus providing more support for the spillover hypothesis over the compensation hypothesis (Erel & Burman, 1995; Najman et al., 1997).

The effect of other dimensions of partnership quality aside from conflict and tension between parents on child wellbeing has received less attention. Emotional support between parents, such as helping each other, being fair, and showing affection are also important aspects in creating nurturing family environments for children (Hohmann-Marriott, 2008). Using data from the Fragile Families and Child Wellbeing Study, Goldberg and Carlson (2014) find that greater supportiveness between parents is associated with lower levels of children's behavioural problems. Conger et al. (2012) use data from the Family Transitions Project, a three-generation study of more than 500 individuals from early adolescence through adulthood, and show that nurturing and supportive behaviours by a partner significantly reduce the risk of transgenerational continuity of harsh, aggressive, or abusive parenting.

None of these studies specifically focus on the relationship between biological parents and stepparents. Evidence on how the parent–stepparent relationship influences child wellbeing is sparse and largely based on U.S. data. Jensen et al. (2018) use a longitudinal dataset from the U.S. and find no association between partnership quality in stepfamilies, measured on an one-dimensional scale, and adjustment among children aged 10–12 years old. In contrast, Berger and McLanahan (2015) use longitudinal data from the same country to find that high-quality parent–stepparent relationships positively influence children's wellbeing.

In this paper, we provide evidence on how (step-) parent–relationship quality influences child outcome in Germany by applying mediation analysis techniques. In light of the previous research, our guiding research hypothesis is that children who live with their two biological parents will have higher socio-emotional wellbeing than their counterparts who live with a biological parent and a stepparent (Hypothesis 1). We further expect that differences in child wellbeing by family structure partly reflect differences in household SES associated with family structure (Hypothesis 2).

The parents' partnership quality is instrumental for child wellbeing and may also be a relevant mediator, if partnership quality differs by family structure. On the one hand, one may presume that stepfamilies are more fragile than nuclear families. For that reason, poor partnership quality may be a mediator that explains some of the negative effects of living with a stepparent on child outcome (Hypothesis 3a). On the other hand, one could argue that the quality of the partnership in stepfamilies may exceed that of nuclear families. Individuals in stepfamilies have likely left a previous, unsatisfactory relationship, suggesting they may have developed greater clarity about their needs and priorities in a partnership. Additionally, these new relationships are often more recent, which can bring a sense of renewed commitment, effort, and emotional investment as the partners work to establish a strong foundation in their re-formed family. If this assumption holds, one will assume that the negative effect of living with stepparents on children's wellbeing would be mitigated by increased (step-) parental partnership quality (Hypothesis 3b).

Data and methods

Data and analytical sample

The present study is based on data from the Panel Analysis of Intimate Relationships and Family Dynamics (pairfam; Brüderl et al., 2023b) . Pairfam is a longitudinal and dyadic panel study that was initatied in 2008 and collects data on an annual basis. If parents consent, every child between the age of eight and 15 in the anchor household

completes a 15-min questionnaire, starting with the youngest child. Additionally, all children who turned eight during the previous year are included. As soon as children turn 16, they are included in the main respondent (so-called anchor) sample (Brüderl et al., 2023a; Huinink et al., 2011). Pairfam data is of high quality: panel stability is consistently near or above 80% from wave three onwards, and conditional response rates for the child surveys are at 95% for the waves relevant to our analysis (Brüderl et al., 2023a). We have limited our investigation to waves 8–14 (2015–2022), as waves 1–7 do not provide complete information on the outcome of interest. We then paired anchors and their children, excluding childless, single parents, and same-sex couples, as well as outliers (i.e., households with more than four children). Second, we included only the anchor's biological offspring or their adopted, foster, or stepchildren who live with the anchor. Finally, we limited the sample to respondents with valid information on every variable used. The final analytical sample contains 1,781 children in 1,200 family units, completing 4,461 family-year observations (see Table 5 in the Appendix for more information on the selection of the analytical sample).

Variables

Dependent variable

This study uses the validated 'Strengths and Difficulties Questionnaire' (SDQ; Goodman, 1997) to capture child socio-emotional wellbeing. The SDQ is comprised of five scales with five items each. For each scale, children can give three possible answers, coded as 0 'not true', to 1 'somewhat true', and 2 'certainly true'. The total score is obtained by computing the sum of the answer values across four relevant domains: 'Emotional Symptoms' (e.g. *"Many worries"; "Often unhappy, down-hearted or tearful"*), 'Conduct Problems' (e.g. *"Often fights with other children or bullies them"; "Often lies or cheats"*), 'Peer Problems' (e.g. *"Has at least one good friend"; "Generally liked by other children"*), and 'Hyperactivity' (e.g. *"Restless, overactive, cannot stay still for long"; "Sees tasks through to the end, good attention span"*) (Goodman, 1997, p. 482). Where items measured positive indicators, they were inversely recoded (e.g., the 'Peer Problem' item). The total difficulties score can range from 0 to 40, where higher values imply greater difficulties and thus worse socio-emotional wellbeing. For example, a score from 0 to 13 would be close to average, whereas a score from 20 to 40 would signify very high difficulties. The SDQ has been found to repeatedly outperform other measures of child psychiatric assessments, *inter alia* in the German context, underlining the suitability of this instrument for the present study (Klasen et al., 2003). All other variables rely on information gathered from the main respondent (anchor) in the household, which can be the biological parent but also the stepparent.

Independent variables

The main predictor is *family structure,* operationalized based on whether the child lives with both biological parents or with a biological parent and a stepparent. It should be emphasized again that the analysis is at the child level. As a result, children

may live with both their biological parents, but still live in a stepfamily, because children from one parent's prior union are also living in the household. In this case, the child would regardless be labelled as 'living with both biological parents', but their stepsibling from the prior union would not. The variable was constructed following Sawatzki et al. 's (2023) approach. Ideally, we would have liked to disentangle the effect of living in a stepfamily for children who live with a stepparent and children who live with their biological parents. However, the share of complex stepfamilies was too small in the data to allow us to make these distinctions.

Partnership quality is the potential mediator of interest. The couple's partnership quality was operationalised over two items as reported by the anchor. The anchor person is the primary respondent in the household. It may be the biological mother or father, but it may also be the stepfather or the stepmother. The first item that we consider is the frequency of conflict, consisting of the frequency of being annoyed or angry with each other, which is measured on a scale from 1 (Never) to 5 (Always). The second item is the frequency of esteem expressed in the relationship, operationalised over the frequency with which the anchor's partner shows appreciation for the anchor (1-Never to 5-Always). Following common practice in mediation analyses, both items were coded as continuous variables, with the lowest values representing the least frequency (Rhemtulla et al., 2012). Nevertheless, to address potential concerns about linearity in these variables and assess their robustness, a robustness check was carried out where we included the frequency of conflict and esteem as categorical variables in the regression (see Table 6 in the Appendix).

The family's socioeconomic status (SES) is operationalised over the *anchor's educational attainment* and equalized *household income*. Educational attainment was classified as 'low' if the anchor did not obtain any vocational training or university education, 'middle' if the anchor obtained vocational training, and 'high' if the anchor obtained a degree from a technical college or university. The equivalized net household income was calculated using the modified OECD scale. Households were classified as low-income if their deflated net equivalence income was below 1,300 €, which approximately constitutes the 2023 at-risk-of-poverty threshold for Germany (Statistisches Bundesamt [Destatis], 2024). Middle-income households were those with a net equalised monthly income between 1,300 and below 2,500 €, whereas high-income households were those with a net equivalent monthly income of 2,500 € or more.

Control variables

We control for a set of variables that are likely to affect child wellbeing. The *anchor's gender* was included as a binary variable (male/female). We also included a variable capturing whether the household residence is in former *East or West Germany*. Information on whether the anchor has a *migration background* was included as well (yes/no). We further control for *children's gender* (male/female) and *children's age* (7–12 years/13–16 years). Additionally, the *number of children* living in the household is controlled for. In the selection of controls, we largely follow the strategies of prior research in the area (Painter & Levine, 2000). However, it should be noted that there is a certain risk of overspecification. Stepfamilies often have more children than nuclear families because there

is a tendency to cement a partnership over joint children (Kreyenfeld & Heintz-Martin, 2012). Thus, family size may not be an exogenous variable but be intertwined with family type. However, dropping this variable from the analysis led to almost identical results.

Analytical strategy

As a first step, we employ ordinary least squares (OLS) regression, where the main independent variable is whether the child lives with both biological parents or only with one biological parent and a stepparent, and additionally consider parental partnership quality (Model 1) as well as socioeconomic characteristics (Models 2). Standard errors are robust and clustered on the household level to account for the nested data structure, as multiple children in our sample may belong to the same household. Then, we conduct a mediation analysis to investigate whether parental partnership quality mediates the relationship between family structure and child wellbeing. We use bootstrapped confidence intervals to estimate the reliability of the results (Hayes, 2009). All models include fixed effects for the survey year. It should be noted that the pairfam-data is a longitudinal and dyadic data set. However, we do not use the longitudinal features and instead treat it as pooled cross-sectional data. The reason is that methodological approaches that exploit both longitudinal and dyadic features in mediation analysis are highly complex and data-intensive, requiring large sample sizes for each observation period.

Mediation analysis approach

Mediation analysis has been established as a powerful statistical method in which the causal pathways between independent and dependent variables can be explored through intermediary variables, known as mediators (Hayes, 2022). This approach allows the identification of the specific means through which two known variables may relate beyond an apparent association, namely through a mediator variable, hence mediation analysis has been further developed to incorporate interactions between independent and mediator variables (van der Weele & Vansteelandt, 2009). Several developments in mediation analysis have been proposed since its original formulation by Baron and Kenny (1986), including a more recent approach which accounts for potential confounders that may simultaneously affect the treatment and the outcome (see also Imai, Keele, Tingley, & Yamamoto 2011; Imai et al., 2010a, 2010b). Accounting for potential confounders ensures that both the exposure-outcome relationship and the mediator-outcome relationship are not biased by these confounding variables. Particularly when considering the intricacies involved in social relations and the interconnected processes to which families are constantly exposed, this technique serves as a useful tool to unravel the causal mechanisms in the direct association between demographic family characteristics and wellbeing outcomes.

For addressing our research hypotheses, we employ a causal mediation analysis to investigate the potential pathways in which family structure may affect child wellbeing. We theorise a mediation relationship through relationship quality, a third variable that could explain the underlying mechanism driving the association (Mencarini & Vignoli, 2018). The goal of our mediation analysis is to understand if the relationship of an independent variable X (family structure) on a dependent variable Y (child socio-emotional wellbeing) is mediated through the mediator M (parental partnership quality).

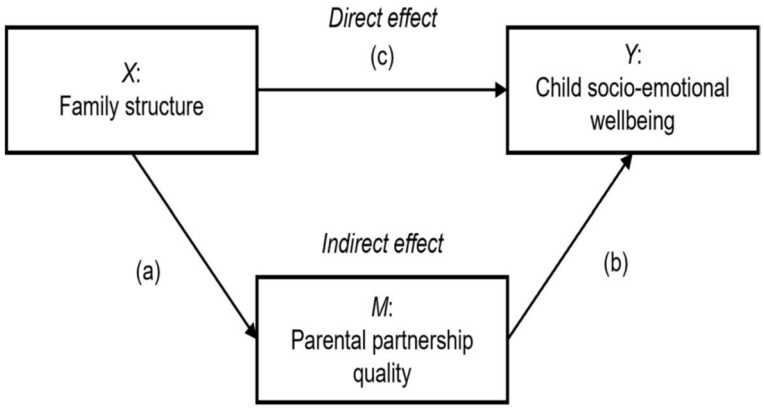

Fig. 1 Proposed mediation model of the effect of family structure on child socio-emotional wellbeing, mediated by parental partnership quality

More specifically, the analysis estimates the indirect effect of children living with a biological parent and a stepparent—compared to those living with both biological parents—on the outcome variable, mediated by either conflict or esteem frequency. We consider the two links that form the indirect effect (a) the effect of family structure on parental partnership quality and (b) the effect of parental partnership quality on child socio-emotional wellbeing, as shown in Fig. 1. Additionally, the model measures the direct effect (c) of living with a biological parent and a stepparent (as opposed to both biological parents) on the outcome. Exploring the total effects (the sum of indirect and direct effects) can help clarify the causal pathway between these three variables, revealing how each factor contributes to the relationship. A set of control variables is included to adjust for potential confounding in each pathway.

Results

Descriptive statistics

Table 1 presents the weighted sample statistics by the child's co-residence status with their parents. On average, the SDQ-score is 9.41 (on a scale from 0 to 40) for children living with both biological parents and 10.53 for children living with one biological parent and a stepparent ($p < 0.001$; see Fig. 2 in the Appendix for the distribution of the outcome variable by family type). When examining parental partnership quality, children living with both biological parents experience a slightly higher average frequency of parental conflict than those living with one biological parent and a stepparent ($p < 0.01$). By contrast, children living with a biological parent and a stepparent experience a higher frequency of parental esteem than their counterparts in nuclear families ($p < 0.001$). Note that Table 1 only displays mean values and that the distribution of the two variables measuring partnership quality is more heterogeneously distributed in stepparent–biological parent partnerships than in partnerships between two biological parents: While the former are more frequently characterised by high esteem and low conflict, they are also more prone to a climate of very low esteem and very high conflict compared to the latter (see Figs. 3 and 4 in the Appendix). These findings highlight the complex and competing implications of repartnering after separation, as new couples navigate economic stress and changing parenting arrangements, but at the same time benefit from

Table 1 Sample statistics, mean and column %, by child's co-residence. Standard deviation in parentheses

	Child lives with both biological parents	Child lives with a biological parent and a stepparent	Overall
Child: SDQ-score	9.41 (5.08)	10.53 (6.05)	9.47 (5.15)
Parent: Frequency of conflict with resident partner	2.56 (0.69)	2.51 (0.88)	2.56 (0.71)
Parent: Frequency of esteem from resident partner	3.54 (0.84)	3.64 (0.97)	3.54 (0.85)
Parent: Age (years)*	42.37 (4.77)	37.99 (5.31)	42.11 (4.91)
Parent: Gender*			
Male	46.66	23.01	45.26
Female	53.34	76.99	54.74
Parent: Education*			
Low	12.22	28.71	13.20
Middle	54.80	59.80	55.09
High	32.98	11.49	31.71
Parent: Migration background*			
No migration background	68.64	72.86	68.89
Migration background	31.36	27.14	31.11
Child: Age			
Child (7–12 years)	65.42	61.59	65.19
Adolescent (13–16 years)	34.58	38.41	34.81
Child: Gender			
Male	50.51	44.81	50.17
Female	49.49	55.19	49.83
Family: Place of residence			
East Germany	15.09	24.22	15.63
West Germany	84.91	75.78	84.37
Family: Number of children in household			
One child	11.28	25.32	12.11
Two children	48.09	46.88	48.01
Three children	29.82	12.44	28.79
Four children	10.82	15.36	11.08
Family: Equivalized household income			
0 and up to 1,300	14.67	33.87	15.81
1,300 and up to 2,500	66.30	53.15	65.52
2,500 and more	19.02	12.98	18.67
Observations	4,164	297	4,461

Source: pairfam waves 8–14 (2015–2022). *Note:* Weighting was performed using one of the ready-to-use calibrated design weights supplied by pairfam (*cd2weight*), which adjusts the data to the target population and controls for baseline survey participation and panel attrition bias. *Information from the adult anchor respondent

companionship, happiness, and support. As expected, Table 1 also reveals substantial differences in socio-economic status between the two comparison groups: Equalized household income is substantially lower for children who live with a stepparent compared to those living with both biological parents.

Regression results

Table 2 presents main results of the OLS regression models (see Table 7 in the Appendix for full results). Model 1 shows that children who live with a stepparent have higher

Table 2 OLS-regression: outcome variable children's SDQ-scores (range 0–40)

	Model 1			Model 2		
	β	SE		β	SE	
Child lives with both biological parents	*Ref*			*Ref*		
Child lives with one biological parent and one stepparent	1.20	0.63	*	1.10	0.63	*
(Anchor) Parent: Frequency of conflict with resident partner	0.27	0.17		0.29	0.17	*
(Anchor) Parent: Frequency of esteem from resident partner	− 0.30	0.16	*	− 0.27	0.16	*
(Anchor) Parent: Education						
Low				*Ref*		
Middle				0.15	0.54	
High				− 0.16	0.56	
Family: Equivalent household Income						
0 and up to 1,300				*Ref*		
1,300 and up to 2,500				− 0.89	0.37	**
2,500 and more				− 1.10	0.45	**
Observations	4,461			4,461		
R^2	0.03				0.04	

Note: Further control variables are gender and age of child and responding parent, number of children in the household, migration background, East/West Germany (for full list of models, see Table 7 in the Appendix). Information comes from the adult anchor respondent. The models control for survey wave and are presented with clustered robust standard errors. Significance: *** p-value < 0.01 ** p-value < 0.05 * p-value < 0.1

SDQ-scores than those who live with both their biological parents ($\beta = 1.20$, $p < 0.1$). Additionally, higher frequency of esteem from the parent's partner is associated with lower SDQ-scores ($\beta = -0.30$, $p < 0.1$), indicating greater child wellbeing as esteem within the partnership increases, whereas frequency of conflict is associated with an increase in SDQ-score, though non-significant ($\beta = 0.27$, $p > 0.1$).

Model 2 accounts for socioeconomic variables. Adding these confounders attenuates the effect of the parameter that measures whether the child lives with both biological parents ($\beta = 1.10$, $p < 0.1$). This suggests that parental income explains some of the differences in wellbeing of children who live with their biological parents and those who live with a stepparent. Moreover, after adjusting for sociodemographic factors, conflict frequency becomes a significant predictor, with each unit increase in conflict associated with a 0.30-point increase in SDQ-scores ($p < 0.1$), pointing at an association between financial and relationship stress. While we find a strong negative relationship between parental income and SDQ-scores, we do not find that parental education significantly relates to SDQ-scores. Although the explained variance by Models 1 and 2 is modest ($R^2 = 0.03–0.04$), this is consistent with prior

research on child wellbeing outcomes, due to the complex and multifactorial nature of child socio-emotional development (see for example Goldberg & Carlson, 2014; Hess, 2021). Table 6 in the Appendix displays the robustness check with parental partnership quality coded as categorical variables (low, middle, or high). This analysis supports the initial findings, with associations of greater frequency of conflict with higher SDQ-scores and greater frequency of esteem with lower SDQ-scores.

Mediation analysis

Table 3 reports the results from the mediation analysis, with frequency of conflict considered as a mediator of the association between family structure and child wellbeing. The analysis reveals a positive Average Direct Effect (ADE) for children who live with a stepparent ($\beta = 1.07$; $p < 0.01$), independent of the mediation pathway. The indirect effect

Table 3 Causal mediation analysis for frequency of conflict in the parental relationship

	ADE (Direct Effect)			ACME (Indirect Effect)			Total Effect		
	β	95% CI		β	95% CI		β	95% CI	
Child lives with both biological parents	*Ref*								
Child lives with biological parent and stepparent	1.07	0.42; 1.72	***	− 0.02	− 0.07; 0.00	*	1.05	0.39; 1.71	***
Observations	4,461								

Note: The underlying model controls for demographics (children's and anchor parents' age and gender as well as place of residence), socio-economic characteristics (anchor parents' education and household income), and survey wave. Significance: *** p-value < 0.01 ** p-value < 0.05 * p-value < 0.1

Table 4 Causal mediation analysis for frequency of esteem in the parental relationship

	ADE (Direct Effect)			ACME (Indirect Effect)			Total Effect		
	β	95% CI		β	95% CI		β	95% CI	
Child lives with both biological parents	*Ref*								
Child lives with a biological parent and a stepparent	1.10	0.46; 1.77	***	-0.06	− 0.11; − 0.01	***	1.04	0.40; 1.71	***
Observations	4,461								

Note: Results are presented with robust standard errors. The underlying model controls for demographic (children's and focal parents' age and gender as well as place of residence), socio-economic characteristics (anchor parents' education and household income), and survey wave. Significance: *** p-value < 0.01 ** p-value < 0.05 * p-value < 0.1

mediated by conflict is small and weakly significant. Still, it is worth noting that 1.9% of the effect of family structure on child wellbeing is mediated by frequency of conflict, indicating that a small share of the total effect of family structure is explained through differences in conflict frequency.

Table 4 displays the mediation analysis for frequency of esteem. We also find that the ADE of family structure is positive and significant ($\beta = 1.10$; $p < 0.001$), indicating that children living with a stepparent have higher SDQ-scores than those living with both biological parents, net of the mediation pathway. The indirect effect, mediated by parental esteem, is -0.06, which explains 5.7% of the effect of family structure on child SDQ-scores. This indirect effect indicates that high esteem between parents in stepfamilies could benefit the child by lowering SDQ-scores. A positive total effect for children who live with a stepparent ($\beta = 1.04$; $p < 0.001$) suggests that when combining both direct and indirect effects, living with a stepparent has a significant negative impact (i.e., increased SDQ-scores) on children's socio-emotional wellbeing. Overall, we find a partial mediation for frequency of esteem (see Figs. 5 and 6 in the Appendix for a robustness checks of the causal mediation analysis).

Discussion and conclusion

This study examined how family structure, specifically living with a biological parent and a stepparent compared to living with both biological parents, relates to children's self-reported socio-emotional wellbeing. Using data from the Panel Analysis of Intimate Relationships and Family Dynamics (pairfam), we examined how partnership quality between parents, measured through conflict and esteem frequencies, mediates the effects of family structure on child wellbeing. While a substantial body of research has investigated the relationship between family structure and child wellbeing, this analysis answers recent calls to integrate family dynamics by focussing on 'family climate' to better understand the impact of family diversity on child outcomes (Herke et al., 2020). Furthermore, this study extends the literature by specifically analysing children's self-reported wellbeing and examining how it relates to the family structures they live in.

The OLS-regression results revealed a significant association between living with a stepparent and child's self-reported socio-emotional wellbeing. Children living with a stepparent consistently show higher SDQ-scores, indicating greater behavioural and emotional challenges compared to those living with both biological parents. This association attenuated but remained strong and significant after controlling for sociodemographic variables (parental age, gender, migration background, and current residence as well as children's age and gender) and SES (educational attainment and equalized household income).

The mediation analysis further explored how parental partnership quality influences the relationship between living with a stepparent and child wellbeing. Overall, the analysis revealed a strong direct effect of living with a stepparent and reporting lower socio-emotional wellbeing. Conflict did not turn out to be a strong mediator. However, esteem frequency shows a partial mediation effect, where higher levels of esteem between parents increase socio-emotional wellbeing. Our descriptive analysis had shown that relationships between the stepparent and the biological parent are often characterised by higher esteem than relationships between two biological parents. Children seem to

benefit from this positive feature of these relationships. Our results align with Berger and McLanahan's (2015) findings that high parental partnership quality can serve as a protective factor for children's socio-emotional development. Within stepfamilies, higher parental partnership quality often protects children from having worse outcomes. Together, these insights emphasise the critical role of esteem frequency between stepparent and biological parent in shaping the adverse effects associated with stepfamily membership and the adverse effects of parental union dissolution.

While this paper provides a valuable extension of the literature, several limitations need to be acknowledged. First, our indicator of partnership quality may be limited, as many studies that report stronger associations between family climate and child wellbeing use more methodologically complex measures (Herke et al., 2020; Phillips, 2012). Second, this analysis focussed on the relationship between the biological parent and stepparent, but we did not account for the relationship between the child and the nonresident parent which may be an important further dimension that may influence child wellbeing. Unfortunately, sample sizes were too small to study this relevant additional dimension. Third, we do not account for selective union dissolution. Partnerships of poorer quality may have already dissolved and are therefore not included in our analysis. This selection bias may be particularly pronounced among stepfamilies, as these unions tend to have shorter durations on average, and only those that have remained intact are observed in the data. Related, there is great heterogeneity in stepfamilies, with some experiencing lower esteem and higher conflict than nuclear families. The elevated esteem in stepfamilies may be partly due to the shorter duration of these unions, making them less directly comparable to nuclear families. The relatively high uncertainty in our estimates likely reflects this heterogeneity within stepfamilies. While some stepfamilies provide stable, supportive environments, others experience high levels of conflict and instability, as reflected in the wider distribution of conflict and esteem levels. However, the limited number of stepfamilies in our sample restricts our ability to explore this variation in greater depth. Future research could aim to better capture this within-group diversity, which is essential to understanding the range of experiences among children in stepfamilies.

Software Statement

Statistics were done using R Version 4.4.1 (R Core Team 2022), the dplyr (wickham et al., 2021a), the estimatr (Blair et al., 2022), the forcats (Wickham, 2021b), the GGally (Schloerke et al., 2024), the ggplot2 (Wickham, 2016), the gtsummary (Sjoberg et al., 2021), the haven (Wickham & Miller, 2021), the kableExtra (Zhu, 2021), the lmtest (Zeileis & Hothorn, 2002), the mediation (Tingley et al., 2013), and the tibble (Müller & Wickham, 2021) package.

Appendix

See Figs. 2, 3, 4, 5, and 6 and Tables 5, 6, and 7.

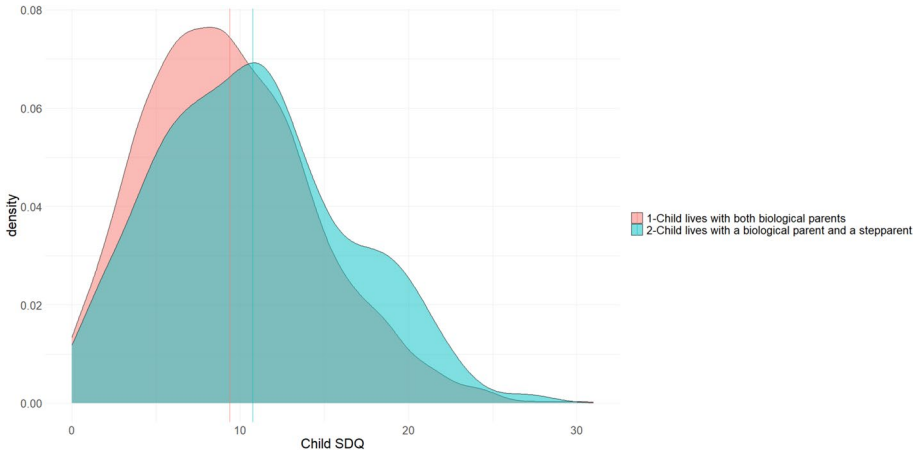

Fig. 2 Density plot and mean of outcome variable child SDQ-score (range: 0–40) by co-residence of the child with their parents. *Source*: pairfam wave 8–14, own illustration

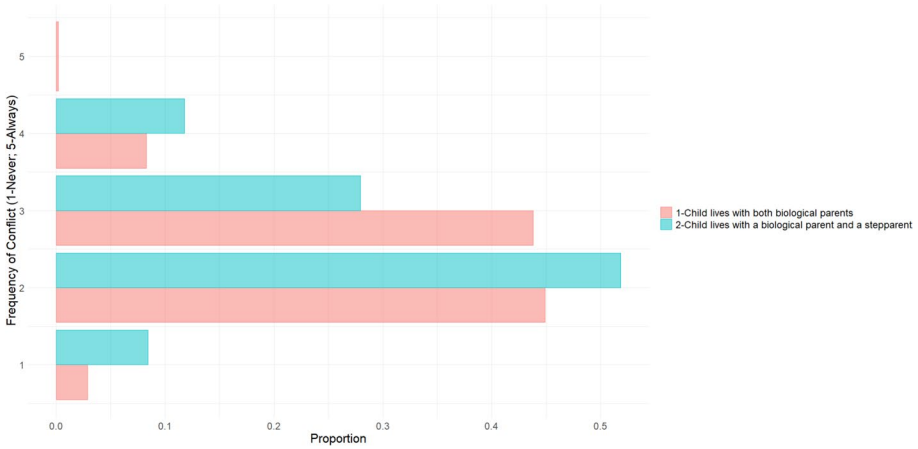

Fig. 3 Frequency distribution of conflict by co-residence of the child with their parents. *Source*: pairfam wave 8–14, own illustration. *Note:* The response '5-Always' was rarely selected by respondents and is therefore barely visible in the figure

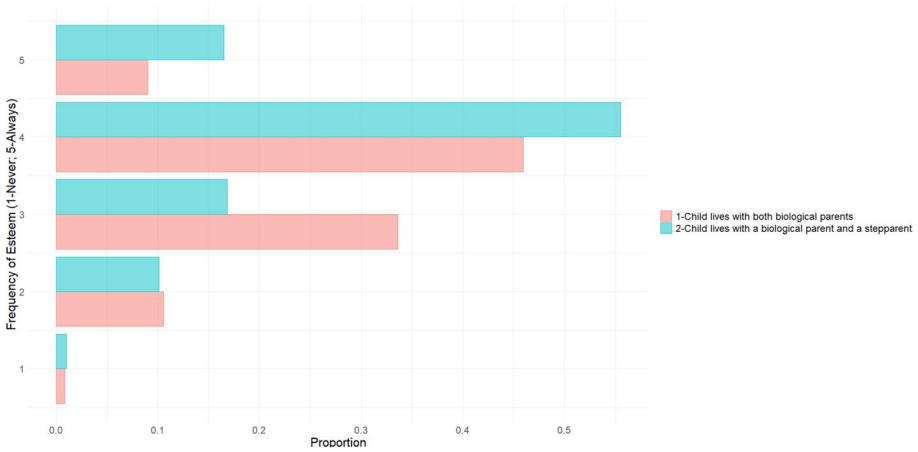

Fig.4 Distribution of esteem by co-residence of the child with their parents. *Source*: pairfam wave 8–14, own illustration

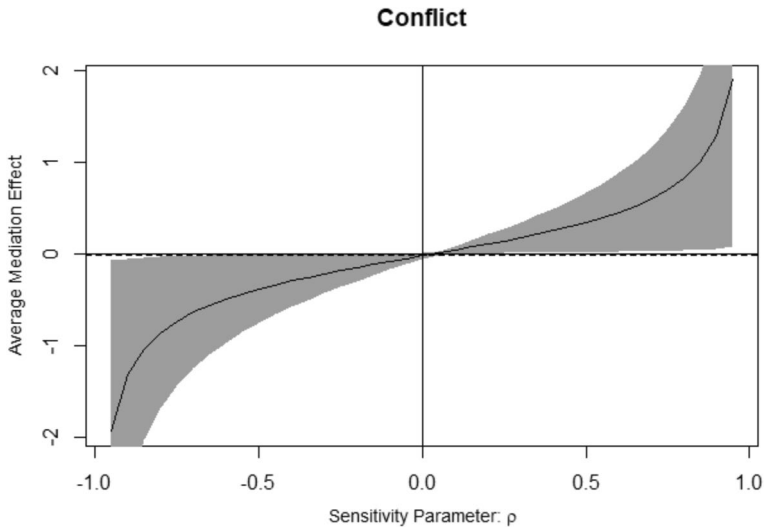

Fig. 5 Sensitivity analysis for sequential ignorability of mediation model with conflict as mediator of family structure and child wellbeing. *Note:* The sensitivity analysis indicates that the mediation effect of esteem is sensitive to unobserved confounding. The effect changes direction and crosses zero as ρ changes, suggesting that even small correlations between the errors could significantly alter the mediation effect. The results should be interpreted with caution, particularly regarding the potential for unobserved confounders affecting both the mediator and the outcome

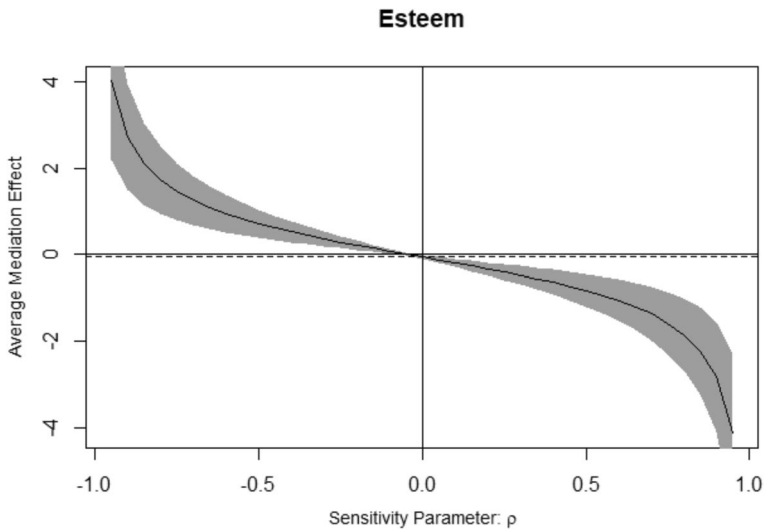

Fig. 6 Sensitivity analysis for sequential ignorability of mediation model with esteem as mediator of family structure and child wellbeing. *Note:* The sensitivity analysis indicates that the mediation effect of esteem is sensitive to unobserved confounding. The effect changes direction and crosses zero as ρ changes, suggesting that even small correlations between the errors could significantly alter the mediation effect. The results should be interpreted with caution, particularly regarding the potential for unobserved confounders affecting both the mediator and the outcome

Table 5 Selection of the analytical sample

Sample	Observations
All anchor-child pairs	7,559
All heterosexual respondents living with a partner	6,517
Households with at least one and less than five biological or stepchildren	6,359
Relevant households with valid information on key variables	4,461

Table 6 OLS-regression: outcome variable children's SDQ-scores (range: 0–40)

	β	SE	
Child lives with both biological parents	*Ref*		
Child lives with one biological parent and one stepparent	1.20	0.63	*
(Anchor) Parent: Frequency of conflict with resident partner			
Low (1–2)	*Ref*		
Middle (3)	0.16	0.54	
High (4–5)	− 0.13	0.56	
(Anchor) Parent: Frequency of esteem from resident partner			
Low (1–2)	*Ref*		
Middle (3)	− 0.62	0.34	*
High (4–5)	− 0.87	0.38	**
(Anchor) Parent: Education			
Low	*Ref*		
Middle	0.16	0.54	
High	− 0.13	0.56	
Family: Equivalent household Income			
0 and up to 1,300	*Ref*		
1,300 and up to 2,500	− 0.89	0.37	**
2,500 and more	− 1.1	0.44	**
Observations	4,461		
R^2	0.04		

Note: Further control variables are gender and age of child and responding parent, migration background, East/West Germany. Information comes from the adult anchor respondent. The models control for survey wave and are presented with clustered robust standard errors. Significance: *** p-value < 0.01 ** p-value < 0.05 * p-value < 0.1

Author contributions

LW conceptualised the study, developed the theoretical framework, and was responsible for the statistical analysis. SM conducted the literature review and synthesis, drafted the discussion and contributed to proofreading and final editing of the manuscript. EAP contributed to statistical analyses and was responsible for interpreting results, as well as drafting the methods and results sections. MK wrote the introduction, contributed to proofreading and editing and supervised the overall research process. All authors have reviewed and approved the final manuscript and are accountable for their respective contributions.

Funding

Open Access funding enabled and organized by Projekt DEAL. The study was funded by the Einstein Foundation Berlin (EZ-2019–555-2) and by the German Research Foundation (DFG) (390285477/ GRK 2458). We acknowledge support by the Open Access Publication Fund of Humboldt-Universität zu Berlin.

Data availability

This study uses data from the pairfam relationship and family panel, which was led by Josef Brüderl, Sonja Drobnič, Karsten Hank, Johannes Huinink, Bernhard Nauck, Franz J. Neyer and Sabine Walper. The study was funded by the German Research Foundation (DFG) from 2004 to 2022.

Table 7 OLS-regression: outcome variable children's SDQ-scores (range: 0–40)

	Model 1			Model 2		
	β	**SE**	**p**	**β**	**SE**	**p**
Child lives with both biological parents	*Ref*			*Ref*		
Child lives with one biological parent and one stepparent	1.20	0.63	*	1.10	0.63	*
Parent: Frequency of Conflict with Resident Partner	0.27	0.17		0.30	0.17	*
Parent: Frequency of Esteem from Resident Partner	− .30	0.16	*	− .27	0.16	*
Parent: Age	− 0.13	0.03	***	− 0.11	0.03	***
Parent: Gender						
Male	*Ref*			*Ref*		
Female	− 0.35	0.29		− 0.37	0.29	
Parent: Place of Residence						
East Germany	*Ref*			*Ref*		
West Germany	− 0.42	0.29		− 0.36	0.29	
Parent: Migration Background						
No	*Ref*			*Ref*		
Yes	− 0.05	0.34		− 0.08	0.34	
Child: Age						
Child (7–12 years)	*Ref*			*Ref*		
Adolescent (13–16 years)	− 0.69	0.19	***	− 0.75	0.19	***
Child: Gender						
Male	*Ref*			*Ref*		
Female	− 0.39	0.23	*	− 0.38	0.23	*
Family: Number of children in household	0.04	0.19		− 0.01	0.19	
Parent: Education						
Low				*Ref*		
Middle				0.15	0.54	
High				− 0.16	0.56	
Family: Equivalent household Income						
0 and up to 1,300				*Ref*		
1,300 and up to 2,500				− 0.89	0.37	**
2,500 and more				− 1.10	0.45	**
Observations	4,461				4,461	
R^2	0.03				0.04	

Note: Information comes from the adult anchor respondent. The models control for survey wave and are presented with clustered robust standard errors. Significance: *** p-value < 0.01 * p-value < 0.05 * p-value < 0.1

Declarations

Competing interests

The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Received: 26 November 2024 Accepted: 16 August 2025
Published online: 12 November 2025

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