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Does union type make a difference when you separate? Frequency of father–child contact and father’s satisfaction with the relation

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Abstract

Growing separation and divorce rates have attracted scholars’ attention to the association between relationship breakup and the relations between fathers and their minor children. Pre-separation life course events and characteristics may influence this relationship. One important characteristic to be considered is the type of union in which ex-partners were in. In this article, we study the association between previous union type and post-dissolution father–child face-to-face contact and father’s satisfaction with the relationship, before and after controlling for factors related to selection into a cohabiting union. Using pooled data from the first wave of the Generations and Gender Survey for 11 European countries, it is shown that, models that do not control for characteristics typically connected with selection into different union types suggest that previously cohabiting fathers have less intensive contact with their child(ren) and are less satisfied with the relationship with their minor children. Taking into consideration the main socio-demographic father and child’s characteristics, this difference turns out not to be statistically significant. This research suggests that union type does not make a difference, confirming most previous studies of single European countries.

Keywords: Cohabitation, Divorce, Partnership dissolution, Father–child relations

Introduction

Unmarried cohabitation has become a common experience for a large part of the European population and also, more recently, a common context for childbearing (Sobotka & Toulemon, 2008). Childbearing within cohabitation is also rapidly increasing in European societies: the proportion of births outside marriage in the EU28 has more than doubled in the last decades, i.e., from 19.7% in 1993 to 41.1% in 2013 of all live births (Eurostat, 2018). At the same time, it has been observed that cohabitations tend to be less stable than marriages (Andersson & Philipov, 2002; Liefbroer & Dourleijn, 2006; Musick & Michelmores, 2015; Žilinciková, 2017). Therefore, the number of children experiencing the dissolution of these unions across Europe is increasing and will probably continue to increase at a significant rate in the near future (Bumpass & Lu, 2000;

Liefbroer & Dourleijn, 2006). Analyzing the specific conditions of parent–child relations after the breakup of a cohabiting union, therefore, is becoming increasingly relevant when examining families' linked lives and the bidirectional influence of family members' life courses (Shapiro & Cooney, 2007).

Partnership instability has been increasing substantially across Europe in recent decades and the phenomenon has attracted scholars' attention. Studies of the causes of marital separation and its consequences on the well-being of ex-partners, their children, and parents have flourished. Many of these studies have focused on the short- and long-term effects of union dissolution on parent–child relations. As fathers have a higher risk of post-separation deterioration of parent–child relations compared to mothers, particular attention has been devoted to the study of the effect of the marital dissolution on father–child relations (e.g. Albertini & Garriga, 2011; Daatland, 2007; Davey et al., 2007; Härkönen et al., 2017; Kalmijn, 2013a, 2013b; Shapiro & Cooney, 2007). One limitation of this literature, however, is that it has mainly focused on how father–child relations are affected by parental divorce while neglecting to address the effect of the dissolution of non-marital unions. To take into account this phenomenon, some studies have treated divorce and non-marital partnership dissolution as equivalent (e.g., Seltzer, 1991) or distinguished union type at the birth of a child rather than at the moment of partnership dissolution (e.g., Aquilino, 2006; Cheadle et al., 2010; Hofferth et al., 2010; Köppen et al., 2018; Seltzer, 1991; Swiss & Bourdais, 2009). This approach, however, runs the risk of confounding different phenomena and effects.

An analysis of the association between parents' marital status before the breakup and later father–child relations, in the European context, is important. Selection into unmarried cohabitation and childbearing within cohabitation is quite different from selection into marriage and parenthood within marriage. For example, cohabiting and married couples tend to differ regarding their age, educational level, commitment to the relationship, and the educational gradient in childbearing (Kiernan, 2001, 2004; Nazio & Saraceno, 2013; Nazio, 2008; Perelli-Harris et al., 2010; see also "Does union type make a difference? Selection" section). Thus, if the characteristics of the two groups are systematically and significantly different, then one may expect that the consequences of their union dissolution are also different. Empirical evidence of these (potential) different consequences, however, is meagre and mixed. Previous research on the U.S. has found that the consequences of separation from cohabitation on father–minor child relations are different than those experienced by previously married fathers—in particular in terms of father–child contact frequency (Cheadle et al., 2010; see also "Father–child relations and involvement after union dissolution" section). The empirical evidence from Europe, on the other hand, is different. In Germany, the United Kingdom, and Norway no significant differences were found in non-resident father–child contact frequency following marital or nonmarital separation (Haux & Platt, 2020; Köppen et al., 2018; Skevik, 2006). Significant differences between previous union types were, on the other hand, reported by a Lithuanian study (Maslauskaitė & Tereškinas, 2017).

This paper aims to analyze the extent to which there is a difference between the dissolution of cohabitation and that of a marriage in terms of the post-dissolution relations between fathers and their minor children in the European context. We do that using a pooled sample of 11 countries participating in the Generations and Gender Survey and

additionally by introducing an interaction between union type and country of residence. On one hand, the limited statistical power of the data set does not allow for fitting our models separately for each of the 11 countries. This of course suggests particular caution when projecting these findings on specific European societies or countries not included in the analytical sample. On the other hand, using pooled data and country interactions allows us to explore common underlying relations between fathers', child's, and ex-couple characteristics and post-separation father–child relationships, and at the same time search for some empirical evidence of a possible difference in the association across different European societies. In particular, we focus our attention on factors associated with two outcomes: the frequency of face-to-face contact between the non-resident father and his children, a measure of the intensity of the relations; and the father's satisfaction with the relationship, which can be seen as a proxy of the quality of the father–child relations after the separation, at least from the point of view of the father. Additional empirical evidence from the European context will contribute to shedding more light on the association existing between the life courses of different generations within the family and, in particular, on the extent to which parents' partnership formation patterns may or may not affect the parent–child relationship following partnership breakup. Finally, we aim at exploring if the association is similar across 11 European countries and if the previous findings are confirmed in a range of European countries.

In the context of increasing diffusion of cohabitation unions, childbirths in these unions, and separation rates, our empirical results will help shed light on the existence (or absence) of differences in post-dissolution father–child relations by union type and, also provide some evidence on the efficiency of the institutions of marriage and divorce in establishing more frequent or satisfactory contact between a non-resident father and his child(ren).

Background and hypotheses

Father–child relations and involvement after union dissolution

The relevance of studies of father–minor child relations after union dissolution is growing. First, in various European countries—also as a consequence of changing laws on divorce and custodial arrangements—there has been an important increase in the proportion of union dissolutions that are followed by arrangements that attribute a significant role to the father in both legal and physical custody of the minor child (Claessens & Mortelmans, 2018).¹ Second, fathers' involvement in bringing up children is growing, particularly among the more educated social strata (Dotti Sani & Treas, 2016; Henz, 2017; Sullivan et al., 2014; Westphal et al., 2014). Therefore, preserving these relations after union dissolution may be critical for guaranteeing the well-being of minor children and non-resident fathers, perhaps with the exception of cases with a high level of inter-parental conflict (Amato & Gilbreth, 1999; Elam et al., 2016; Kalmijn, 2016; Westphal et al., 2014). Third, it has been found that the negative effect of parental separation on father–minor child relations lasts for many decades after the breakup when the child becomes an adult, and this, in turn, not only negatively affects children's well-being but

¹ For instance, in Sweden in 2013 about 35% of minor children with divorced parents lived alternately with both parents, three decades earlier it was only 1% of these children who lived equally much with both their parents (Statistics Sweden, 2014).

also significantly increases the risk of social isolation among fathers and lack of informal care for them in later life (Albertini & Garriga, 2011; Albertini & Kohli, 2017). In the long run, the increasing instability of marriages and cohabitations may lead to a growing number of elderly men who are socially isolated and de facto kin-less and need public support to cope with the difficulties of old age.

Divorce, or the separation of a non-marital co-resident union, deteriorates the relationship between a parent and a minor child. This is usually accountable for the conflict and stress connected with the dissolution (Kaufman & Uhlenberg, 1998) and the loss of contact due to the disruption of co-resident patterns (Bastaits & Mortelmans, 2017). Traditionally, fathers are at a greater risk of breaking bonds with their children, as they gain physical custody of their children less often than mothers. As a result, the involvement between a father and a child decreases, and the interaction becomes less frequent. Fathers who are most at risk of losing contact with their children are usually those who divorced early in the lives of their children, i.e., fathers who had a shorter time to build a foundation for social exchange after a partnership dissolution (Bulcroft & Bulcroft, 1991).

Previous research provided abundant evidence that union dissolution brings a deterioration in relations between fathers and their children, both in the short and long term. These findings were confirmed according to a number of indicators of the father–child relationship. The intensity of contact between fathers and children is negatively affected by parental divorce (Albertini & Garriga, 2011; De Graaf & Fokkema, 2007; Kalmijn, 2015b; Seltzer, 1991); negative associations are also found regarding the exchange of financial, social and emotional support between fathers and children (Daatland, 2007; De Jong Gierveld & Peeters, 2003; Kalmijn, 2007) and with respect to fathers' satisfaction with the overall quality of their relationship with their children (Booth et al., 2007; Kalmijn, 2015a). These negative associations tend to be more pronounced for those fathers who are less educated, were less involved in the upbringing of their children, and had less gender–equal partnership relations (Westphal et al., 2014).

While the study of father–child relationships following divorce has been given significant attention, only recently has been the attention drawn to father–child relationships after the dissolution of non-marital partnerships and, thus, on the role of previous parent's life course choices on later consequences of relationship dissolution.

Previous studies of the consequences of cohabitation dissolutions on the intensity of father–child relations report mixed findings. While the studies from the U.S. find that non-resident separated fathers who were not married to the mother of their children (measured either at childbirth or before the separation) have less frequent contact and interaction with their children than divorced fathers (Cheadle et al., 2010; Cooksey & Craig, 1998; Hofferth et al., 2010). Research using data from European countries shows more heterogeneous results and suggests adopting a more balanced view when comparing different previous union types. Maslauskaitė and Tereškinas (2017), analyzing the Lithuanian case found a similar association as the U.S. studies: formerly cohabiting fathers had less contact with their children than those separating from marital unions. On the other hand, Köppen et al. (2018) using German data, found that there were no significant differences between men who had been living in marital and cohabiting unions at first childbirth. Similarly, Haux and Platt (2020) using British data, and Skevik (2006) using Norwegian data showed that there was either no difference in the level of

contact between fathers who were cohabiting or married before separation or an even higher frequency of contact among formerly cohabiting fathers.

In general, studies of the consequences of divorce and cohabitation breakup on the quality of father–child relations are less common than those looking at the intensity of the relation. To the best of our knowledge, there is no study addressing the difference in the satisfaction with the relationship with nonresident children between formerly cohabiting and married fathers. Satisfaction with the relationship is likely to correlate with the frequency of contact (Dyer et al., 2018). However, satisfaction tells us more about the quality of the relationship. If the face-to-face contact is scarce but of a high quality it may lead to higher satisfaction with the relationship than in cases when contact is more frequent but of lower quality. In addition, the relationship may be fostered through other channels of contact (e.g., phone, web) which are not captured when asking about face-to-face contact. Investigating both the frequency of the contact as well as satisfaction with the relationship provides a more articulated picture of the post-dissolution father–child relationship.

Does union type make a difference? Institutional and social context

The legal and social context in which the partnership dissolution takes place is expected to influence the post-dissolution involvement of formerly cohabiting and married fathers. First, married fathers are in a better and more straightforward legal position toward their children than cohabiting fathers, as they usually gain paternity and legal custody automatically with the birth of a child. Unmarried fathers, on the other hand, often need to apply for paternity and/or legal custody, and the consent of the mother is usually requested from the authorities in most European countries (Perelli-Harris & Gassen, 2012). The situation at the partnership breakup is also less straightforward in the case of cohabiting parents. Whereas the legal procedure accompanying divorce helps non-resident fathers to establish regular contact with their children, unmarried fathers, on the other hand, may not turn to the court for mediation of contact following a cohabitation breakup.

Second, the social context in which cohabitation dissolution takes place also appears as an important factor in its consequences. As reported above for the intensity of post-dissolution involvement, the negative association between cohabitation and post-dissolution involvement was found in the US and Lithuania, but this finding was not confirmed in western and northern European countries (Norway, UK, and Germany). Even though these studies do not employ comparable designs, they point to cross-national variations in the effect and, possibly, to a systematic difference between the American and (part of) the European context.

Meaning of cohabitation, the proportion of children born to cohabiting unions and acceptance of childbearing to cohabitation varies between European countries (Hiekel, 2014; Kiernan, 2004; Perelli-Harris et al., 2010). To illustrate, Andersson et al. (2017) show that births to cohabiting women comprise more than half of the births in Sweden, between 33 and 39% in France, Austria, and Belgium, 26% in Belarus, and 20% or less in Germany and the all of central and eastern European countries included in this study. These cross-country differences suggest that childbearing to cohabitation is institutionalised to a different extent across European countries (Soons et al., 2009). This probably

means not only that such behaviour is more or less accepted in different societies, but also that the social norms for this behaviour are clearer, and socially accepted behavioural “models” for dealing with those situations are also available (Cherlin, 2004; Soons et al., 2009).

Given the previous findings and differences in the prevalence of cohabiting unions across the countries, it is thus likely that the consequences of cohabitation dissolution are context-dependent, however, to the best of our knowledge, no study compares the post-dissolution involvement of fathers and non-resident children across countries.

Does union type make a difference? Selection

Apart from legal and social context, it is important to consider the different selection mechanisms linked to the status of non-resident fathers. The selection can occur in several moments of the life course. The first selection occurs when deciding whether to have children within marriage or cohabitation. The second selection may be related to the process of partnership dissolution, and finally, a third selection may occur while deciding on post-dissolution residential arrangements of the parents.

Regarding the first selection, it has been well-documented how cohabiting parents differ from their married counterparts in socio-demographic characteristics, attitudes, and values (Surkyn & Lesthaeghe, 2004). Cohabiting parents in European countries are younger than married ones (Bianchi et al., 2014; Musick & Michelmores, 2018) and childbearing within cohabitation was found to have a negative educational gradient in the majority of the studied European countries (Mikolai et al., 2018; Musick & Michelmores, 2018; Perelli-Harris et al., 2010), even though more recent births within cohabitations in Finland and Norway are among middle- or higher educated women (Schnor & Jalovaara, 2017; Vitali et al., 2015). It thus seems that childbearing within cohabitation is likely to be connected to the pattern of disadvantage in most European countries, even though there are some relevant exceptions.

Cohabitors are also selected according to partnership characteristics and attitudes. It has been found that cohabiting couples tend to report lower relationship satisfaction (Wiik et al., 2012) and lower levels of well-being (Soons et al., 2009). Surkyn and Lesthaeghe (2004) found that cohabiting parents incline towards less traditional/conformist values, including less familistic attitudes. In a similar direction, research shows that cohabitors have less contact with their mothers than married children (Yahirun & Hamplová, 2014); however, it is worth noting that there are mixed findings on this. Nazio and Saraceno (2013) for instance did not find significant differences between the two groups in terms of the strength of family intergenerational ties.

Cohabiting couples are also more likely egalitarian than married ones. They share domestic duties, including childcare, more equally (Barg & Beblo, 2012; Baxter, 2005; Baxter et al., 2008; Bianchi et al., 2014; Domínguez-Folgueras, 2013) and also argue about housework more often (Van der Lippe et al., 2014). Nevertheless, for example in Sweden, there was no difference found in childcare involvement of cohabiting and married fathers (Ono & Yeilding, 2009).

Regarding the second selection, it is well established that cohabiting parents tend to see their partnership dissolving more often than married parents (e.g., Andersson &

Philipov, 2002; Liefbroer & Dourleijn, 2006). It is, however, not well-established whether and how separated (cohabiting) couples differ from the couples separating from marriage. Some research suggests, that previously cohabiting and married couples tend to differ in terms of the stated reasons for union dissolution, with married couples stating more often extreme reasons for dissolution, such as violence and infidelity (Lampard, 2014), at the same time it is worth noting that other research suggests that the drivers of dissolution are similar for marriage and cohabitation (van Houdt & Poortman, 2018).

Finally, cohabiting, and married parents may opt for different living arrangements following union dissolution. Nevertheless, the study of living arrangements of several European countries using GGS data shows that there are very few differences in the chance of formerly married or cohabiting fathers becoming non-resident parents (Zilincikova, 2021).

To sum up, while there is little evidence on the differences in the selection into dissolution and living arrangements after dissolution, there is quite good knowledge on the selection to childbearing within cohabitation. The selection pattern seems to be rather consistent across European countries. We can expect that, on average, formerly cohabiting European fathers are less educated and younger than formerly married fathers. This selectivity of cohabiters could also influence post-dissolution involvement, as both characteristics, level of education and age, were found to be negatively associated with post-separation involvement. However, on the other hand, the more equal distribution of childcare within cohabiting couples can point to a higher than average involvement of cohabiting fathers in the upbringing of their children, and thus to stronger bonds being formed. These bonds, in turn, could lead to more intense and better quality father–child relationships after union dissolution (Kalmijn, 2015a; Manning et al., 2003; Meggiolaro & Ongaro, 2010; Tach et al., 2010).

Hypotheses

Based on the results from previous research, we suggest that the less straightforward legal position of cohabiters, as well as the selection of fathers to childbearing within cohabitation, could influence the observed post-separation involvement of non-resident fathers. Thus, we hypothesise that cohabiting fathers have less face-to-face contact with their children when *not* accounting for the selection (especially in terms of age and education) of cohabiting and married non-resident fathers (H1).

At the same time, in line with previous findings from studies focusing on European countries (with the sole exception of the Lithuanian context), we expect that once controlling for the characteristics of fathers and children which are related to selection to cohabitation and post-dissolution involvement, namely, age of a father, and level of education, the gap in frequency of the face-to-face contact between formerly cohabiting and formerly married fathers diminishes or even result not being significant (H2). It is worth noting, however, that we are not able to account for all selection factors discussed and documented in previous studies: such as partners' values, attitudes, pre-dissolution father involvement with child, or reason for dissolution. It is unclear the extent and direction of the effect of this omission but it can be suggested that they are in part related to other observed, and accounted for characteristics, and moreover, their contrasting tendencies

could cancel each other out (e.g., higher pre-dissolution involvement in children's upbringing of cohabiting fathers may compensate for their lower familistic orientation).

Previous empirical research provides less evidence on the post-dissolution quality of the father–child relationship. However, assuming this proxy of the qualitative dimension of the relation potentially and partially overlaps with its quantitative dimension (i.e., intensity of the relation), here in line with H1, we hypothesise that cohabiting fathers are less satisfied with the relationship (H3) when not accounting for the selection of cohabiting and married non-resident fathers (especially, age and education). We also put forward the hypothesis that after including control variables in the model the gap in satisfaction with the relationship with their children among formerly cohabiting and married fathers diminishes (H4).

Finally, by including interaction terms between union type and country dummies we aim to explore the association between pre-dissolution union type and post-dissolution father–child relationship across several European countries. By doing this, we provide a more systematic study of the phenomena. While previous single-country studies provide some scope for comparison, different measurement and modelling techniques make it difficult to draw any conclusion. Furthermore, most of these studies are based on Western or northern European countries, while we located only one study of an Eastern European country (and this study had opposite findings). Adopting a descriptive approach, in the following empirical analyses, we will explore the extent to which the relation between union-type and post-dissolution father–child relations varies across the countries considered. The results should be interpreted with caution, country dummies cannot be realistically thought of as a perfectly adequate and efficient indicator of complex institutional and cultural differences.

Data and methods

Data and sample

This paper uses data from the first wave of the Generations and Gender Survey (GGS). GGS is a cross-national longitudinal survey, conducted in several European countries, that addresses the topic of intergenerational and partner relations within families (Vikat et al., 2007). Although GGS has for most countries available two waves of the survey, it is not possible to use the longitudinal component for our research. The number of marital and cohabitation dissolution is very small (due to the large attrition between the waves, scarcity of the event of union dissolution, and a higher likelihood of those experiencing union dissolution to drop from the survey). In the present paper, we use data from the 11 countries for which variables on father–child relations, father's marital history, and main individual's socio-economic characteristics are available, i.e., Austria, Belgium, Bulgaria, Czech Republic, France, Germany, Lithuania, Poland, Romania, Russia, and Sweden. Information on collection years in each country is presented in Table 1. We included in the sample only male respondents who reported having at least one biological non-resident minor child (i.e., aged 0 to 18), and whose children were born within a cohabiting or marital union that dissolved by a breakup. We excluded those unmarried fathers who have never co-resided with their children (375 fathers; 500 father–child dyads). This selection was performed by combining information about respondents' partnership histories and the year of birth of each of their children. The rationale behind this decision

Table 1 Country characteristics

		Year of data collection	Number of father-child dyads for dependent variable contact			Number of father-child dyads for dependent variable satisfaction		
			Marriage	Cohabitation	Total	Marriage	Cohabitation	Total
Western Europe	Sweden	4/2012–4/2013	47	31	78	60	32	92
	Austria ¹	9/2008–2/2009	36	48	84	36	48	84
	Belgium	2/2008–5/2010	102	39	141	102	39	141
	France	9/2005–12/2005	168	148	316	168	148	316
Central and Eastern Europe	Germany	2/2005–5/2005	77	22	99	77	24	101
	Bulgaria	11/2004–1/2005	59	15	74	60	13	73
	Czechia	2/2005–9/2005	116	8	124	119	13	132
	Lithuania	4/2006–12/2006	115	14	129	113	14	127
	Poland	10/2010–2/2011	170	28	198	172	29	201
	Romania	11/2005–12/2005	38	4	42	86	10	96
	Russia	6/2004–8/2004	190	22	212	203	21	224

¹ The data for the Austrian GGS are restricted to individuals from 18 to 45

was twofold. First, we are uncertain whether the absence of a union is the result of a real-life situation or the result of misreports of the timing of union and/or the birth of a child. Second, in case the union was not reported, several variables (such as union duration, and time since separation) could not be utilised in the analyses.

Some fathers have more than one child who fits these selection criteria, while the contact and quality of relationship with each child might be unique. Such fathers will appear more than once in the data set, which violates the non-independence assumption. To account for this, we computed clustered standard errors in the following analysis. We also had to deal with missing data on dependent and independent variables. We excluded cases in which missing information was on the dependent variables ($N=227$ missing for contact, $N=137$ missing for satisfaction) and imputed missing values for independent variables.²

The final sample consisted of 1127 fathers and 1497 father–child dyads for the dependent variable measuring father-child contact, and 1202 fathers and 1587 father–child dyads for the dependent variable measuring father’s satisfaction with the quality of the relationship with the child. The number of observations for individual countries is reported in Table 1.

Methods and variables

To assess the intensity and quality of the father-child relationship after union dissolution we employed two different dependent variables. First, we used information on the frequency of face-to-face contact; the corresponding question in the questionnaire was

² There were two independent variables in our dataset which included missing values – employment ($N=26$) and education ($N=15$). We imputed the missing data by a sequence of chained equations (Royston, 2004). The predictors in the equations were the same as the independent variables in the multivariate models (i.e. union type, age, partnership status, number of children, time since separation, duration of union, child’s age, child’s gender, and country). To account for the uncertainty of the estimates, we imputed each missing value ten times and thus created ten datasets in which the imputed values may have differed. The results from the imputed datasets were then combined using Rubin’s (2004) rules.

formulated as follows: “How often do you see [name]?” The respondents’ answers were recorded by registering the number of meetings per week, month, or year. In the case of Germany, the information was registered using an ordinal scale (the categories being: daily, more than once per week, once per week, more than once per month, once per month, more than once per year, once per year, rarely and never) and thus we recoded it to the format utilised by the other countries.³ The dependent variable in our empirical analyses is expressed as the natural logarithm of the number of father–child meetings per year to adjust for the skewed distribution of the variable.⁴

The second dependent variable aims at capturing information on the quality of the father–child relationship, which is proxied by the father’s self-reported satisfaction with the relationship with each of his children. The father evaluated the relationship on a scale from 1 (not at all satisfied) to 10 (completely satisfied).

The explanatory variable is the type of relationship between the father and the partner to which a child was born. We distinguish marriage and cohabitation according to the relationship status at the moment of dissolution. In our sample, 75% of unions were marriages, and 25% of unions were cohabitations. It is worth noting that this approach to the measurement of the relationship is different from that utilised in some previous studies, which, instead, take into consideration the type of relationship at the moment of the child’s birth (Aquilino, 2006; Cheadle et al., 2010; Hofferth et al., 2010; Köppen et al., 2018; Seltzer, 1991; Swiss & Bourdais, 2009; Tach et al., 2010). At the same time, it should be pointed out that the study by Cooksey and Craig (1998) suggests that there is very little (if any) difference in post-dissolution father–child relations between marital births and premarital births when the union turns to marriage at a later stage.

Multivariate regression models further control for a number of the father’s and children’s characteristics. The father’s characteristics include *age*, *education* (lower than secondary, secondary, higher than secondary), and *employment status* (1 = not employed). We control for the *presence of a new co-resident partner* (1 = yes), which has been found to have a negative impact on fathers’ involvement in parenting activities after co-residence disruption (Juby et al., 2007; Kalmijn, 2015a; Swiss & Bourdais, 2009; Tach et al., 2010). *The number of children* is an important control as a higher number of children can decrease the frequency of contact with a particular child (Grundy & Read, 2012). *Time since separation* and the *duration of a relationship in which a child was born* (both measured in years) are also likely to influence post-dissolution interactions (Aquilino, 2006; Cheadle et al., 2010; Hofferth et al., 2010). The child’s characteristics include *age* (0–6, 7–12, 13–18) and *gender*. A number of previous studies found that involvement with a non-resident father decreases at higher ages of the child (Kalmijn, 2015a; Meggiolaro & Ongaro, 2010), while for gender the results are less consistent (Kalmijn, 2015a; Manning & Smock, 1999; Manning et al., 2003).

Analytical strategy

Our sample consists of father–child dyads in which the biological father does not reside with the child due to the dissolution of the union with the biological mother of the

³ Daily = 364, more than once per week = randomly assigned a number between 2 and 6 multiplied by 52, once per week = 52, more than once per month = randomly assigned number 2 or 3 multiplied by 12, once per month = 12, more than once per year = randomly assigned number between 2 and 11, once per year = 1, rarely and never = 0.

⁴ The logarithm is calculated on the number of father–child meetings per year plus one (i.e. $\log(x + 1)$). In this way we can account also for those father–child dyads who did not have any contact during the year.

child. We first provide descriptive statistics, then analyze results from the multivariate OLS regression models with clustered standard errors. In particular, for each of the two dependent variables, we implemented three models.

First, testing Hypothesis 1 and Hypothesis 3, we include among the independent variables the type of union at the time of dissolution, and the characteristics connected with the timing and location of the dissolution, i.e., the time elapsed since union dissolution and the country of residence. These models, therefore, are only deemed to describe the association between our dependent variables and union type. Time since separation is included to account for the tendency of cohabiters to be overrepresented among fathers who separated relatively recently, due to the rise in non-marital cohabitation in more recent years, while the country of residence accounts for cross-national differences in the post-dissolution father–child involvement.

In Model 2, we add information that is largely connected with self-selection into different union types and dissolution. Thus we account for the father's characteristics and the duration of the relationship into which the child was born. Furthermore, we also take into consideration the child's characteristics (age and gender). This model mainly aims at testing the role of some of the most relevant processes governing selection into cohabitation (versus marriage) in explaining the observed differences (Hypotheses 2 and 4).

Finally, we explore the cross-national differences in the association between union type on father–child contact and satisfaction with father–child relations. We add an interaction between union type and country dummies to Model 2, creating Model 3. This allows us, despite the limited statistical power of the national data sets, to provide some evidence about “if” and “how” the associations vary across countries.

Results

Descriptive results

Descriptive analysis (Table 2) shows that, contrary to what we hypothesised, the intensity of face-to-face contact between non-resident fathers and children was on average considerably higher for previously cohabiting fathers (63.4 times per year) than for those who were married to the mothers of their children (55.7 times per year). Among previously cohabiting fathers there was a higher proportion of those who saw their children at least once a week (37.2 for previously cohabiting fathers, 33.7 for previously married fathers), the proportion of those having contact less than once a month was about the same for previously cohabiting and married fathers. On the other hand, a father's satisfaction with the relationship with their child seemed to be substantially similar for the two groups. Descriptive statistics also show that there are important differences in the characteristics of formerly cohabiting and married fathers. Some of these compositional differences may help to explain the difference observed in the intensity of father–child contacts: formerly cohabiting fathers were on average younger (39 years old compared to 41 for married fathers) and had younger children (mean age of children of cohabiting fathers was 10 years compared to 12.7 years of children of married fathers). Cohabiting and married fathers had separated from the child's mother on average 7.4 and 7.9 years ago, respectively. At the same time, we also observe that previously cohabiting fathers tended to have a lower educational level, were less likely to be in paid employment, and were less likely to be in a new partnership. Finally, as expected, the length of the union in which a child was born was shorter for previously cohabiting fathers

Table 2 Descriptive statistics

	Marriage			Cohabitation			<i>No union identified</i>		
	%	Mean	SD	%	Mean	SD	%	Mean	SD
Father-child relationship <i>N</i> = 1606							<i>N</i> = 500		
Contact (times per year)		55.7	85.4	63.4	94.0		74.2	112.5	
At least one per week	33.7			37.2			38.7		
Less than once a week, more than once a month	34.8			31.7			24.3		
Less than once a month	31.5			31.1			37.0		
Father's satisfaction	6.9	3.2		6.8	3.6		6.6	3.4	
Children's characteristics <i>N</i> = 1606									
Child's age									
0–6 years	9.0			26.6			26.2		
7–12 years	35.1			39.8			30.8		
13–18 years	55.9			33.7			43.0		
Child's gender female	47.1			49.1			48.4		
Father's characteristics <i>N</i> = 1218							<i>N</i> = 375		
Age	40.8	7.2		38.7	8.9		40.7	9.5	
Education ¹									
Lower than secondary	12.5			27.4			22.6		
Secondary	65.4			56.4			55		
Higher than secondary	22.1			16.2			22.4		
Not employed ¹	21.5			25.1			25.6		
Current co-residential partner	44.6			33.3			35.7		
Number of children	2	1.1		1.9	1.3		2.1	1.2	
Time since separation (years)	7.9	4.4		7.4	4.6				
Duration of the relationship into which a child was born (years)	11.0	6.0		7.6	5.1				

Italics indicate cases in which no union was identified and which are excluded from the further analysis

¹ Descriptive statistics are based on non-missing values (i.e. before generating multiple imputations)

(7.6 years) than for previously married parents (11 years). The descriptive findings are in line with the previous literature on selection into cohabitation and marriage.

Multivariate results: Face-to-face contact between fathers and non-resident children

The results from multivariate analysis indicate that previously cohabiting fathers have less intensive relations with their non-resident children vis-à-vis previously married fathers. When controlling the association only for time since separation, and country of residence, previously cohabiting fathers have 34% ($= \exp(-0.41)$) less contact with their children than previously married ones (Table 3, Model 1). Therefore, Hypothesis 1—which suggests that formerly cohabiting fathers are more likely to have weaker ties with their children when not accounting for the father's characteristics—is supported. When controlling the relation for the father's and child's socio-demographic characteristics (Model 2), the coefficient was closer to zero (0.12) and nonsignificant. The associations of other variables were in line with previous findings. With increasing time from the moment of separation, father-child contact tends to be less frequent. The intensity of the relationship is also negatively affected if the father is not employed, has a low level of education, has a new partner, and a higher number of children. Model 2 thus provided support for Hypothesis 2 stating that once we

Table 3 Contact (logged)

	M1		M2		M3	
	<i>b</i>	<i>se</i>	<i>b</i>	<i>se</i>	<i>b</i>	<i>se</i>
Previous union type (ref.: marriage)						
Cohabitation	−0.41*	0.2	−0.12	0.2	−0.36	0.49
Time since separation	−0.11***	0.02	−0.10***	0.03	−0.10***	0.03
Father's age			0.01	0.02	0.01	0.02
Education (ref.: lower than secondary)						
Secondary			0.46*	0.23	0.47*	0.23
Higher than secondary			0.42 ⁺	0.25	0.43 ⁺	0.25
Not employed			−0.46*	0.19	−0.46*	0.2
Current co-residential partner			−0.33*	0.16	−0.33*	0.16
Number of children			−0.13 ⁺	0.07	−0.13 ⁺	0.07
Duration of the relationship to which a child was born			0.03 ⁺	0.02	0.03 ⁺	0.02
Child's age (ref.: 0–6 years)						
7–12 years			0.16	0.25	0.16	0.26
13 years			0.37	0.3	0.37	0.3
Child female			0.01	0.14	0.02	0.14
Country (ref.: Sweden)						
Austria	0.43	0.29	0.60 ⁺	0.31	0.58	0.37
Belgium	0.87**	0.27	0.98***	0.29	0.76*	0.34
France	0.48 ⁺	0.27	0.65*	0.27	0.55	0.34
Germany	−0.56 ⁺	0.32	−0.4	0.31	−0.46	0.34
Bulgaria	0.13	0.32	0.53	0.35	0.31	0.38
Czech Republic	0.1	0.27	0.44	0.29	0.3	0.34
Lithuania	−0.45	0.28	−0.24	0.3	−0.36	0.35
Poland	0.06	0.29	0.26	0.31	0.11	0.35
Romania	−0.67 ⁺	0.38	−0.29	0.39	−0.33	0.43
Russia	−0.47 ⁺	0.28	−0.24	0.31	−0.32	0.35
Sweden*cohabitation (ref.)						
Austria*cohabitation					0.1	0.59
Belgium*cohabitation					0.72	0.59
France*cohabitation					0.25	0.55
Germany*cohabitation					0.12	0.74
Bulgaria*cohabitation					0.9	0.85
Czech Republic*cohabitation					0.93	0.62
Lithuania*cohabitation					0.49	0.66
Poland*cohabitation					0.65	0.68
Romania*cohabitation					−0.22	1.02
Russia*cohabitation					0.12	0.76
Constant	3.73***	0.28	2.57***	0.61	2.65***	0.64
<i>N</i>	1497		1497		1497	

Results from linear regression with clustered standard errors. Number of father-child dyads = 1497. Number of fathers = 1127

Significance levels: *** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$, ⁺ $p < 0.1$

account for the father's characteristics the difference between formerly married and cohabiting fathers diminishes. Regarding the cross-country differences, the results show that separated/divorced fathers have more frequent contact with their children in Belgium, Austria, and France. Fathers have the least frequent contact with their children in Germany, Romania, Russia, and Lithuania.

Model 3, where we added interaction terms between union type and country, does not show any statistically significant country differences in the association between union

type and father-child contact. As a matter of fact, despite the size of the estimates ranging from small (0.1 for cohabiters in Austria) to substantially more important (0.93 for cohabiters in Czechia), the large confidence intervals prevent rejecting the null hypothesis. In some cases, the lack of statistical significance is likely to be related to the small number of observations in the countries considered (see Table 1 for the number of observations for each country).

Multivariate results: Satisfaction with the relationship between fathers and non-resident children

Previously cohabiting fathers also tend to report lower levels of satisfaction with the relationship with their children than previously married ones. Former cohabitation was associated with 0.8 points lower satisfaction on a 10-point scale (Table 4, Model 1), when controlling only for time since separation and country dummies, which provides support for Hypothesis 3. Once we introduce the full set of control variables into the regression equation (Table 4, Models 2), the size of the coefficient decreases close to zero (-0.15) and is statistically insignificant. In line with Hypothesis 4, after controlling for the main selection characteristics, the difference between previously cohabiting and married fathers are no longer significant. Father's satisfaction with the relationship with his child is also positively correlated with the father's higher educational level and employment. Father's perception of the quality of intergenerational relations after union dissolution is somewhat lower even though not statistically significant in Russia, Germany, Romania, and Poland, where the contact with children is lower than in the rest of the countries.

Model 3, including the interaction between union type and country of residence, shows little cross-national variation in the association. Again, there is some variation in the size of the coefficient, including small effect sizes (0.05 for cohabiters in Czechia) as well as more substantial ones (2.29 for cohabiters in Belgium, marginally statistically significant). Given the small number of observations in some of the countries, we are, however, not able to make any firm conclusion about the differences across the countries.

To further test the robustness of our results, we performed a series of sensitivity analyses. First, we fitted the same regression models on a larger sample, i.e., extending the sample to fathers with children up to age 21 (Appendix, Tables 5 and 6). The results of multivariate analyses, for both the dependent variables, were substantively similar to the ones reported in the paper. In Model 1 estimating contact frequency between father and child, the negative effect of cohabitation is smaller and only marginally statistically significant. In a second sensitivity test, the regression models were fitted on an unimputed data set while dropping cases that included any missing value (Appendix, Tables 7 and 8). The analyses yield essentially the same results as the ones reported above.

Conclusions and discussion

This paper studied the association between union type at the moment of a partnership dissolution and father-child face-to-face contact and satisfaction with the relationship after the separation of the partners, before and after controlling for several factors related to selection into a cohabiting union and dissolution. The analysis was based on the Generations and Gender Survey for 11 European countries.

Table 4 Father's satisfaction with quality of relation with a child

	M1		M2		M3	
	<i>b</i>	<i>se</i>	<i>b</i>	<i>se</i>	<i>b</i>	<i>se</i>
Previous union type (ref.: marriage)						
Cohabitation	−0.80*	0.4	−0.15	0.41	−0.46	1.05
Time since separation	−0.18***	0.03	−0.10*	0.05	−0.10*	0.05
Father's age			−0.02	0.03	−0.02	0.03
Education (ref.: lower than secondary)						
Secondary			0.7	0.49	0.7	0.5
Higher than secondary			1.17*	0.53	1.17*	0.53
Not employed			−1.15**	0.41	−1.13**	0.41
Current co-residential partner			−0.47	0.3	−0.45	0.3
Number of children			−0.25 ⁺	0.15	−0.26 ⁺	0.14
Duration of the relationship in which a child was born			0.12**	0.04	0.12**	0.04
Child's age (ref.: 0–6 years)						
7–12 years			−0.06	0.46	−0.06	0.47
13 years			0.01	0.54	0	0.55
Child female			0.05	0.25	0.05	0.25
Country (ref.: Sweden)						
Austria	0.74	0.61	0.86	0.64	1.04	0.77
Belgium	1.03 ⁺	0.54	1.08 ⁺	0.6	0.42	0.69
France	0.53	0.53	0.78	0.55	0.63	0.66
Germany	−0.77	0.71	−0.52	0.7	−0.4	0.75
Bulgaria	0.17	0.6	0.95	0.67	0.97	0.75
Czech Republic	0.24	0.57	0.84	0.61	0.74	0.7
Lithuania	0.06	0.53	0.45	0.58	0.21	0.67
Poland	−1.00 ⁺	0.55	−0.6	0.58	−0.84	0.66
Romania	−0.76	0.59	−0.3	0.63	−0.31	0.72
Russia	−0.76	0.54	−0.51	0.6	−0.66	0.67
Sweden*cohabitation (ref.)						
Austria*cohabitation					−0.26	1.27
Belgium*cohabitation					2.29 ⁺	1.24
France*cohabitation					0.38	1.15
Germany*cohabitation					−0.61	1.57
Bulgaria*cohabitation					−0.57	1.59
Czech Republic*cohabitation					0.05	1.44
Lithuania*cohabitation					1.39	1.26
Poland*cohabitation					1.06	1.37
Romania*cohabitation					−0.46	1.4
Russia*cohabitation					0.48	1.56
Constant	8.48***	0.55	7.26***	1.21	7.48***	1.27
<i>N</i>	1587		1587		1587	

Results from linear regression with clustered standard errors. Number of father-child dyads = 1587. Number of fathers = 1202

Significance levels: *** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$, ⁺ $p < 0.1$

In light of previous studies on the different partners' and union characteristics associated with different types of union, we were expecting to find that when not controlling for fathers' and children's characteristics, previously cohabiting and married fathers differ in the amount of face-to-face contact and satisfaction with the relationship with their children. The results of our empirical analyses are consistent with these hypotheses, as

we observed a lower intensity of face-to-face contact and a lower level of satisfaction with the relation with minor children for previously cohabiting versus married fathers. This finding is important, because it not only shows less intensive face-to-face contact of previously cohabiting fathers but also their dissatisfaction with the situation.

However, and most importantly, once we controlled for the main socio-demographic characteristics—which are also related to selection into non-marital childbearing—the association between previous union type and post-separation father–child relations turns out not to be statistically significant. This result is in line with those from other previous multivariate studies of European societies (with exception of Lithuania). Thus, what these results seem to suggest is that what matters is not the union type per se, but the fact that cohabitation and marriage attract individuals with different characteristics. The fact that, in a controlled model, our empirical evidence does not find the difference between the two union types suggests that institutions of marriage and divorce are not more efficient in establishing more frequent or satisfactory contact between a non-resident father and his child(ren) in comparison to cohabiting unions.

While previous studies from the US and Europe reported mixed results of the association between union type and post-dissolution father–child contact, our results are quite consistent in finding no association neither between union type and father–child contact nor between union type and father's satisfaction with the contact. Although our analysis was exploratory in its nature, we do not find an indication that different levels of prevalence or institutionalization of cohabitation would be associated with different post-dissolution outcomes on top of the selection factors.

The aim of this study was limited by several factors. First, due to the small number of observations of formerly cohabiting fathers in a number of countries the confidence intervals of the country-specific analysis were too large. Second, cross-sectional data can only suggest the existence and patterns of specific micro-level social mechanisms governing the evolution of father–child relations, but they did not allow us to clearly identify these micro-level causal mechanisms. Third, the data did not include information on mothers, which were previously found to influence father–child interactions after a marital breakup. Fourth, data limitations do not allow us to control the relation for one important factor, which is pre-dissolution father involvement with child upbringing and the quality of the relation. Finally, we cannot control for the level of cooperative parenting after dissolution (i.e., the ability of ex-partners to both actively engage with one another to share parenting responsibilities), which has been shown to have a positive effect on both the intensity and quality of parent–child contact (Sobolewski & King, 2005).

Notwithstanding these limitations, the present paper contributes to the study of post-dissolution father-child involvement in Europe, showing interesting differences with respect to results from the U.S. Moreover, it not only considers previously neglected relations after the breakup of cohabitation but also explores cross-national variations in the quality and intensity of father-child relations following the breakup of cohabitation. Finally, if confirmed in future research using longitudinal data, our results suggest that the increasing proportion of former cohabiters among non-resident fathers will not necessarily lead to important changes in the relationship between non-resident fathers and their children.

Appendix

See Tables Tables 5, 6, 7, 8.

Table 5 Contact (logged)

	M1		M2		M3	
	<i>b</i>	<i>se</i>	<i>b</i>	<i>se</i>	<i>b</i>	<i>se</i>
Previous union type (ref.: marriage)						
Cohabitation	−0.32 ⁺	0.18	−0.03	0.18	0.13	0.32
Time since separation	−0.10 ^{***}	0.01	−0.09 ^{***}	0.02	−0.09 ^{***}	0.02
Father's age			0.01	0.01	0.01	0.01
Education (ref.: lower than secondary)						
Secondary			0.47*	0.21	0.48*	0.21
Higher than secondary			0.47*	0.22	0.49*	0.22
Not employed			−0.53 ^{***}	0.16	−0.52 ^{**}	0.16
Current co-residential partner			−0.33*	0.13	−0.32*	0.14
Number of children			−0.11 ⁺	0.06	−0.12 ⁺	0.06
Duration of the relationship in which a child was born			0.03	0.02	0.03	0.02
Child's age (ref.: 0–6 years)						
7–12 years			0.17	0.25	0.16	0.25
13–18 years			0.36	0.28	0.35	0.28
19–21 years			0.2	0.33	0.2	0.33
Child female			0.09	0.12	0.1	0.12
Country (ref.: Sweden)						
Austria	−0.03	0.24	0.18	0.25	0.38	0.31
Belgium	0.35 ⁺	0.21	0.52*	0.22	0.46 ⁺	0.26
France	−0.03	0.2	0.18	0.2	0.22	0.25
Germany	−0.84 ^{***}	0.25	−0.67 ^{**}	0.24	−0.54*	0.25
Bulgaria	−0.41	0.26	0.02	0.29	−0.01	0.31
Czech Republic	−0.3	0.21	0.04	0.23	0.07	0.25
Lithuania	−0.83 ^{***}	0.21	−0.62 ^{**}	0.22	−0.57*	0.25
Poland	−0.31	0.22	−0.1	0.23	−0.06	0.26
Romania	−1.09 ^{**}	0.35	−0.68 ⁺	0.35	−0.56	0.38
Russia	−0.93 ^{***}	0.21	−0.70 ^{**}	0.23	−0.62*	0.25
Sweden*cohabitation (ref.)						
Austria*cohabitation					−0.41	0.46
Belgium*cohabitation					0.41	0.46
France*cohabitation					−0.1	0.39
Germany*cohabitation					−0.47	0.59
Bulgaria*cohabitation					0.31	0.71
Czech Republic*cohabitation					0.49	0.49
Lithuania*cohabitation					0.09	0.53
Poland*cohabitation					0.06	0.54
Romania*cohabitation					−0.69	0.96
Russia*cohabitation					−0.27	0.6
Constant	4.10 ^{***}	0.21	2.96 ^{***}	0.54	2.89 ^{***}	0.56
<i>N</i>	2005		2005		2005	

Results from linear regression with clustered standard errors including children aged 0–21. Number of father–child dyads = 2005. Number of fathers = 1477

Significance levels: *** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$, + $p < 0.1$

Table 6 Father's satisfaction with the quality of relation with a child including children aged 0–21

	M1		M2		M3	
	<i>b</i>	<i>se</i>	<i>b</i>	<i>se</i>	<i>b</i>	<i>se</i>
Previous union type (ref.: marriage)						
Cohabitation	−0.78*	0.35	−0.14	0.35	0.43	0.64
Time since separation	−0.16***	0.02	−0.08*	0.04	−0.09*	0.04
Father's age			−0.01	0.03	−0.01	0.03
Education (ref.: lower than secondary)						
Secondary			0.61	0.45	0.62	0.45
Higher than secondary			1.11*	0.48	1.13*	0.48
Not employed			−1.09**	0.35	−1.06**	0.35
Current co-residential partner			−0.34	0.26	−0.33	0.27
Number of children			−0.16	0.12	−0.16	0.12
Duration of the relationship in which a child was born			0.11**	0.03	0.11**	0.04
Child's age (ref.: 0–6 years)						
7–12 years			−0.13	0.45	−0.15	0.46
13–18 years			−0.17	0.51	−0.21	0.52
19–21 years			−0.18	0.6	−0.19	0.61
Child female			0.16	0.22	0.18	0.22
Country (ref.: Sweden)						
Austria	−0.15	0.51	0.22	0.53	0.74	0.66
Belgium	−0.07	0.41	0.14	0.45	−0.07	0.52
France	−0.32	0.4	0.09	0.4	0.23	0.49
Germany	−1.38*	0.56	−1.00 ⁺	0.54	−0.56	0.58
Bulgaria	−0.86 ⁺	0.49	0.16	0.55	0.52	0.62
Czech Republic	−0.69	0.45	0.07	0.48	0.27	0.54
Lithuania	−0.75 ⁺	0.39	−0.18	0.42	−0.05	0.49
Poland	−1.76***	0.42	−1.20**	0.43	−1.07*	0.49
Romania	−1.48***	0.45	−0.82 ⁺	0.46	−0.47	0.53
Russia	−1.73***	0.41	−1.28**	0.45	−1.08*	0.51
Sweden*cohabitation (ref.)						
Austria*cohabitation					−1.16	0.96
Belgium*cohabitation					1.32	0.9
France*cohabitation					−0.4	0.78
Germany*cohabitation					−1.68	1.27
Bulgaria*cohabitation					−1.42	1.22
Czech Republic*cohabitation					−0.55	1.11
Lithuania*cohabitation					0.22	0.89
Poland*cohabitation					0.11	1.06
Romania*cohabitation					−1.63	1.06
Russia*cohabitation					−0.54	1.19
Constant	9.24***	0.42	7.53***	1.08	7.41***	1.12
<i>N</i>	2139		2139		2139	

Results from linear regression with clustered standard errors. Number of father–child dyads = 2139. Number of fathers = 1568

Significance levels: *** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$, ⁺ $p < 0.1$

Table 7 Contact (logged)

	M1		M2		M3	
	<i>b</i>	<i>se</i>	<i>b</i>	<i>se</i>	<i>b</i>	<i>se</i>
Previous union type (ref.: marriage)						
Cohabitation	−0.38 ⁺	0.21	−0.1	0.21	−0.2	0.52
Time since separation	−0.11 ^{***}	0.02	−0.10 ^{***}	0.03	−0.10 ^{***}	0.03
Father's age			0.01	0.02	0.01	0.02
Education (ref.: lower than secondary)						
Secondary			0.44 ⁺	0.24	0.45 ⁺	0.24
Higher than secondary			0.39	0.26	0.41	0.26
Not employed			−0.47 [*]	0.2	−0.47 [*]	0.2
Current co-residential partner			−0.35 [*]	0.16	−0.35 [*]	0.16
Number of children			−0.14 ⁺	0.07	−0.14 ⁺	0.07
Duration of the relationship in which a child was born			0.04 ⁺	0.02	0.04 ⁺	0.02
Child's age (ref.: 0–6 years)						
7–12 years			0.17	0.26	0.16	0.26
13 years			0.34	0.31	0.34	0.31
Child female			−0.01	0.14	0	0.14
Country (ref.: Sweden)						
Austria			0.49	0.32	0.55	0.39
Belgium			0.91 ^{**}	0.3	0.74 [*]	0.36
France			0.57 [*]	0.28	0.53	0.35
Germany			−0.47	0.33	−0.5	0.36
Bulgaria			0.47	0.35	0.31	0.39
Czech Republic			0.37	0.3	0.31	0.35
Lithuania			−0.3	0.31	−0.37	0.36
Poland			0.22	0.32	0.13	0.37
Romania			−0.29	0.4	−0.26	0.44
Russia			−0.27	0.32	−0.29	0.37
Sweden*cohabitation (ref.)						
Austria*cohabitation	0.32	0.31			−0.07	0.62
Belgium*cohabitation	0.82 ^{**}	0.29			0.62	0.63
France*cohabitation	0.4	0.28			0.1	0.58
Germany*cohabitation	−0.64 ⁺	0.33			0.08	0.77
Bulgaria*cohabitation	0.06	0.33			0.73	0.87
Czech Republic*cohabitation	0.03	0.29			0.62	0.65
Lithuania*cohabitation	−0.52 ⁺	0.29			0.33	0.68
Poland*cohabitation	0.02	0.3			0.46	0.7
Romania*cohabitation	−0.66 ⁺	0.39			−0.47	1.03
Russia*cohabitation	−0.52 ⁺	0.3			−0.06	0.78
Constant	3.79 ^{***}	0.29	2.65 ^{***}	0.62	2.67 ^{***}	0.66
<i>N</i>	1462		1462		1462	

Results from linear regression with clustered standard errors without multiple imputations. Number of father-child dyads = 1462. Number of fathers = 1126

Significance levels: *** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$, + $p < 0.1$

Table 8 Father's satisfaction with the quality of relation with a child without multiple imputations

	M1		M2		M3	
	<i>b</i>	<i>se</i>	<i>b</i>	<i>se</i>	<i>b</i>	<i>se</i>
Previous union type (ref.: marriage)						
Cohabitation	−0.75 ⁺	0.4	−0.13	0.41	−0.84	1.11
Time since separation	−0.17***	0.03	−0.10*	0.05	−0.10*	0.05
Father's age			−0.02	0.03	−0.02	0.03
Education (ref.: lower than secondary)						
Secondary			0.66	0.51	0.65	0.52
Higher than secondary			1.07 ⁺	0.55	1.07 ⁺	0.55
Not employed			−1.20**	0.42	−1.18**	0.41
Current co-residential partner			−0.47	0.31	−0.45	0.31
Number of children			−0.26 ⁺	0.15	−0.26 ⁺	0.15
Duration of the relationship in which a child was born			0.12**	0.04	0.12**	0.04
Child's age (ref.: 0–6 years)						
7–12 years			0	0.48	−0.01	0.49
13 years			0.05	0.56	0.05	0.58
Child female			0.04	0.26	0.04	0.25
Country (ref.: Sweden)						
Austria			0.52	0.67	0.51	0.78
Belgium			0.8	0.62	0.09	0.7
France			0.57	0.57	0.29	0.67
Germany			−0.67	0.73	−0.74	0.77
Bulgaria			0.73	0.69	0.62	0.75
Czech Republic			0.62	0.64	0.36	0.71
Lithuania			0.25	0.61	−0.13	0.67
Poland			−0.79	0.61	−1.16 ⁺	0.67
Romania			−0.45	0.65	−0.59	0.73
Russia			−0.7	0.63	−0.99	0.69
Sweden*cohabitation (ref.)						
Austria*cohabitation	0.42	0.64			0.25	1.33
Belgium*cohabitation	0.79	0.57			2.49 ⁺	1.31
France*cohabitation	0.32	0.55			0.74	1.21
Germany*cohabitation	−0.95	0.74			0	1.63
Bulgaria*cohabitation	−0.03	0.62			−0.22	1.64
Czech Republic*cohabitation	0.05	0.59			0.61	1.55
Lithuania*cohabitation	−0.12	0.54			1.81	1.32
Poland*cohabitation	−1.17*	0.57			1.44	1.42
Romania*cohabitation	−0.88	0.61			−0.19	1.45
Russia*cohabitation	−0.94 ⁺	0.56			0.88	1.6
Constant	8.60***	0.57	7.47***	1.23	7.82***	1.28
<i>N</i>	1546		1546		1546	

Results from linear regression with clustered standard errors. Number of father–child dyads = 1546. Number of fathers = 1190

Significance levels: *** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$, + $p < 0.1$

Author contributions

Both authors have been involved and contributed to the writing of the paper, the analysis, and the preparation of the manuscript. Both authors read and approved the final manuscript.

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Availability of data and materials

This manuscript uses GGS data which are available to researchers upon request from <https://www.ggp-i.org/>.

Declarations**Competing interests**

The authors declare that they have no competing interests.

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