



Fertility after Separation: Second Births in Higher Order Unions in Germany

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Abstract:

This paper uses recent data from the German family panel (pairfam) to examine the fertility behavior after separation. More specifically, we focus on the transition to the second child and compare the behavior of respondents in ongoing partnerships (couples who are still partnered with the mother/father of their first child) with those who have experienced family dissolution after the first birth. The investigation reveals strong gender differences in post-separation fertility behavior. We also find large regional differences. Eastern Germans had much lower second birth rates than western Germans. However, they were more prone than western Germans to have their second child with a parent who was not the father or the mother of their firstborn child. This result is in line with descriptive findings on the diversity of family structures in eastern Germany

Keywords: Birth spacing, divorce, fertility, Germany, separation

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1 Introduction

The image of the family of the 21st century is shaped by high separation and divorce rates. Men and women are becoming increasingly likely to dissolve a union, enter a new partnership, and have children with a new partner. Family sociologists and demographers have often approached this theme by studying the fertility, marriage, and separation processes of stepfamilies (Beaujouan and Wiles-Portier 2011; Henz and Thomson 2005; Holland and Thomson 2011; Ivanova, Kalmin, and Uunk 2014; Juby, Marcil-Gratton, and Le Boudais 2001; Vikat, Thomson, and Hoem 1999; Vikat, Thomson, and Prskawetz 2004). Recently, there have been a number of studies on “multi-partnered” fertility which have specifically investigated how parents, and especially fathers, “spread” their children across different partnerships (Carlson and Furstenberg 2006; Guzzo and Frank F. Furstenberg 2007; Guzzo and Furstenberg 2007; Thomson et al. 2014). This paper contributes to this discussion by providing recent evidence on the fertility behavior of couples in higher order unions. We compare respondents who have a second child with a person who is also the parent of the first child and respondents who have second child with a new partner.

We have chosen to focus on second birth behavior because having a second child is a very regular event in most western European countries. Most people aspire to having two children, and those who have a second child tend to do so around two to three years after their first child is born (Testa 2012; Van Bavel and Nitsche 2013). Therefore, first-time mothers and fathers who experience union dissolution not only face a partnership breakdown, but also a potential disruption in their fertility career. How a union dissolution affects birth spacing, and how the impact varies by education, gender, and region (eastern and western Germany), are the primary themes of this investigation. Our main research questions are as follows: How does partnership dissolution after the first birth affect the length of the interval between the births of the first and the second child? How rapidly do couples in a new partnership make the transition to a second child? How does the pattern vary by gender and region (eastern and western Germany)? The data used in this study come from the German Family Panel (pairfam).

2 Prior Research

Much of our knowledge about post-separation fertility behavior comes from research on the demographic behavior of stepfamilies (Allen-Li 2006; Brown 2000; Heintz-Martin, Le Bourdais, and Hamplová 2014; Holland and Thomson 2011; Juby, Marcil-Gratton, and Le Boudais 2001). In particular, the Family and Fertility Surveys of the 1990s generated a large body of comparative evidence on this topic (Buber and Prskawetz 2000; Henz 2002; Prskawetz 2003; Thomson 2004; Vikat, Thomson, and Hoem 1999; Vikat, Thomson, and Prskawetz 2004). The main findings from this strand of research are that stepfamilies (defined as couples in which at least one of the children in the household stems from a prior partnership) have higher dissolution rates than couples with children in nuclear families. However, there is also consistent evidence that stepfamilies have higher fertility than nuclear families with the same number of biological children. According to the commitment hypothesis, a couple may seek to cement their new relationship by having children together (Griffith, Koo, and Suchindran 1985; Henz 2002; Thomson 2004). Another reason for the elevated birth risk among stepfamilies is that having a common child not only creates a link between the parents; it also creates a biological link between all of the members of the stepfamily, as the new child is a half-sibling of the children from prior partnerships.

While stepfamily research has greatly advanced our knowledge of post-separation family behavior, this type of research has often been limited in scope. The main shortcoming of stepfamily research has been that it has ignored “linkages and interactions that occur across households” (Teachman and Tedrow 2008): 4). Stepfamilies are commonly defined as couples who reside with children from prior partnerships. Biological children who do not live with the respondent are often not taken into account. Because children usually live with their mother after their parents separate, the fertility histories of male and female respondents have been treated systematically differently in this type of research. Thus, the ability of stepfamily research to explain the relationship between union dynamics and fertility behavior across the life course has so far been limited.

Another recent strand of literature has investigated how fertility evolves across partnerships (Carlson and Furstenberg 2006; Guzzo and Frank F. Furstenberg 2007; Guzzo and Furstenberg 2007; Thomson et al. 2014). The term “multi-partnered fertility” was coined to account for the fact that women and men may have children with various partners across the life course. This research has mainly been motivated by social policy concerns about “serial fatherhood,” in which parents who “are parenting across multiple households likely

face even greater obstacles to investing both time and financial resources in their children” (Guzzo and Furstenberg 2007a: 584). This type of research has paid particular attention to the “allocation” of children to different partnerships, and to the question of how parents “allocate their time, resources, and emotion” across households (Carlson and Furstenberg 2006: 272). In a recent study of the transition to the second and the third child among women in Norway, Sweden, Australia, and the United States, Thomson et al. (2014) critically evaluated the term “multi-partnered fertility,” replacing it with the term “childbearing across partnerships.” The study compared cases in which the woman had her second or third child with the father of her first child, and cases in which the woman had a new partner at the birth of her second or third child. The research showed that irrespective of the welfare state context, less educated women and those who had a first child at young ages were more likely to have a child with a new partner.

Neither proponents of the stepfamily fertility approach nor of the multi-partnered fertility approach have paid much attention to the timing and spacing of births across the life course. With our research, we are seeking to fill this gap by focusing on the transition to the second child. More specifically, we are trying to gain a better understanding of how separation affects birth spacing, and how the spacing differs by gender. Our decision to focus on gender was based on our observation that women and men face different realities after separation. On the one hand, there is consistent evidence that women have lower re-partnering rates than men after union breakdown (Ivanova, Kalmijn, and Uunk 2013; Jaschinski 2011). Thus, we may expect to find that women have lower chances than men of having a second child soon after separation. On the other hand, children usually reside with their mother after separation. According to the sibling hypothesis, an important motivation for having a second child is to provide a playmate for the firstborn child, which generally means that the first and the second child must be spaced reasonably close together. The larger the age gap is between the youngest child and a newborn half-sibling, the less value the child has as a sibling to the older child, and the less likely it is that the parent will want to have another child (Holland and Thomson 2011). This suggests that the age of the first child is an important influence on the timing of the transition to the second child, but less so if the first child does not live with the parent who is considering having a second child. Since children usually live with their mothers, we may expect to find that women have a stronger motivation than men to have a second child shortly after entering into a new union.

3 Data and Methods

Data for this investigation come from the third wave of the German Family Panel (*pairfam*) and the eastern German subsample *DemoDiff* (Huinink et al. 2011; Kreyenfeld et al. 2012). The German family panel is a multi-actor study that interviews anchor respondents from the birth cohorts 1971-73, 1981-83, and 1991-93; along with their partners and their parents. The first wave was conducted in 2011/12, and the respondents have been interviewed since then on an annual basis. A special feature of this dataset is that it includes detailed fertility and partnership histories (Schnor and Bastin 2012). Most importantly, it includes not only all cohabitation and marriage episodes, but also “living apart together” (LAT) arrangements. For our analysis, this means that we are able to observe new unions not just from the start of cohabitation, but from the start of the partnership. This enables us to gain a more nuanced perspective on the interrelation of union and fertility dynamics after separation than was possible in previous studies which restricted their analysis to the period when respondents were cohabiting or married to a new partner. Another important feature of the German Family Panel, which also sets it apart from other studies, is that children and partnerships can be clearly matched in the data. This enables us to identify whether the other parent of a respondent’s second child was a new partner, or was the mother/father of the first child.

For our investigation, we have selected data from the third wave (2011/12), and have limited the investigation to anchor respondents of the cohorts 1971-1973 and 1981-1983. Since we are interested in second birth spacing, our sample has been limited to respondents who have at least one biological child. Respondents with multiple births have been deleted from the sample. The main process time is the age of the first child measured in months since the last birth. In the multivariate analysis, the cases are censored when the first child reached age 10. The total sample consists of 2,930 second births: in 2,530 of these cases the other parent was also the parent of the first child, and in 400 of these cases the other parent was a new partner who was not the parent of the first child.

In the descriptive part of this paper, we provide statistics on the *mean birth intervals* of respondents who remained partnered with the mother/father of their first child, and those who had a second child with a new partner. This method is very simple and straightforward, but it does not account for censoring. A more sophisticated method is the *cumulative incidence curves* approach (Coviello and Boggess 2004). The cumulative incidence curves method allows us to consider two competing events: namely, having a child with the parent of the first

child, or having a child with a new partner. For these two competing events, the probability by the age of the first child is calculated.

The multivariate analysis consists of two parts. In a first step, following the procedure developed by Thomson et al. (2014), we estimate a *competing risk model*. The competing outcomes are the rate of having a second child with the parent of the first child, and the rate of having a second child with a new partner. For the calculation of both, the process time is the age of the first child. This analysis matches the cumulative incidence curves that we provide in the descriptive part of the paper. The drawback of this approach is that the partnership status is not accounted for in this type of analysis. All of the individuals (and episodes) are entered into the analysis, irrespective of the current partnership status of the respondent. This approach may lead to misleading conclusions if different population subgroups have different rates of re-partnering. Thus, in a second step, we take a more nuanced approach by accounting for the respondent's union status after the first birth, and treat the partnership status as a time-varying covariate. Furthermore, we estimate separate models depending on whether the respondent was still partnered with the parent of the first child or had a new partner. All of the analyses have been weighted, in large part to account for the oversampling of eastern Germans in the sample.

Among the major control variables in our investigation is *region*; i.e., whether the respondent was living in eastern Germany (including Berlin) or western Germany. The time-varying covariates are the respondent's *age* (categorized) and the *duration of the partnership* (categorized). Among the time-constant covariates is the respondent's highest level of education achieved up to the last interview; i.e., whether the respondent had a university or college degree (high), a vocational training degree (medium), or no degree (low); or was still in education. We also control for the respondent's gender. For ongoing unions, this variable is rather meaningless. Although we do not observe couples, we can assume that the second birth behavior of women and men of the same birth cohort was roughly similar. But for the reasons mentioned above, we expect to find differences between the second birth patterns of men and women in new partnerships. (Table A1 in the appendix provides the descriptive statistics of our sample, broken down by type of union.)

4 Descriptive Findings

In order to gain an initial understanding of how separation affects birth spacing, we provide simple descriptive statistics; namely, the *mean difference* between the first and the second birth. Because such a statistics can only be calculated for respondents who had at least two

children, we limit this part of the descriptive statistics to respondents with at least two children, and who were at least 38 years old at the time of the interview. For this sample, the mean interval between the first and the second birth was 3.7 years, which is in line with the results from vital statistics data (Pötzsch 2012). In our sample, we further distinguish between those respondents who had both of their children with the same partner, and those who had each of their two children with a different partner.

As we can see in Table 1, among the respondents who remained with the father or the mother of their first child, the average interval between the births of their first and their second child was 3.4 years. Among the respondents who had a second child with a new partner, the average interval between the births of their first and their second child was almost twice as large: i.e., 6.1 years among women and 7.3 years among men. On the whole, these simple descriptive statistics suggest that the average interval between the first birth and the second birth among those who had their second child with a new partner was longer among men than among women.

Table 1: Mean difference between first and second child (standard error in parenthesis), cohorts 1971-73

	Men	Women	All
Second child with parent of first child	3.3 (0.08)	3.4 (0.07)	3.4 (0.05)
Second child with new partner	7.3 (0.76)	6.1 (0.37)	6.4 (0.35)
All	3.6 (0.11)	3.8 (0.08)	3.7 (0.07)

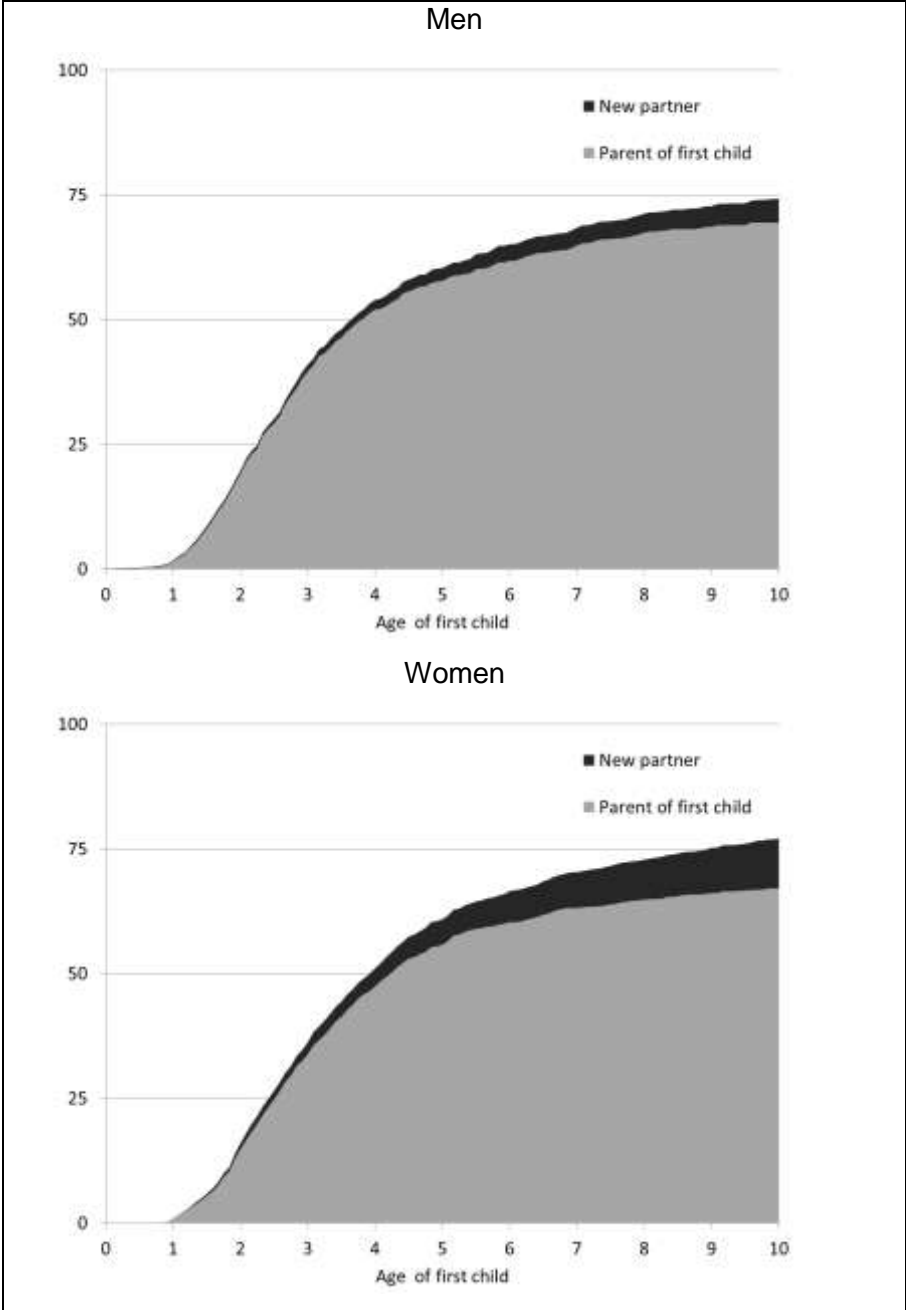
Note: Analysis was weighted with "d1ca1weight".
Source: German Family Panel (pairfam/DemoDiff), Release 3.0

The advantage of the representation in Table 1 is that it provides us with clear-cut descriptive insights into the birth spacing behavior of individual parents who experienced a union dissolution. However, simple descriptive statistics of this kind are unable to account for censoring. To address this shortcoming, we provide in Figure 1 cumulative incidence curves for the transition to the second child. The competing events are having a child with the parent of the first child ("parent of first child" in Figure 2) and having a child with a new partner ("new partner" in the Figure 2). The two outcomes are treated as competing events, with age of the first child used as the process time.

Figure 2 reveals that men and women had about the same probability of having a second child with the parent of the first child. When the first child was age 10, around 67 percent of the woman and 69 percent of the men had a second child with the parent who was the

father/mother of the first child. However, we observe large differences between men and women in the probability of having a second child with a new partner. Among the women, about 10 percent had a second child with a new partner when the first child was age 10. Among men, the respective share was only five percent. It therefore appears that the overall probability of having a second child within 10 years after the first birth was lower among men than among women.

Figure 1: Transition probabilities by whether second child is from a new partner, results from cumulative incidence curves



Note: Analysis was weighted with "d1ca1weight".
 Source: German Family Panel (pairfam/DemoDiff), Release 3.0

5 Multivariate Findings

5.1 Competing Risk Approach

Table 2 contains the results of the competing risk model. The column labeled “2nd child with parent of first child” gives the relative risks of having a second child with the mother or the father of the firstborn child. The results are very much in line with the findings on second birth fertility for Germany. The second birth intensities peaked when the first child was between two and three years old. The level of education also follows a well-known pattern: i.e., educational participation strongly reduced second birth fertility, while having a high level of education increased it. The latter finding is usually explained by the tendency of university graduates to space their births closer together (Kravdal 2001; Kreyenfeld 2002). We also find that eastern Germans had much lower second birth rates than western Germans; a result which is also in line with prior research (Goldstein and Kreyenfeld 2011). The second births risks of eastern Germans were about 40 percent lower than those of western Germans. Except among the very young, the age of the respondent did not have much influence on second birth fertility. The second birth risks among respondents aged 25 and younger were almost one-quarter lower than those of the respondents in the reference category who were aged 25-29. Gender did not influence second birth fertility. It is important to note that our investigation looks at the rates at which respondents had their first two children with the same partner. In such an analysis, we would not expect to see any gender differences.

The column “2nd child with new partner” gives the relative risks of having a second child with a partner who was not the parent of the first child. The results clearly differ from the results discussed above. First, the baseline intensity (the age of the first child) follows a completely different pattern. The intensities do not peak at age two to three, as they did in the previous analysis. Instead, they gradually increase with the age of the first child. The level of education also follows a different pattern. There is a negative educational gradient. We also find a different pattern for the age of the respondent, as the youngest age group has strongly elevated second birth rates. This finding is in line with the results of international studies which have shown that multi-partnered fertility is more common among the young and the less educated (Thomson et al 2004). Interestingly, region also changed its sign. Although we find that eastern Germans were very reluctant to have a second child with the father/mother of the firstborn child, they were more likely than western Germans to have a second child with a new partner. This finding corresponds to the results of previous analyses of descriptive statistics on family arrangements, which found that family structures in eastern Germany are

diverse (Kreyenfeld and Martin 2011; Steinbach 2008). Finally, if we turn to the effect of gender, we find strongly elevated second birth rates among women. This finding corresponds to the results of the cumulative incidence curves analysis (see Figure 1), which indicated that women have a higher probability than men of having a second child with a new partner. This result is rather surprising, as we know from previous studies that women are less likely than men to re-partner after a union dissolution. To tease out the effect of partnership status on second birth fertility, in the following investigation we look more specifically at each respondent's partnership status after his or her first child was born.

Table 2: Results from competing event history model (piecewise constant baseline hazard). Dependent variable: Transition to second birth

	2nd child with parent of first child	2nd child with new partner
Age of first child		
0 to 1 year of age	0.31 ***	0.31 ***
2 to 3 years of age	1	1
4 to 5 years of age	0.59 ***	2.12 ***
6 to 8 years of age	0.32 ***	2.21 ***
8 to 10 years of age	0.17 ***	2.87 ***
Level of education		
In education	0.61 **	0.88
Low	1.06	1.41 **
Medium	1	1
High	1.16 **	1.00
Region		
Western Germany	1	1
Eastern Germany	0.61 ***	1.30 **
Age of respondent		
Less than 25 years of age	0.78 ***	1.55 ***
25 to 29 years of age	1	1
30 to 34 years of age	1.08	0.65 ***
35 years of age and older	0.89	0.39 ***
Gender		
Male	1	1
Female	0.98	1.99 ***
Exposure	265,609	265,609
Failures	2,530	400

Note: Analysis was weighted with "d1ca1weight". Controlled for missing information on level of education. *** p<0.01; ** p<0.05; * p<0.10.

Source: German Family Panel (pairfam/DemoDiff), Release 3.0

5.2 Union Dynamics and the Second Child

When applying the competing risks approach, we follow the principles outlined by Thomson et al (2014). The drawback of this strategy is, however, that it ignores the underlying

partnership dynamics. Certain groups may be more likely to have a child with a new partner because they have better chances of re-partnering after the first birth, and thus are more likely to be at risk of having a child in a new partnership. We will address this issue by limiting our subsequent analysis to partnership episodes and estimating separate models by partnership status. We distinguish here between respondents who were still partnered with the father/mother of the first child, and respondents who had a partner who was not the parent of the first child. Episodes in which the respondents did not have a partner are omitted.¹

Table 3 provides the results of this investigation. The column with the title “all partnerships” gives the results for all of the partnership episodes. This model includes a time-varying covariate for the partnership situation. The model suggests that the risk of having a second child was 24 percent lower among respondents in a new partnership than it was among respondents in an ongoing partnership. This seems logical, as we can assume that people in a new partnership need some time to stabilize their partnership before they have a child. However, this finding appears to contradict prior stepfamily research which showed that stepfamilies tend to have higher birth rates than comparable couples in nuclear families (Griffith, Koo, and Suchindran 1985; Henz 2002; Thomson 2004). The differences between these results may be attributable to the fact that prior research did not take into account full partnership histories, but instead limited their analysis to co-residential episodes. In line with prior stepfamily research, Table A2 in the appendix, which displays the results for co-residential episodes only, shows that the birth risks for respondents in ongoing unions were slightly elevated.

The column “ongoing partnerships” gives the results for episodes in which the respondents were partnered with the parent of the firstborn child. The results are very much in line with those of the competing risk model presented above: we find the same large east-west differences in behavior, with eastern Germans being less likely to have second children. The educational gradient also runs very much in the same direction. But when we turn to the column “new partnerships,” we see that the results here differ from those of the prior analysis. First, we find a much more sensible pattern for the baseline hazard. The prior analysis had

¹ It should be noted that this approach does not tell us directly whether the parent of the second child was the new partner. We assume that if the respondent had a second child while in an ongoing partnership with the parent of the first child that the same partner was the parent of both children. If the second child was born while the respondent was in a new partnership, we assume that the new partner was the parent of the second child. This is a simplified assumption, and does not fully match the prior competing risk analysis which directly used information about whether the parent of the second child was identical to the parent of the first child. Among the cases in which the respondent was in an ongoing partnership, 34 of the children out of 2,503 second births had a parent who was not the father or mother of the first child. Among the cases in which the respondent was in a new partnership, 16 children out of 306 second births had a parent who was the father/mother of the first child (see also the bottom of Table A1 in the appendix).

suggested that the risk of having a second child with a new partner increased with the age of the first child. This analysis, which more carefully identifies the exposure population, shows that the second birth intensities peaked when the first child was between two and four years old. The peak was less pronounced than it was among the respondents in an ongoing partnership. However, the results suggest that newly partnered couples also tended to space their births closely, if they were already at risk of having a second child when the first child was still young. In addition, the prior analysis showed that respondents aged 25 and younger were very likely to have a child with a new partner. Furthermore, eastern German women were shown to have been at higher risk of having a child with a man who was not the father of the first child. We do not find these results in this specification. In other words, eastern Germans had a higher probability of having a second child *with a new partner*, but they were not more likely to have a second child *in a new partnership*. This apparent contradiction can be resolved if we consider that eastern German women are shown to have a higher probability of having children outside of any partnership than western German women, a finding which has been confirmed by other studies on east-west German differences in behavior (Bastin 2012). The effect of gender also appears to have differed from the effect seen in the prior analysis. While women are still shown to have elevated second birth risks, the effect is no longer significant. This finding is contrary to our expectations. Since we know from earlier studies that women are less likely than men to re-partner after union dissolution, we expected to find that the effect of gender increased when we limited our investigation to partnership episodes. This does not, however, appear to be the case, possibly because women are more likely than men to have children outside of any partnership, or because single men tend to underreport their children in surveys (Rendall et al. 1999). There are, however, also similarities between these findings and those from the competing risk approach. For example, we find that less educated respondents were more likely to have a child in a new partnership; i.e., that they were at higher risk of having a second child *with a new partner* and of having a child *within a new partnership*.

Table 3: Results from event history model (piecewise constant baseline hazard), Dependent variable: Transition to second birth by union status

	All Partnerships	Ongoing Partnerships	New Partnerships
Partnership status			
Ongoing partnership	1	--	--
New partnership	0.76 ***	--	--
Region			
West Germany	1	1	1
East Germany	0.70 ***	0.66 ***	1.11
Level of education			
In education	0.73	0.71 **	0.69
Low	1.16 **	1.16 **	1.41 **
Medium	1	1	1
High	1.15 **	1.13 *	0.98
Gender			
Male	1	1	1
Female	1.07	1.03	1.20
Age of first child			
0 to 1 year	0.29 ***	0.28 ***	0.61 *
1 to 2 years	1	1	1
2 to 3 years	0.72 ***	0.71 ***	1.00
3 to 5 years	0.47 ***	0.45 ***	0.70
5 years and more	0.35 ***	0.28 ***	0.80
Age of respondent			
Less than 25 years of age	0.94	0.88	0.84
25 to 29 years of age	1	1	1
30 to 34 years of age	1.00	1.01	0.90
35 years of age and older	0.80 ***	0.83 ***	0.42 **
Duration of partnership			
Less than 2 years	1	1	1
2 to 4 years	0.92	0.87	1.11
4 to 6 years	1.00	0.92	1.65 ***
6 to 10 years	1.14	1.08	1.56 *
10 years and more	1.12 *	1.08	1.61 *
Exposure	265,609	201,750	27,744
Failures	2,930	2,503	306

Note: *** p<0.01; ** p<0.05; * p<0.10.

Source: German Family Panel (pairfam/DemoDiff), Release 3.0 (2011/2012)

6 Conclusions

In this paper, we have investigated second birth dynamics among German respondents who separated from the father or the mother of their first child. We specifically focused on the second birth because having a second child is a very common event in most western European countries. Most people want to have two children, and if they have a second child they tend to have it two to three years after the first child is born. Men and women who separate after the birth of their first child not only experience a breakdown in their partnership, but also a disruption in their fertility career. In light of these trends, we provided in this paper descriptive statistics on birth intervals which indicated whether the respondent had a second child with a new partner. The descriptive investigation showed that the mean interval between the first and the second birth was about 3.4 years. For respondents who separated, the mean interval was almost twice as long. The descriptive statistics also revealed some differences by gender, showing that the birth intervals of those who had a second child with a new partner were significantly larger among men than among women.

In the multivariate analysis, we followed the approach recently presented by Thomson et al. (2014) and colleagues in *Demography*. They employed a competing risk model in which the competing outcomes were having two children with the same partner or having the first and the second child with different partners. Thomson et al. (2014) focused on Australia, the United States, Norway, and Sweden. Our investigation, in which we used data for Germany, uncovered a pattern similar to the patterns found for other countries; namely, that being young and having a low level of education is related to multi-partnered fertility. An interesting finding for Germany is that although eastern Germans had much lower second birth rates than western Germans, they had much higher chances of having a second child with a partner who was not the father or the mother of their first child. These results support prior descriptive evidence which showed that stepfamilies and other types of “non-standard” families are more widespread in eastern than in western Germany. Our investigation also revealed that the birth intervals between the first and the second birth were larger for men than for women if the second child was with a new partner. This is an important demographic finding, because it suggests that the increase in separation and divorce rates may result in differences in the fertility schedules of men and women. Vital statistics, which generally report births by female characteristics only, would thus no longer be indicative of the male life course. However, given the difficulties associated with collecting valid fertility histories of men who have

children outside of any union, some caution is warranted in interpreting these findings (Rendall et al. 1999).

In some respects, we went beyond the work of Thomson et al. (2014). While they lacked access to comparable union histories, we were able to draw upon a rich dataset. This dataset allowed us to clearly link children and partnerships, and thus to identify whether a child was born in a new union. Furthermore, the data contain detailed partnership histories, including both residential and non-residential partnership episodes. We were thus able to study not only the probability of having a second child *with a new partner*, but also the probability of having a second child in *a new partnership*. The two approaches generated some common findings. For example, we found that less educated women had higher chances of having a second child with a parent who was not the father of their first child, and of having a second child in a new partnership. There are, however, some stark differences between the findings produced by the two approaches. We found that eastern Germans were more likely to have a second child with a new partner, but that they did not have higher second birth rates in a new partnership. This was because eastern Germans had higher chances of having children outside of any partnership. These differences are subtle, but they call for a differentiated interpretation of birth dynamics in higher order unions. Having a child *with a new partner* and having a child in *a new partnership* are conceptually different from one another. While this may be obvious, due to a lack of data many prior studies were unable to make this differentiation.

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Table A1: Occurrence and exposure table for multivariate analysis

	Ongoing Partnership		New Partnership		Single	
	Exp.	Occ.	Exp.	Occ.	Exp.	Occ.
Age of first child						
0 to 1 year	98721	642	4101	29	10629	34
1 to 2 years	54755	1229	6214	76	9828	47
2 to 3 years	25796	422	7028	104	7124	27
3 to 5 years	14208	153	5858	51	5078	9
5 years and more	8270	57	4543	46	3456	4
Region						
Western Germany	122328	1783	15204	162	20304	80
Eastern Germany	79422	720	12540	144	15811	41
Gender						
Male	78775	955	8444	76	11403	26
Female	122975	1548	19300	230	24712	95
Level of education						
In education	3467	26	1022	8	1150	4
Low	24240	358	4076	59	6554	36
Medium	137715	1586	18750	199	24563	72
High	35757	524	3878	40	3739	9
Missing	571	9	18	0	109	0
Age of respondent						
Less than 25 years of age	45773	487	7709	92	11774	60
25 to 29 years of age	71657	900	10034	125	12439	38
30 to 34 years of age	57158	798	6950	72	7847	14
35 years of age and older	27162	318	3051	17	4055	9
Duration of partnership						
Less than 2 years	37708	448	11219	98	-	-
2 to 4 years	35819	388	6618	69	-	-
4 to 6 years	31129	375	3825	56	-	-
6 to 10 years	26293	352	2543	35	-	-
10 years and more	70801	940	3539	48	-	-
Total	201750	2503	27744	306	36115	121
Failures by parental status						
- Parent of first child		2469		16		45
- New parent		34		290		76

Table A2: Results from event history model (piecewise constant baseline hazard), Dependent variable: Transition to second birth by union status (only respondents in co-residential union)

	All unions	Ongoing unions	New unions
Partnership status			
Ongoing union	1	--	--
New union	1.12	--	--
Region			
Western Germany	1	1	1
Eastern Germany	0.64 ***	0.61 ***	1.03
Level of education			
In education	0.67	0.60 **	0.98
Low	1.18 ***	1.19 **	1.16
Medium	1	1	1
High	1.29 ***	1.30 ***	1.07
Gender			
Male	1	1	1
Female	1.04	1.04	1.08
Age of first child			
0 to 1 year	0.29 ***	0.28 ***	0.54 ***
1 to 2 years	1	1	1
2 to 3 years	0.77 ***	0.75 ***	1.10
3 to 5 years	0.51 ***	0.51 ***	0.66 **
5 years and more	0.42 ***	0.35 ***	0.76
Age of respondent			
Less than 25 years of age	0.95	0.97	0.84
25 to 29 years of age	1	1	1
30 to 34 years of age	0.99	1.01	0.81
35 years of age and older	0.80 ***	0.82 ***	0.56 *
Duration of partnership			
Less than 2 years	1	1	1
2 to 4 years	0.92	0.90	1.02
4 to 6 years	1.02	0.98	1.30 ***
6 to 10 years	1.09	1.07	1.25 *
10 years and more	1.06	1.05	1.11 *
Exposure (failures)	206,626	190,074	16,552
Failures	2,664	2,416	248

Note: *** p<0.01; ** p<0.05; * p<0.10.

Source: German Family Panel (pairfam/DemoDiff), Release 3.0 (2011/2012)