INVEST

Social Origin and Parental and Offspring Union Dissolution: Cues from Sibling Correlations

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Social Origin and Parental and Offspring Union Dissolution: Cues from Sibling Correlations

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ABSTRACT

Objective: This paper estimates the size of the effect of parental union dissolution on offspring union dissolution, as a share of the sum of all social origin factors.

Background: A large literature has documented a positive correlation between divorce and separation among parents and their children. Parental union dissolution is one out of several aspects of social origin that is associated with union dissolution. It is difficult to contrast the relative impact of parental union dissolution to other aspects of social origin because many apects of social origin are unobservable.

Method: Swedish administrative data for the 1960 to 1965 birth cohorts that cover the individuals' life events until 2018 is used to estimate sibling correlations in divorce and childbearing union dissolution, adjusting for parental union dissolution.

Results: The variance in union dissolution attributable to factors shared by siblings ranged from 6% to 13%. Parental union dissolution and factors associated with parental union dissolution explained between 15% and 28% of this variance. Sister correlations are greater than brother correlations, and sibling correlations of childbearing union dissolution are higher than sibling correlations of divorce.

Conclusion: It is pertinent to estimate the total effect of all social background factors on offspring union dissolution. It is likewise of interest to specify the share of all social background effects that are constituted by factors caused by or correlated specifically with parental union dissolution. Sibling correlations can be a useful tool for quantifying these relationships.

Individuals who divorce or separate tend to have parents who themselves divorced (Amato, 1996; Amato & DeBoer, 2001; Amato & Patterson, 2017; Bumpass et al., 1991; fnAllen Li & Wu, 2008; Gähler et al., 2009a; Kiernan & Cherlin, 1999; Landis, 1955; Lyngstad, 2011; Lyngstad & Jalovaara, 2010; McLanahan & Bumpass, 1988; Wolfinger, 2005). A sizable intergenerational transmission of union dissolution (ITD) is found across different contexts (Diekmann & Schmidheiny, 2004, 2013; Dronkers & Härkönen, 2008). Despite signs of abating effects, the pattern appears to remain salient across time periods (Li & Wu, 2008; Wolfinger, 2011). Understanding ITD has long interested social scientists both due to the consequences of union dissolution and family structure for an individual's life chances (Amato, 2001; Amato & Booth, 1991; Amato & Cheadle, 2005; Bernardi et al., n.d.; Härkönen & Bernardi, n.d.) as well as to grasp the theoretical underpinnings of the spread of demographic behavior (Amato & Booth, 1991; Bachrach, 2014; Goode, 1963).

The relationship between parent's and children's union dissolution is commonly measured using correlations between parent and offspring union dissolution. Potential mechanisms are examined by adjusting for observable factors, such as attitudes, SES, cognitive ability, and relationship quality (Amato, 1996; Dronkers & Härkönen, 2008), or by using sources of plausibly random variation in parental divorce, such as bereavement, divorce laws, or extended sibling birth spacing (e.g., Bumpass et al., 1991). Intergenerational correlations (IGC) capture the effects of parental separation and unobserved factors correlated with both parent's and child's separation. The measure does not, however, pick up any factors that are unrelated to parental divorce but that are related to offspring separation. Therefore, it underestimates the total effect of parents on offspring divorce. Although not problematic for the analysis of divorce transmission per se, this implies that researchers rarely analyze the proportion of all of the social origin effects on children's divorce that are associated with parental separation.

Several important questions relate in particular to the correlates of the parent's and offspring's union dissolution (Amato, 2010). Yet, the broader role of social background on union dissolution and other family events, of which parental union dissolution is one of several factors (Billari et al., 2019; Liefbroer, 2018), is arguably also of significance. Studies that focus on ITD and studies that analyze multiple antecedents to union dissolution stress the importance of household structure for both wellbeing and intergenerational transmission of

inequality. Within that research agenda, parental separation is understood as one of several features of an individual's social origin (McLanahan & Percheski, 2008) and both destination family structure and origin family structure are seen to play a role in the reproduction of disadvantage (McLanahan, 2004). We argue that the literature on ITC and the literature on the effect of social backgrounds on family behavior are mutually informative. It is therefore important to analyze the total impact of social origin on offspring union dissolution and to estimate the share that parent's separation plays in relation to this effect. However, few exsting studies do this. The aim of this study is to contribute to this research project by asking two descriptive questions. First, how much of the population variance in union dissolution can be accredited to social origin? Second, how much does parental separation contribute to the population variance in union dissolution that is associated with social origin?

We answer these questions by using administrative data from Sweden in order to estimate sibling correlations in union dissolution. We analyze offspring marital divorce and offspring separation of childbearing union. We estimate brother correlations and sister correlations separately. We contrast the sibling correlations for offspring from families with different divorce propensities. Our findings indicate that social background has a relatively small impact on individuals' divorce behavior in comparison to other family related events. Our results also suggest that a sizable share of the total impact of social background on individuals' union dissolution is associated with their parental union dissolution. Our study contributes to the literature by analysing union dissolution of different groups (i.e., married, parents, men, and women) in a long term perspective and by providing the first estimates of sibling correlations in union dissolution.

INTERGENERATIONAL TRANSMISSION OF DIVORCE

The positive link between parent's and offspring's union dissolution has been thoroughly established and assessed in multiple reviews and monographs (Härkönen et al., 2013; Lyngstad & Jalovaara, 2010; Wolfinger, 2005). Several theories for the causes behind ITD have been advanced (Amato, 1996). Some explanations propose a causal effect of parental union dissolution itself on offspring union dissolution.

Parental divorce may convey particular norms and attitudes towards family life to the offspring. This may include a moral understanding about whether and under what circumstances divorce is a viable option (Axinn & Thornton, 1996). Ideational factors

influence perceived costs and benefits of union dissolution, marriage, and relationships, which may impact carefulness in partner choice and investment in relationships in general. Thus, parent's divorce behavior may increase offspring's tendency to dissolve unions perceived as taxing or to increase effort in maintaining relationships in general. These theories find support in studies that document an intergenerational transmission of divorce attitudes (Cunningham & Thornton, 2006) and studies that show that children of divorce are particularly likely to dissolve troublesome unions (Amato & DeBoer, 2001).

Children of divorced or separated parents may lack the social skills useful for maintaining a relationship. According to social learning theory (Bandura, 1977), interactions within relationships are learned from observing adults' behavior. Parents who have separated, or eventually will separate, may have limited or non-amicable social exchanges. Their children, then, will have fewer opportunities to build up a repertoire of relationship skills and face greater likelihood of relationship problems in adulthood, leading to union dissolution. The theory finds empirical support in studies showing that offspring's behavioral problems mediate intergenerational divorce association (Amato, 1996). A similar strain of explanations proposes that the absence of the father as a role model impinges on relational skills, as well as other outcomes, affecting offspring union dissolution. This explanation have been assessed by comparing the effects of single motherhood due to divorce and due to bereavement (Amato & Anthony, 2014; Diekmann & Engelhardt, 1999).

Lastly, parental union dissolution may trigger a number of pathways in late adolescence and young adulthood that lead to higher union dissolution probability. Parental union dissolution may cause a temporary shock that lowers grades in school reducing human capital formation in the long term (Björklund et al., 2007), causes stress (Amato, 2000) that may accumulate into anxiety in adulthood, and accelerates the process of leaving home and early partnering (Lyngstad & Engelhardt, 2009; Teachman, 2002). These outcomes are predictors of union dissolution (de Graaf & Kalmijn, 2006; Härkönen et al., 2013; Killewald, 2016; Lyngstad & Jalovaara, 2010; White, 1990), which suggest that children of divorced or separated parents, on average, become more prone to dissolve unions themselves.

Another set of explanations questions the causal effect of parental divorce and highlights different ways in which offspring union dissolution may be the result of correlates of parental union dissolution. Families who separate are disproportionally drawn from less affluent strata (Jonsson & Gähler, 1997; McLanahan, 2004). There is an intergenerational

persistence in SES and affiliated risk of poverty and social exclusion, and these factors are predictive of divorce (Härkönen et al., 2013). Therefore, the observed relationship between parental and offspring union dissolutions may be confounded by social background factors. Similarly, parents who separate may have psychological characteristics that, transmitted via socialization or genes, would influence offspring's dissolution behavior regardless of whether the parents separate or stay together (Amato, 2010). Twin studies suggest that shared genetic traits may explain up to 30% of variance parent and offspring divorce (D'Onofrio et al., 2007), and adoptee designs find an even stronger genetic component (Salvatore et al., 2018). Moreover, cultural and geographical contexts may generate a similar level of union dissolution risk for both parents and children (Glass & Levchak, 2014; Katalin Toth & Markus Kemmelmeier, 2009). These confounding factors may work directly or indirectly, by placing offspring on trajectories that increase lifetime union dissolution risk, such as early age at first birth. No consensus exists as to how much can be attributed to selection versus causal mechanisms. Empirical research suggests the answer lies somewhere in the middle, as studies tend to report a robust but substantially reduced parental divorce coefficient after including controls such as social class background (e.g., Gähler et al., 2009b; Teachman, 2002; Wolfinger, 2011).

Parental socioeconomic position is probably the most-well studied aspect of family of origin. Billari and colleagues (2019) argue that multiple mechanisms operate through the family of origin, giving rise to earlier partnering, childbearing, and home-leaving among individuals from low SES families. These include, among other things, the socializing influence of parental divorce on offspring family behavior. Similarly, Liefbroer (2018) finds that parental SES is highly predictive for risky demographic behaviors. It is often found that children from low SES families do not display greater probability of divorce after adjusting for factors such as their own socioeconomic position (Liefbroer, 2018; Lyngstad, 2006). These findings highlight the benefits of focusing on broader aspects of family of origin in addition to parental dissolution when studying union dissolution from an intergenerational perspective.

STUDY CONTRIBUTION

To summarize, theories of intergenerational persistence of divorce suggest several reasons for why parents' union dissolution, parent's characteristics, and social background influence the likelihood of offspring union dissolution. Because the potential mechanisms are so numerous,

models relying on observable characteristics can capture only a certain share of the variation explained by individual's family background. Measures of SES will absorb an unknown fraction of the social class background component of this variation, and family conflict will absorb an unknown fraction of the family dynamics. This study assesses the range of the overall impact of social origin and parental union dissolution on dissolution behavior of the second generation.

To accomplish this, we must use a measure that encompasses the entirety of social background and single out the components of this measure that relate to parent's union dissolution. Sibling correlation models are useful tools for this type of variance decomposition, as they capture the entirety of the social background shared by siblings without measuring particular parental or family characteristics (Solon et al., 1991). Sibling correlations include the parent to offspring correlation (intergenerational correlation) in union dissolution squared, as well as all of the things siblings share that are not correlated with their parents union stability. The shared background encompasses all measured factors, such as the cultural and financial resources of family and kin as well as family conflict and environmental and genetic factors. It also captures the net effect of between-sibling interaction. Another advantage of examining sibling rather than intergenerational correlation measures is the ability to estimate the impact of parent's divorce on offspring divorce relative to all other parental aspects shared by siblings (cf., Mazumder, 2008).

Results from a twin design study (D'Onofrio et al., 2007) and a children-of-adoptee analysis (Salvatore et al., 2018) provide evidence of a genetic component in divorce behavior. Yet, the broader question of how much parental endowments, environmental as well as genetic, influence union dissolution requires further attention. A few previous studies have applied sibling correlation models to family demographic behaviors other than union dissolution. Piraino and colleagues (2014) studied mortality; Dahlberg (2013) and Dahlberg and Kolk (2018) analyzed individuals' age at first birth and fertility; and Van Poppel and colleagues (2008) studied sororal historical marriage rates. This literature generally finds larger sibling correlations than corresponding ICT estimates. Parents' demographic behavior, however, can play a rather small role in this transmission. For example, sibling correlations in Sweden explain between 16 and 26% of the variation in the number of live children born, out of which the intergenerational component (parents own number of siblings) explains between 4% and 7% (Dahlberg & Kolk, 2018). One benefit of providing a sibling correlation analysis

of union dissolution is the possibility to contrast the influence of social origin on union dissolution with the influence of social origin on other demographic behavior.

UNION DISSOLUTION IN SWEDEN

The increase in (marital) divorce has been key to the changes in household structures seen through the twentieth century. This development has coincided, however, with changes in union formation itself, including decreased prevalence of marriage, postponement of marriage and childbearing, and increased prevalence of cohabiting childbearing unions (Seltzer, 2019). The similarity between cohabiting and married unions in particular tends to vary across time and context (Rindfuss & VandenHeuvel, 1990). Even in contexts such as the Scandinavian one, where cohabiting unions are believed to be most similar to marriage (Heuveline & Timberlake, 2004), cohabiting unions to a large extent either dissolve or become marital unions (Jalovaara, 2012). Yet, both marital and cohabiting unions respond similarly to predictors of union dissolution (Härkönen et al., 2013), and the suggested mechanisms for ITD appear to apply, by and large, to dissolution behavior of marital as well as cohabiting unions. In contexts such as the US and Scandinavia, where childbearing and marriage are partly disconnected and where neither cohabiting nor marital dissolution is uncommon, it is meaningful to estimate ITD for both marital and cohabiting unions. Therefore, we analyze the dissolution of childbearing unions (regardless of civil status) and the divorce of marital unions (regardless of parental status) separately.

METHODS

Sample

This study used a combination of linked administrative records of the full population of Sweden. The index cohort includes all Swedish-born individuals of the 1960 to 1965 birth cohorts. We chose these cohorts because they are old enough to have experienced union divorce and dissolution while also being representative of the generations entering adulthood during the period when divorce and dissolution of childbearing unions are becoming commonplace. We limited the cohort span to five years in order to restrict the sibling spacing to the same range. This is an important exclusion criterion as a key assumption for the interpretation of sibling correlations is that the estimates capture everything shared by siblings (Lundberg, 2018), which is not the case for childhood parental separation when birth

intervals are very wide (Björklund et al., 2007). Individuals are linked to their mother and father via records of birth. After excluding individuals for whom both mother or father could not be identified (N = 4,110) the analytical population consisted of 551,890 men and women (Table 1). Among this group, 235,740 had one or more full-siblings included in the analytical population.

Previous research has found higher sibling correlations among women (see, for example, Dahlberg & Kolk, 2018 regarding fertility or Björklund et al., 2010 for wage earnings). Women enter partnerships earlier and may therefore be more susceptible to influence from parents compared to men. We therefore analyzed the samples of men and women separately.

Marriage, divorce, union entry, and union dissolution for individuals and their parents were identified via residential dwelling registers and civic registers, as recorded on yearly basis from 1968 onwards and from the 1960 and 1965 censuses (Thomson & Eriksson, 2013). The first year of the first observation when the biological parents resided in different households was taken as the year of union separation, unless the parents were observed as living together at a later time point. If a divorce appeared in the civic registries at a time point before the couple's shared residential status changed, the year of the divorce was used to denote the end of the union. The events of divorce of first marriage and dissolution of first childbearing union were tracked until the last observation point in 2018. The death of a parent was not coded as a union dissolution. To standardize for differences in exposure time (Li & Wu, 2008), we defined the main outcomes of divorce within eight years of first marriage and dissolution within eight years of entry into parenthood. We estimate probability of divorce for the sample who marry before 45 (N = 293,199) and we estimate the risk of separation of first childbearing union for the sample who become parents before age 45 (N = 400,487); all individuals are right censored at age 53. As a sensitivity analysis, we present results from models that do not condition on first marriage or parenthood (see Appendix Figure 1). As demonstrated by Wolfinger (2011), the omission of later age separations can be influential for measures of ITD and this motivates extensive observation periods. There is, to our knowledge, no consensus on appropriate age limits for a completed cohort measure of union dissolution. This uncertainty is amplified by reports indicating that divorce risks in older ages increase in later cohorts (Andersson & Kolk, 2015; Brown & Lin, 2012). As a robustness exercise to analyze the influence of omitted divorces at later ages, we contrast our main

sample results to analyses the of the 1950–1953 birth cohorts, for which we observe the divorce/separation risk by age 65 (appendix figure A2).

Table 1. *Descriptive Statistics of the Study Population as of 2018, by Childhood Family structure.*

	Parental union dissolution		
	Intact	Separated	Total
No. individuals	427,431	124,459	551,890
No. families	329,701	97,980	427,681
No. siblings	185,928	49,813	235,740
No. same sex siblings	100,396	27,361	127,757
No. siblings (percentile)			
25 pct.	2	2	2
50 pct.	2	2	2
75 pct.	2	2	2
Sibling birth interval (percentile)			
25 pct.	2	2	2
50 pct.	3	3	3
75 pct.	4	3	4
Offspring parity 1 by age 53 (%)	80	79	8
Offspring parity 1 by age 45 (%)	80	79	8
Offspring married by age 53 (%)	63	59	62
Offspring married by age 45 (%)	59	54	58

Source: Swedish register data, author's calculations.

Table 2 shows descriptive statistics for marriage and divorce (and first childbearing and union dissolution of first childbearing) among the population who experienced marriage and/or first childbearing by age 45. Appendix table A1–A2. shows the corresponding statistics separately for women and men. Appendix table A3–A4 shows descriptive statistics where divorce/parenthood is measured up to age 53. In the sample who married by age 45 and who's parent's did not separate, 75% has married by about age 32. In the married sample who's parents separated, 75% married by about age 33. Out of those who married and who's parent's did not separate, about 36% divorced. In contrast, out of those who married and who's parent's did separate, 51% divorced. Among those who divorced and who's parent's did not separate, 75% had divorce by age 46. Among divorcees who did see their own parents union dissolve, 75% had divorced by age 44. About 75% of those who had a child by age 45 and who's parent's did not separate had their first child by about age 31. 75% of those who become parents and who's own parent's did separate had their first child somewhat earlier, at about age 30. Out of those who became parents and who's parents did not separate, 37% dissolved their own first childbearing unions. Among those who became parents and who's

own parents did separate, about half dissolved their own childbearing union. 75% of individuals from intact families of origin who dissolved their childbearing union, did so by age 44. 75% of those who dissolved their childbearing union and who's parents separated, did so at about age 41.

Table 2. *Descriptive Statistics for All Those Married by Age 45 (left) and All Those Who Have a First Child by Age 45 (right), by Childhood Family Structure*

	Divorce of first marriage			Separation of first childbearing union	
	Parental union dissolution			Parental union dissolution	
	Intact	Separated		Intact	Separated
No. individuals	251,139	66,953	*No. individuals*	341,420	98,067
No. families	213,589	58,280	*No. families*	275,791	80,586
No. siblings	109,325	26,867	*No. siblings*	149,649	39,616
No. same sex siblings	58,758	14,808	*No. same sex siblings*	80,631	21,823
Age at 1st marriage (percentiles)			*Age at 1st birth (percentiles)*		
25 pct.	25	25	25 pct.	25	23
50 pct.	28	28	50 pct.	28	27
75 pct.	32	33	75 pct.	31	30
Divorced	91,040	34,121	*Separated*	127,518	49,435
Divorced (%)	36	51	*Separated (%)*	37	50
Age at divorce (percentiles)			*Age at separation (percentiles)*		
25 pct.	33	31	25 pct.	30	27
50 pct.	39	37	50 pct.	37	33
75 pct.	46	44	75 pct.	44	41

Note: Appendix A1 shows corresponding statistics for men; Appendix table A2 shows corresponding statistics for women; Appendix table A3 shows corresponding statistics for men who married/had a first child by age 53; and Appendix table A4 shows corresponding statistics for women who married/had a first child by age 53.

Sibling Correlation Models

Our aim is to estimate (a) the full association between social background and offspring union dissolution and (b) the share of the total social background component that is explained by parental union dissolution. An individual's likelihood of union dissolution Dis_{if} can be divided into anything shared between siblings of family, f, α_f, and anything that is unique to the individual sibling, b_{if}:

$$Dis_{if} = a_f + b_{if} \quad (1)$$

We derive the proportion of variance in an individual's union dissolution probability that may be attributed to family background, defined as factors shared between siblings, ρ. This is calculated by dividing the population variance of the shared component, σ_a^2 (the between-

family variation), by the sum of shared and unique component (the between and within family variation), $\sigma_a^2 + \sigma_b^2$ (Solon et al., 1991).

$$\rho = \frac{\sigma_a^2}{\sigma_a^2 + \sigma_b^2} \quad (2)$$

The intraclass correlation (ICC), ρ, ranges from 0 to 1 and indicates the degree of variance at the family level. A high value indicates a high correlation between siblings; it is interpreted as low variability in union dissolution within families and thus high persistence of union dissolution across generations.

The ICC is often described as an omnibus measure. It incorporates the influence of the shared experience of parental (in)stability, as well as sibling's genetic resemblance of about 50% and any legacy from sibling's joint exposure to the wider kinship network and environment at the cultural or community level (Conley et al., 2007). This can be contrasted with measures of intergenerational correlations, which are intended to capture the association between the particular observed behaviors or characteristics of the parents and the offspring. The total sum of all family of origin components can be disaggregated into those related to parental union dissolution (the intergenerational correlation), and parental factors which are uncorrelated with parental union dissolution (Mazumder, 2008).

Following Solon (1999), sibling correlations amount to sum of the square of the intergenerational correlation in union dissolution and those family background factors that are not correlated with parental union dissolution. To identify the share of parental divorce in the total social origin effect, we add a covariate for parental union dissolution to Equation 1. If offspring union dissolution is strongly correlated with parental union dissolution, then this reduces the between family variation, σ_a^2, and also reduces ρ. The proportional decrease in ρ gives a rough estimate of the maximum share of all social-origin effects on offspring union dissolution that is explained by parental union dissolution (Dahlberg & Kolk, 2018; Lindquist et al., 2017). More specifically, it can be interpreted as the share of any factor captured in measurement of parental union dissolution and hence an upper bound of parental union dissolution as produced by any conceivable mechanism. Although this estimate says little of the causal mechanisms behind the intergenerational correlation of union dissolution, it shows the scope of family structure effects and enables comparison with sibling correlations of other sociodemographic behaviors.

We estimated sibling correlations by fitting linear probability models using the Stata 15 mixed command. In the main analysis, we excluded singletons and modeled four separate pools of siblings: full sibling sets, brothers, sisters, and mixed-sex sibling sets, as sibling correlations may be sensitive to the inclusion of singletons (see discussion in Mazumder, 2008). As a sensitivity analysis, we reran this model including singletons. Sibling correlations can be attenuated by genetic resemblance in the population outside the nested groups (Mazumder, 2008). We defined the family-group level as the biological parents and therefore the family group level consisted of full siblings only. Some of the full siblings within a family-group will have maternal or paternal half-siblings in other family units. As a sensitivity analysis, we analyzed a sub-sample that excluded all families with parents who had children from other unions. Because we used five adjacent birth cohorts as the study population, the age span of the included siblings was limited automatically. To test the extent to which intraclass correlation measures are sensitive to sibling differences in exposure as a function of spacing, we analyzed a sub-sample where only siblings born within two years of each other were included.

RESULTS

Figure 1 shows sibling correlations from the unconditional models for divorce on the right and dissolution of childbearing unions on the left. Family background and all other factors shared by siblings accounted for about 7% of the total variation in divorces in the full population. For brothers, the share was 7.4%; for sisters, the share was 9.2%; and for mixed sex siblings, the share was about 6%. Family background explained somewhat more of all variance in childbearing union dissolution. For brothers, the share was also about 9.3%; for sisters, the share was about 11.4%; and for mixed sex siblings, the share was about 7.4%.
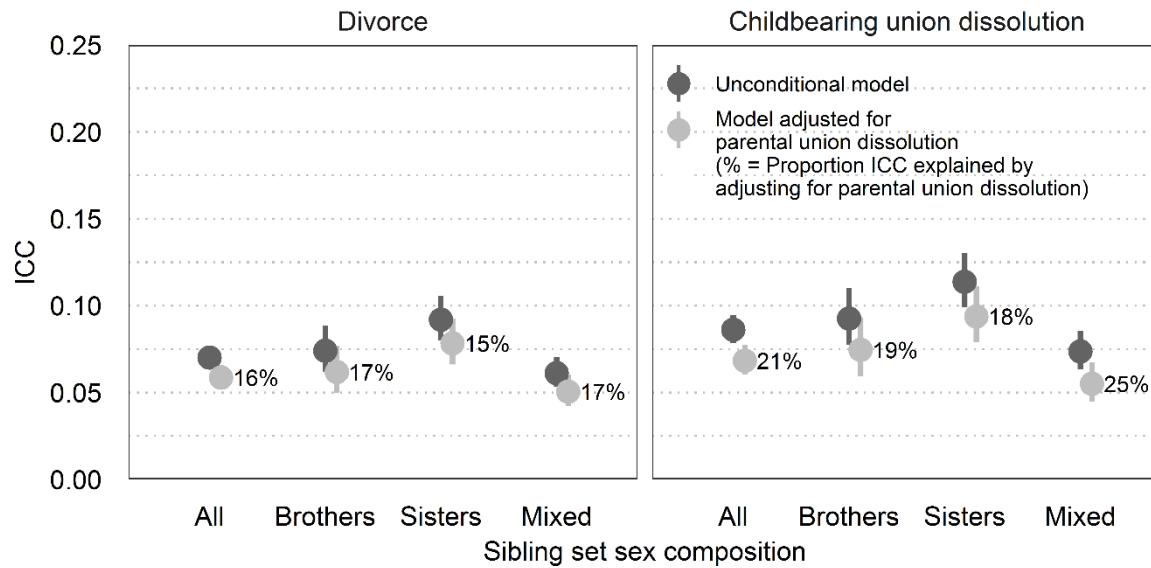
FIGURE 1. SIBLING CORRELATIONS IN UNION DISSOLUTION, INDIVIDUALS WITH SIBLINGS ONLY.

Note: 95% confidence intervals. Excluding singletons. Number of observations inis shown in a Appendix table A5.

The gray points show the point estimates for sibling correlations adjusted for parent's separation. The sibling correlations decreased moderately after accounting for parental union dissolution. The percentage values to the right of the gray points indicate the proportion of sibling correlations explained by parental separation, calculated from the point estimates. 16% of family background effects on divorce can be attributed to parental union dissolution or anything co-occurring with parental union dissolution. The share was about 17% for both brothers, 15% for sisters and 17% for mixed sex siblings. For childbearing union dissolution, parental union dissolution explained about 21% of the ICC for all siblings; 19% for brothers, 18% for sisters and 25% for mixed sex siblings.

In Figure 2, we see that the overall ranges and patterns displayed in Figure 1 are reproduced when including singletons. Neither of the sets of estimates appear substantially sensitive to the exclusion of half-siblings (see Figure 3). Restricting the sample to closely spaced siblings did not alter the size or pattern of the sibling correlations subtantially (see Figure 4). Neither do we observe substantial deviations from the pattern in our robustness checks using models that do not condition on first marriage or parenthood (Appendix figure 1A) and models of the 1950–1953 birth cohorts (Appendix figure A2).
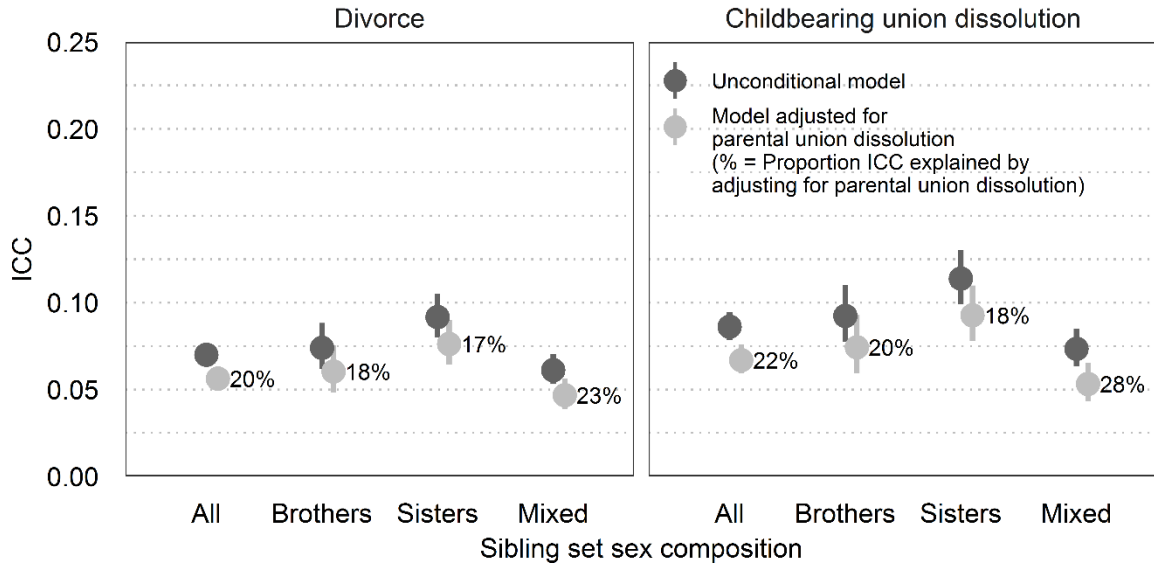
FIGURE 2. SIBLING CORRELATIONS IN UNION DISSOLUTION, INCLUDING SINGLETONS.

Note: 95% confidence intervals. Including singletons. Number of observations inis shown in a Appendix table A5.
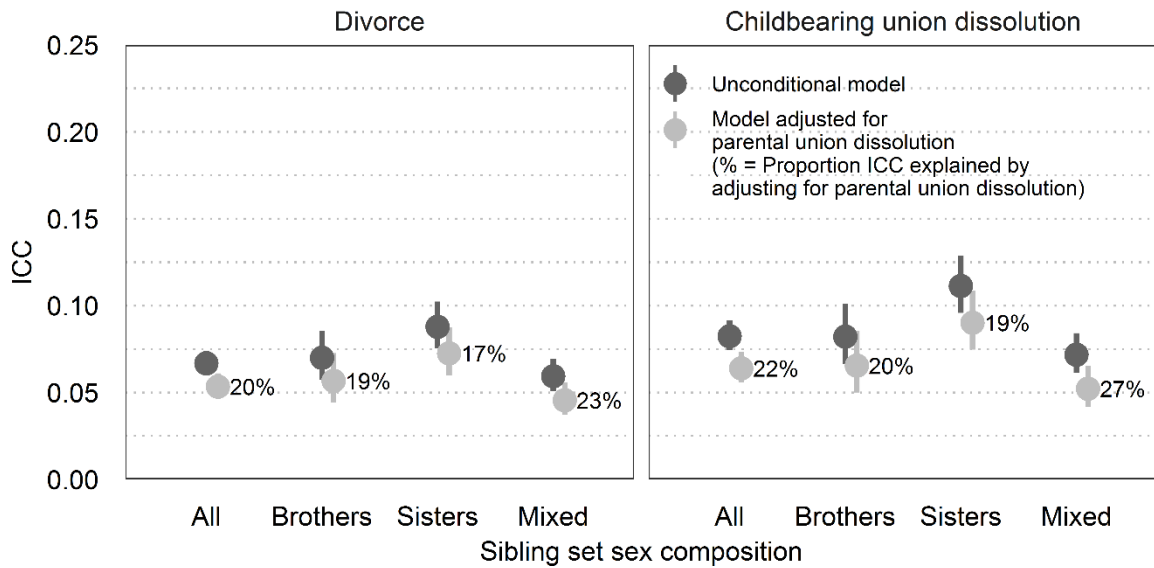

FIGURE 3. SIBLING CORRELATIONS IN UNION DISSOLUTION, EXCLUDING HALF-SIBLINGS.

Note: 95% confidence intervals. Including singletons. Number of observations inis shown in a Appendix table A5.
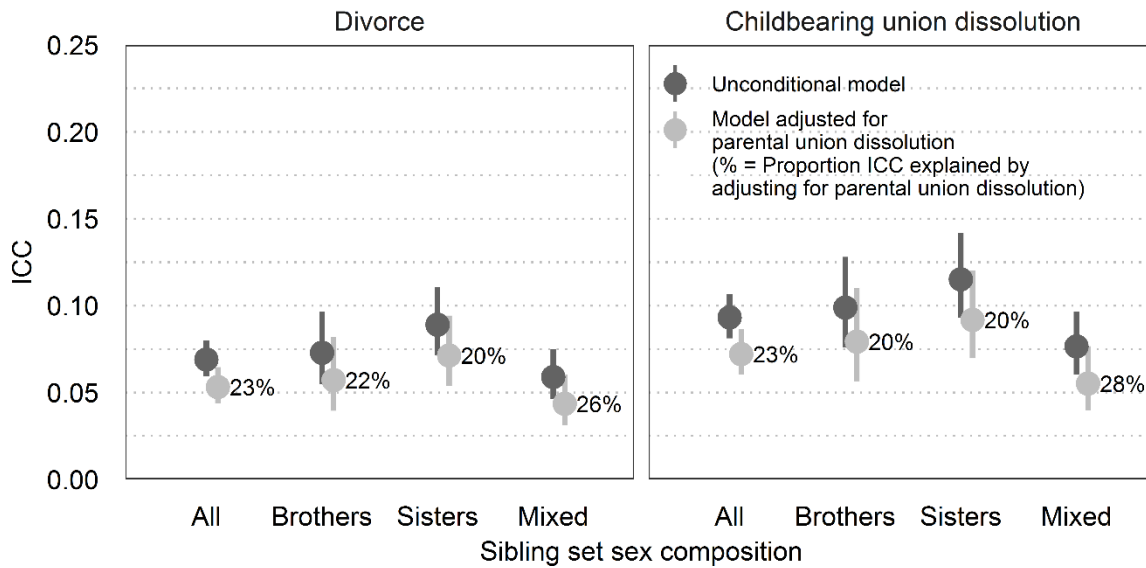
FIGURE 4. SIBLING CORRELATIONS IN UNION DISSOLUTION, LIMITED TO SIBLINGS WITH ONE OR TWO YEARS OF BIRTH SPACING.

Note: 95% confidence intervals. Including singletons. Number of observations inis shown in a Appendix table A5.

In summary, Figures 1 through 4 suggest that the total impact of social origin on union dissolution explains a substantive but limited share of individuals' union dissolution behavior. The influence of factors shared by siblings is larger in childbearing union dissolution than in marriage dissolution; it is also somewhat stronger for women compared to men. The discrepancies between union dissolution type and sibling gender composition range from points estimates of 6.1% to 13% percent of all variance in union dissolution in the population. Using the upper and lower confidence intervals rather than point estimates excerberates this pattern only moderately. When compared to other family behavior, such as completed fertility, the overall ICC in sibling union dissolution appears moderate to low (sibling correlations in completed fertility, for example, are between 10–20%, Dahlberg 2013). In all estimates, parental union dissolution and factors correlated with parental union dissolution appears to constitute a substantive proportion of all social origin effects on offspring union dissolution, the added factor accounting from roughly 15% to 28% of the sibling correlation.

DISCUSSION

This study aimed to determine the extent to which the sum of social background factors matters for individual's union dissolution. We also set out to quantify the relative importance of intergenerational mechanisms by contrasting the size of the effect of parental dissolution on union dissolution with the sum of social background factors. Findings from sibling correlations suggest that social background, understood as factors likely shared between siblings, accounts for between 7% and 12% of all variance in union dissolution. Out of this, measures of parental union dissolution account for 12% to 21% of the variation.

We have argued that because important social background factors will not be captured by observational studies, a sibling correlation approach provides threshold estimates that inform the literature on the relationship between social background and demographic behavior. Our results corroborate studies that measure specific observable facets of social origin, such as occupational class or reported family distress, by showing that social background may explain 7% to 12% of all variance in union dissolution in Sweden. A related but different question is what specific mechanisms (i.e., genetics or environmental and their interaction) shape the similarity that does exist between siblings. Previous twin and adoptee studies (D'Onofrio et al., 2007) suggest that genetic endowments are critical to the intergenerational transmission of divorce. A large literature proposes that a host of environmental factors confound ITD. We contribute to this body of work by comparing the impact of parent's union dissolution to that of other factors from childhood. Our results suggest that, regardless of which social background factors matter for offspring union dissolution, anything caused by or correlated specifically with parental union dissolution may constitute no more than about one tenth to one quarter of the variance in offspring union dissolution.

There is no generally accepted standard for what constitutes a large effect of social origin. In absolute terms, the variance in union dissolution explained by social origin is lower than that for fertility or childlessness. This speaks to the notion that divorce is the product of a host of influences, choices, and chance events that unfold during a very long time period; many of these processes are linked to individual deliberate or indeliberate behavior and reaction to life situations, which are not determined by genetic factors or childhood

environment alone. On the other hand, parental union dissolution and associated factors explain between 16 and 28% of all social origin effects, which is sizable for a single predictor. This is congruent with the centrality of parent's divorce in shaping offspring divorce. Because they say little of the causal relationship, the findings suggest the need for research to disentangle the causal processes behind intergeneration transmission. If the proportion explained by parental union dissolution was miniscule, this would not be necessary.

We found that sibling correlations were higher among sisters compared to brothers and mixed sex siblings but also that the proportion of sibling correlation explained by parental union dissolution did not differ substantially between brothers and sisters. Similar gender differences are found for fertility, age at first birth, and socioeconomic outcomes (Björklund et al., 2010; Dahlberg, 2013; Dahlberg & Kolk, 2018). Our analysis cannot address the underlying causes of sex differences. We note, however, that higher sister correlations are consistent with several proposed explanations for gender differences in union dissolution behavior. Women partner and form unions earlier and may therefore be more susceptible to influences from childhood. There is evidence that women take a more active part in the decision of union dissolution (Brinig & Allen, 2000), making any predisposition towards divorce associated with one's upbringing more likely to lead to actual behavior.

The differences between marital and cohabiting dissolution transmission and heterogeneity in union forms in general has recently received some attention in the ITD literature (e.g., Amato & Patterson, 2017). Our results suggest that sibling correlations for divorces of first marriages were lower than for separations of first childbearing unions. One potential explanation for this pattern is that divorce entails a greater number of selection processes. About four fifths of our sample became parents whereas just slightly more than half married. Known predictors of divorce, such as low income, are also predictive of non-marriage (Andersson & Kolk, 2015). Siblings who are similarly positively prone to divorce may also be selected on characteristics that prevent them from marrying in the first place and therefore facing potential divorce, lowering sibling correlations. Although the same process may operate for entry into parenthood, the fact that parenthood is a much more common state across the population than marriage suggests that this selection process will have a weaker effect on sibling correlations in parental separation.

This study has several limitations. Most research on intergenerational transmission studies single countries, most notably the US, and cross-country research indicates that the phenomenon varies by context. Dronkers & Härkönen (2008) report that the strength of divorce transmission varies inversely with the prevalence of parental divorce across 18 European countries, which suggests that the divorce cycle is stronger in societies where parental divorce is less common (see also Wolfinger, 1999, 2005, for similar conclusions). In the geographical and historical context of this study, union dissolution is fairly common, and attempts to extrapolate the results should take this fact into account.

We conclude that sibling correlations may be one fruitful venue to expand current knowledge of intergenerational transmission of union separation. We have provided, albeit for a single country, the first focused account of sibling correlations in divorce and separation. In contrast to studies using intergenerational correlations of union dissolution, relatively little research exists regarding sibling correlations in union dissolution, leaving important descriptive research questions unattended. Future research may, for example, apply this approach comparatively (Grätz et al., 2019) or pay attention to heterogeneous effects across population subsets.

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Appendix

Appendix table A1. Descriptive statistics of men married by age 45 (left) and men who have a first child by age 45 (right), by childhood family structure.

Divorce of first marriage Among offspring ever married			Separation of first childbearing union Among offspring ever parent		
	Parental union dissolution			Parental union dissolution	
	Intact	Separated		Intact	Separated
No. individuals	119,193	31,095	*No. individuals*	166,586	47,006
No. families	110,072	29,003	*No. families*	149,924	42,656
No. siblings	52,162	12,514	*No. siblings*	73,204	18,981
No. same sex siblings	28,951	7,091	*No. same sex siblings*	40,623	10,648
Age at 1st marriage (percentiles)			*Age at 1st birth (percentiles)*		
25 pct.	26	26	*25* pct.	26	25
50 pct.	29	29	*50* pct.	29	28
75 pct.	34	35	*75* pct.	32	32
Divorced	43,082	15,136	*Separated*	61588	22,704
Divorced (%)	36	49	*Separated (%)*	37	48
Age at divorce (percentiles)			*Age at separation (percentiles)*		
25 pct.	34	32	*25* pct.	31	28
50 pct.	40	38	*50* pct.	38	34
75 pct.	47	45	*75* pct.	45	42

Appendix table A2. Descriptive statistics of women married by age 45 (left) and women who have a first child by age 45 (right), by childhood family structure.

Divorce of first marriage Among offspring ever married			Separation of first childbearing union Among offspring ever parent		
	Parental union dissolution			Parental union dissolution	
	Intact	Separated		Intact	Separated
No. individuals	131,946	35,858	*No. individuals*	174,834	51,061
No. families	121,344	33,295	*No. families*	156,985	46,068
No. siblings	57,164	14,354	*No. siblings*	76,446	20,636
No. same sex siblings	29,807	7,717	*No. same sex siblings*	40,008	11,175
Age at 1st marriage (percentiles)			*Age at 1st birth (percentiles)*		
25 pct.	24	24	*25* pct.	24	22
50 pct.	27	27	*50* pct.	27	25
75 pct.	30	30	*75* pct.	30	29
Divorced	47,958	18,985	*Separated*	65,930	26,731
Divorced (%)	36	53	*Separated (%)*	38	52
Age at divorce (percentiles)			*Age at separation (percentiles)*		
25 pct.	32	30	*25* pct.	29	25
50 pct.	38	36	*50* pct.	36	31
75 pct.	45	43	*75* pct.	43	39

Appendix table A3. Descriptive statistics of men married by age 53 (left) and men who have a first child by age 53 (right), by childhood family structure.

Divorce of first marriage Among offspring ever married			Separation of first childbearing union Among offspring ever parent		
	Parental union dissolution			Parental union dissolution	
	Intact	Separated		Intact	Separated
No. individuals	130,900	34,685	*No. individuals*	168,476	47,544
No. families	120,232	32,170	*No. families*	151,512	43,115
No. siblings	57,116	13,905	*No. siblings*	74,033	19,184
No. same sex siblings	31,703	7,862	*No. same sex siblings*	41,061	10,756
Age at 1st marriage (percentiles)			*Age at 1st birth (percentiles)*		
25 pct.	26	26	*25* pct.	26	25
50 pct.	30	30	*50* pct.	29	28
75 pct.	37	39	*75* pct.	33	32
Divorced	44,453	15,729	*Separated*	61,964	22,845
Divorced (%)	34	45	*Separated (%)*	37	48
Age at divorce (percentiles)			*Age at separation (percentiles)*		
25 pct.	34	33	*25* pct.	31	28
50 pct.	40	39	*50* pct.	38	35
75 pct.	47	46	*75* pct.	45	42

Appendix table A4. Descriptive statistics of women married by age 53 (left) and women who have a first child by age 53 (right), by childhood family structure.

Divorce of first marriage Among offspring ever married			Separation of first childbearing union Among offspring ever parent		
	Parental union dissolution			Parental union dissolution	
	Intact	Separated		Intact	Separated
No. individuals	140,123	38,601	*No. individuals*	174,955	51,090
No. families	128,319	35,681	*No. families*	157,088	46,093
No. siblings	60,787	15,492	*No. siblings*	76,504	20,647
No. same sex siblings	31,731	8,328	*No. same sex siblings*	40,033	11,180
Age at 1st marriage (percentiles)			*Age at 1st birth (percentiles)*		
25 pct.	24	24	*25* pct.	24	22
50 pct.	27	27	*50* pct.	27	25
75 pct.	31	33	*75* pct.	30	29
Divorced	48,696	19,353	*Separated*	65,968	26,742
Divorced (%)	35	50	*Separated (%)*	38	52
Age at divorce (percentiles)			*Age at separation (percentiles)*		
25 pct.	32	30	*25* pct.	29	25
50 pct.	38	36	*50* pct.	36	31
75 pct.	45	43	*75* pct.	43	39

FIGURE A1. SIBLING CORRELATIONS IN UNION DISSOLUTION, NOT CONDITIONING ON AGE AT MARRIAGE BEFORE AGE 45 OR AGE AT FIRST CHILDBIRTH BEFORE AGE 45.

Note: 95% confidence intervals. Including singletons. Number of observations inis shown in a
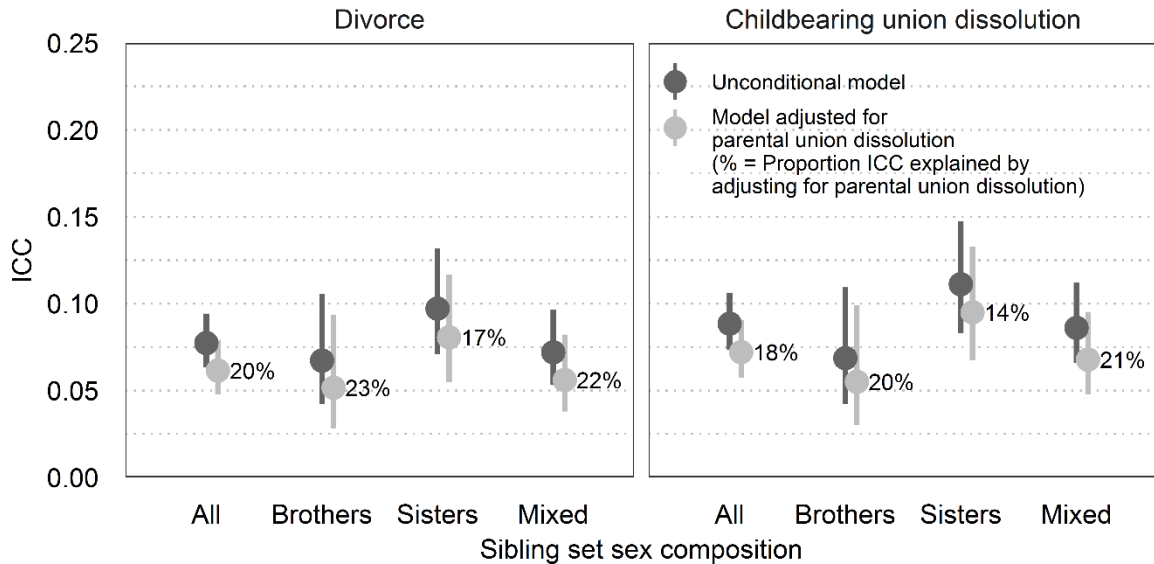
Appendix table A5.

FIGURE A2. SIBLING CORRELATIONS IN UNION DISSOLUTION, USING THE 1950 TO 1953 BIRTH COHORT.

Note: 95% confidence intervals. Including singletons. Number of observations inis shown in a

Appendix table A5.

Appendix Table A5. *N for Models in Main Text and Appendix.*

	Marriage				Dissolution			
	All	Brothers	Sisters	Mixed	All	Brothers	Sisters	Mixed

Figure 1. Sibling correlations in union dissolution. individuals with siblings only.

	All	Brothers	Sisters	Mixed	All	Brothers	Sisters	Mixed
Family	190,458	93,307	97,151	102,404	149,511	72,320	77,191	80,157
Individual	106,451	71,875	74,287	56,227	95,076	58,721	62,162	50,342

Figure 2. Sibling correlations in union dissolution. Including singletons.

	All	Brothers	Sisters	Mixed	All	Brothers	Sisters	Mixed
Family	442,282	216,234	226,048	354,228	349,436	168,610	180,826	280,082
Individual	358,275	194,802	203,184	308,051	295,001	155,011	165,797	250,267

Figure 3. Sibling correlations in union dissolution. Limited to siblings with 1 or 2 years of birth spacing. Including singletons.

	All	Brothers	Sisters	Mixed	All	Brothers	Sisters	Mixed
Family	386,588	189,521	197,067	308,397	307,179	148,712	158,467	245,224
Individual	312,569	170,599	177,036	267,903	258,674	136,534	145,185	218,763

Figure 4. Sibling correlations in union dissolution. Limited to siblings with 1 or 2 years of birth spacing. Including singletons.

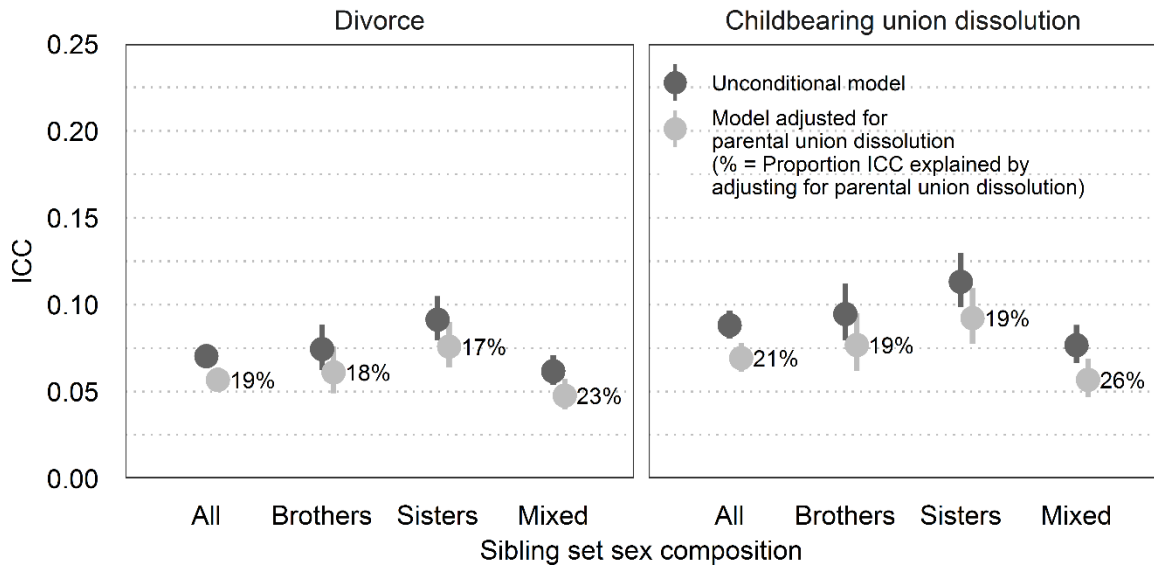|	All	Brothers	Sisters	Mixed	All	Brothers	Sisters	Mixed
Family	337,191	164,680	172,511	295,038	266,149	128,237	137,912	233,481
Individual	301,521	155,915	163,053	276,985	243,733	122,847	131,852	222,161

Figure A1. Sibling correlations in union dissolution. Not conditioning on age at marriage before age 45 or age at first childbirth before age 45. Including singletons.

	All	Brothers	Sisters	Mixed	All	Brothers	Sisters	Mixed
Family	493,392	196,963	97,515	792,549	978,394	180,603	978,572	772,298
Individual	110,789	111,168	111,220	111,050	18,825	19,047	18,779	18,290

Figure A2. Sibling correlations in union dissolution. Using the 1950 to 1953 birth cohort. Including singletons.

	All	Brothers	Sisters	Mixed	All	Brothers	Sisters	Mixed
Family	192,794	103,259	106,835	192,516	195976	99,458	102,994	186,011
Individual	218,040	107,113	110,927	200,129	209526	102,910	106,616	192,745