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PARTNERS' EDUCATIONAL PAIRINGS, WORK DIVISIONS, AND FERTILITY: EVIDENCE FROM GERMANY

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Abstract

The relationship between education and fertility among individuals systematically varies by the education of the partner, according to previous research. For example, couples with two highly educated partners seem to have an accelerated transition to second births, compared to couples with one highly educated partner only, at least in some countries. However, little is known about the underlying mechanisms which may drive this phenomenon. Bringing together the literature on the education-fertility nexus and on associations between men's involvement with domestic work and fertility, this study investigates the role of gendered domestic work divisions for the educational pairing-fertility relationship in couples. Using data from the German Socio-Economic Panel, cox regression, and a cohort approach, findings confirm educational pairing effects; hypergamous couples have higher first birth rates in the birth cohorts 1950-1965 and 1966-75, while highly educated homogamous couples display the highest second birth rates in all examined birth cohorts (1950-65, 1966-75, 1976-85). While educational pairing effects for first births are largely mediated by paid and unpaid work divisions, this is not the case for second births. Here, positive effects of increases in his time spent with housework are independent of the educational pairing effect, warranting future exploration into additional mechanisms.

Keywords

Couples, fertility, education, housework, child care, Germany.

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Partners' Educational Pairings, Work Divisions, and Fertility: Evidence from Germany

Natalie Nitsche

1. Introduction

The late 20th and early 21st century has been a period of continuing social change with respect to women's and men's roles in societies. Separate spheres, implying rather rigid gender roles of women as care-takers or homemakers and men as breadwinners, were a characterizing feature of the social organization of families and paid employment at least since the age of industrialization in the 19th century, in many European regions (Creighton 1996, Horrel and Humphries 1997, Pfau-Effinger 2004). When women entered higher education and the labor market in steeply increasing numbers since the 1960s, men's involvement in domestic work rose too, but less rapidly so (Bianchi et al. 2000, Bianchi et al, 2012). These developments went hand in hand with the postponement of first births, increases in childlessness, and declines in higher parity births and total fertility rates (Gustafsson 2001, Van de Kaa 1987, Sobotka 2004, Billari and Kohler 2004). Today, women have outnumbered men in college graduation rates across Europe, North-America, and beyond (Schofer and Meyer 2005). Women continue to make their way into the labor market, both in terms of participation rates and vertical advancements, yet gender wage gaps and occupational segregation persist, and domestic and care responsibilities continue to be perceived as female activities and are carried out to a large(r) extent by women, especially after children are born and when workplace policies are perceived as unsupportive of equal gender roles (Polacheck et al. 2015, Pedulla and Thebaus 2015, Gangl and Ziefle 2009, Bianchi et al. 2012). Research suggests that fertility levels may increase once paid and unpaid work divisions are shared more equally between men and women (McDonald 2000a & 2000b, Goldscheider et al. 2015), yet to date, fertility rates remain well below replacement in most advanced societies, further underscoring the need for deeper explorations of the relation between partners' paid and unpaid work divisions, socio-economic capital, and their childbearing behavior.

Reflecting on these developments, various academic debates ensued, two of which frame the current paper. The first addresses the relationship between women's (and increasingly men's) gains in education, employment, monetary resources and their fertility behavior (for an overview see Balbo et al. 2013). More and more, socio-economic resources of the male partner, in conjunction with the woman's, are coming to the fore in this context. The second debate centers on men's contributions to house- and care work, assessing their role for women's and couples' work-family balance, and, in extension, for their childbearing behavior (see Dommermuth et al. 2017 for a recent summary). Explicit linkages between these two debates have been rather rare, even though the connection is apparent. How couples split or arrange for the second shift may be an important

mechanism which may be mediating the relationship between the partners' individual or joint resources and their childbearing behavior. Vice versa, housework- and care divisions may be a derivative of the partners' educational pairings and relative involvement in employment careers. Previous research indicates the existence of both significant associations between her and his[1] relative education and fertility and between domestic work divisions and fertility. For example, highly educated homogamous couples have been shown to have higher second and third birth rates across Europe compared to couples with only one highly educated partner, i.e. hypergamous couples in which he has more education than she has, or hypogamous couples in which she is more highly educated than him today (Nitsche et al. forthcoming). Moreover, increases in his time spent with child care are related to higher second birth rates in several contexts (Cooke 2004, Cooke 2009, Duvander et al. 2010). However, it is not yet well understood what the underlying mechanisms of such educational pairing effects may be, for instance, no study has yet tested whether variation in the division of house- and care work by educational pairings may be partly driving this significant relationship between partners' educational pairings and their childbearing behavior. Also, while studies on the association between domestic work divisions and subsequent birth transitions have controlled for partners' individual resources and paid employment arrangements, partners' educational pairings have not yet been modeled in this context, leaving open the question of whether house- or care work division effects may be masking negotiated arrangements based on educational differences between partners. Finally, little is known on whether and how the relationship between couples socio-economic resources and their childbearing behaviors and the potential mediating role of unpaid work divisions varies over time or birth cohorts. The present study sets out to shed some light on these issues.

Using data from the German Socio-Economic Panel and cox proportional hazard models, I use stepwise models to test whether associations between educational pairings and birth transitions are partly mediated by housework and paid work divisions. The 30-year panel duration of the GSOEP allows for a cohort design, covering the birth cohorts 1950-1965, 1966-1975, and 1976-1985. In a nutshell, the contribution to the literature of this piece is twofold: First, findings confirm educational pairing effects for the German context. Hypergamous couples display higher first birth rates in the two older cohorts, while highly educated homogamous couples have the highest second birth rates across all three cohorts, in particular compared to hypogamous couples. Second, while educational pairing effects for first births are largely mediated by paid and unpaid work divisions, this is not the case for second births. Here, positive effects of increases in his time spent with housework appear independent of the educational pairing effect.

[1] 'Her' and 'his' refer to the partners in a couple, a terminology used throughout the paper.

2. Background

2.1 Theoretical Considerations

McDonald has theorized that gender equity on the couple level matters for women's fertility decisions and couples' fertility outcomes (2000a & 2000b). He argues that women can participate equally in education and the labor market in advanced nations today, yet gender symmetry is not achieved in the division paid and unpaid work, as nurturing and housework are often still women's responsibilities. But since women have made considerable gains in self-control over their reproduction, some women will in consequence of this "uneven and stalled revolution" (England 2010) choose to limit their fertility in order to be able to fully participate in education and the labor market (McDonald 2000a, 2000b). McDonald further hypothesizes that conflicting levels of gender equity in families and family policies versus social other institutions such as education and labor market institutions within a society are responsible for the fertility decline to much below replacement levels in many Western countries (2000a:1), for instance Germany. In other words, when there is good access to education and employment but at the same time institutional support for traditional gender roles within families, women will feel pressured to make a choice between childrearing and career. Accordingly, both gendered domestic work divisions and relative resources on the couple level, as well as gender equity and gender relevant social policies on the societal level, and the interaction of those 'micro' and 'macro' elements, matter for fertility decision-making. In addition, gender ratios in higher education are shifting, likely with profound implications for educational assortative mating, relative resources in couples, possibly affecting family dynamics such as union dissolution and childbearing processes (Van Bavel 2012). Thus, when investigating how women's (and men's) educational and employment career trajectories are linked to their childbearing behavior, it is paramount to integrate the educational attainment of the partner, alongside gendered domestic work divisions. Education is usually acquired early in the life course, and can be considered a stock resource. Earnings are dependent upon employment and labor market participation decisions, and can be endogenous with respect to childbearing choices and behavior (Cramer 1980). I thus argue that income and employment are more endogenous to housework- and care divisions than non-reversible educational resources, which is why I will focus on educational pairings as the main measurement for resources between partners. Relative employment participation and income will also be modeled. This allows for analyzing whether the effect of education and educational pairings may be due to the partners' joint and relative monetary resources, or hinge on their paid work divisions. However, due to the endogeneity concerns, income and employment are rather treated as control variables, with the focus of the analyses being on the educational pairings and the measurements of unpaid work divisions, which allow for assessing the gendered division of the domestic workload more directly.

Theories on families and fertility have hypothesized more specifically how each partner's individual and their joint resources may relate to the couples' childbearing behavior. The economic theory of the family postulates a strict role specialization as the

most rational family arrangement (Becker 1981). Opportunity costs are argued to be minimized when one partner specializes in paid employment and the other in homemaking and childrearing. Yet, this approach is not gender neutral, as it argues that women are especially outfitted for the nurturing career-role (ibid). This theory implicitly predicts higher first and subsequent birth transition rates for couples with educational-, and/or income-, and/or employment hypergamy. This can be extended to couples with a female breadwinner and a male home maker; yet, women's position in the labor market is more vulnerable, especially around the time of childbirth (Gustafsson et al. 1996, Gangl and Ziefle 2009). Female breadwinner couples may therefore be more reluctant to add another child to the family than male breadwinner couples. The resource pooling approach argues that extreme role-specialization is inflexible, and that dual-earner couples' will be better able to adapt to challenges in the labor market by pooling their resources (Oppenheimer 1997). Thus, couples with a larger joint amount of educational or economic capital (e.g. homogamous highly educated couples, couples with two full-time workers) can be expected to have higher birth transition rates than other types of couples. In extension, pooling may also imply pooling responsibilities for non-labor-market-related activities, so that divisions of care work in which both contribute can be expected to be associated with higher birth rates. Third, the bargaining approach argues that socio-economic resources can be equated to negotiation power, and that the partner with more resources has more leverage in negotiating for their desired outcome (Blood and Wolfe 1960). Given that women today still take on the majority of house-and care work, especially after the birth of a first child (Bianchi et al. 2000 & 2012; Schober 2013; Grunow, Schulz, and Blossfeld 2012), women might be better able to negotiate circumstances facilitating work-family compatibility (expenditures for child care and domestic services, men's participation in domestic work etc.) when they hold a larger share of resources. Work divisions may become more meaningful for decision-making after the first birth, as domestic workloads increase significantly then. The bargaining approach thus predicts higher birth rates for couples with educational- or income hypogamy, in particular for second births.

2.2 Relationship between Partners' Resources and Childbearing—Previous Literature

2.2.1 Partners' Education

Previous findings on the relationship between couples' educational pairings and their birth transitions have been nuanced and dependent on parity, context, and possibly specification of relative education. However, among the few pieces available, evidence accumulates pointing at a possibly distinct pattern of childbearing of highly educated homogamous couples today. One study pooling data from 24 European countries indicates that highly educated homogamous couples postpone the first birth the most and have higher second and third birth rates compared to hypergamous or hypogamous couples with only one highly educated partner in many countries (Nitsche et al. forthcoming). However, this study does not include data on Germany. For the German context, the transition to

parenthood contingent on both partners' education has been examined twice, and the transition to second births once, using micro census data (Micro-census data lack full fertility histories, thus, they need to be derived from the household rosters). Bauer and Jacob (2010) find that her education has a stronger influence on the probability of a first birth than the education of the male partner, yet educationally homogamous couples have a higher likelihood of becoming parents than hypogamous or hypergamous couples. Wirth (2007) has examined couples with at least one highly educated partner only. She finds that couples in which the woman has a higher level of education than the male partner remain childless most often, followed by highly educated homogamous couples (Wirth 2007: 188). These diverging findings may be related to differences in the examined birth cohorts, or the educationally different sub-samples, yet, they underscore the importance of differentiating the fertility-education relationship by partner's education in the German context. With respect to second births, it has been shown that the positive effect of women's education on second births risks disappears when controlling for his education, also with data from the micro-census (Kreyenfeld 2002). Specifically, men's college education is positively associated with second births. The paper does not formally test interaction effects between her and his education, yet, the positive coefficient on his college education and relatively strong educational homogamy in Germany hint at possibly more nuanced effects in the educational pairings (ibid.), and further accentuate the need for a more systematic analysis of partners' educational pairings and second births in this populous low-fertility country. However, no study has yet explicitly modeled second birth risks by educational pairings for the German context. Research on other single countries indicates later entry into parenthood among highly educated homogamous couples also in the Netherlands (Corijn et al 2006) and in a sample pooling data from Bulgaria, France, Norway, and Poland (Osiewalska 2015). Highly educated homogamous 'power-couples' also displayed higher second and third birth risks in Sweden (Dribe and Stanford 2010). No interaction effects of her and his education on first birth risks were, however, found for Finland (Jalovaara and Miettinen 2013).

2.2.2 Gendered Divisions of Unpaid Labor and Childbearing

Relatively few panel studies have examined the relationship between the division of housework or childcare and subsequent birth transitions, and most focus on second births. Domestic workloads increase sharply after the birth of the first child, which may explain why this literature has focused on the transition to second births, instead of first births, as the division of care-and housework may be more decisive for fertility decision-making when it poses a larger burden. Third births less common in advanced countries, hence, meaningful analyses are difficult due to sample size restrictions. Findings on the association between housework divisions and birth transitions are mixed and appear context dependent. Positive effects of his share of housework on second birth transitions have been found for the US (Torr and Short 2004) and Japan (Nagase and Brinton 2017), but not for Germany (Cooke 2004, Henz 2008), the UK (Schober 2013), or Australia (Craig and Siminski 2011). In addition, a study on Hungary combined housework- and childcare divisions into

one measure, finding that couples who share domestic work more equally have higher second birth transitions (Olah 2003). While the measure for relative housework divisions was showing no effect in Australian HILDA data, mom's own absolute hours spent with housework were negatively associated with subsequent second births (Craig and Siminski 2011). For Norway, Dommermuth et al. (2017) find that couples with very unequal shares of housework have lower birth transition rates. Specifically, first, and second birth rates are reduced when he does much more than she, and third births are reduced when she does much more than him, compared to couples who share equally or semi-equally (ibid.). In Italy, third (but not second) birth transition rates were depressed when he did less housework after the birth of the previously born child, compared to before that birth (Mencarini and Tanturri 2004). In addition to Dommermuth et al. two other studies have looked at housework divisions and first birth risks. In Germany, couples with 'patriarchal' housework arrangements, meaning the woman taking care of the majority or all of cleaning, cooking, and shopping, had significantly higher first (and second) birth risks than any other type of couple (Henz 2008). This study uses data from the German Family Survey, collected between 1988 and 2000 (ibid.). Schober (2013) finds only a weak and curvilinear effect for the UK. Increases in her share of housework were associated with higher first birth risks, but not beyond a share in which she did about two thirds of the housework or more. In sum, couples with more traditional divisions of labor tend to have higher first birth rates, possibly signaling selection effects of couples with more traditional gender role preferences self-selecting into unequal divisions of housework and parenthood, in particular in Germany.

With regards to childcare, a positive association between increases in his share of care and second birth transition rates have been found for Germany (Cooke 2004) and Italy (Mencarini and Tanturri 2004, Cooke 2009), but not for Norway (Dommermuth et al) or Spain (Cooke 2009). Furthermore, a study on fragile families in the US links increases in perceived father involvement and supportive co-parenting to a higher likelihood among women of having another child with the same biological father (Dush et al. 2011). Fathers' leave-taking for first children was associated with higher second birth risks in Norway (Duvander et al 2010) and Sweden (Olah 2003, Duvander et al. 2010). Again, more child-oriented men may self-select into having more children, meaning the relationship between increases in his care and birth risks may also be endogenous, driven jointly by underlying preference structures. Due to lack of appropriate panel data, this question is difficult to tackle. Furthermore, homogamous highly educated couples may be more egalitarian in their gender ideology, have children later, and then share domestic and labor market work more equally, leading to a more favorable environment for adding a second child. This would mean that the reported effects of house- or care-divisions may hinge upon educational pairings.

2.3 Hypotheses

The discussed family theories and previous literature lead to explicit and testable hypotheses. The New Home Economics (NHE), Oppenheimer's pooling theory, and bargaining theory all predict differential effects of educational pairings on first, and specifically second birth rates:

H1 There will be a significant relationship between partners' educational pairings and their childbearing behavior.

> ***H1a According to the economic theory of the family, hypergamous couples will have the highest transition rates to first and second births.***
>
> ***H1b: According to the pooling theory, homogamous highly educated couples will have the highest transition rates to first and second births.***
>
> ***H1c According to the bargaining approach, hypogamous couples will have the highest transition rates to first and particularly second births.***

Next, according to the economic theory of the family, possible significant educational pairings-fertility relationships should be contingent upon paid and unpaid work divisions between the partners. Once it is accounted for who resumes the role as primary homemaker and caretaker, no residual effects of educational resources should be present. Here, unequal divisions of paid and domestic work will predict higher birth rates, rendering educational pairings insignificant. Predictions of the pooling theory are less clear-cut. While more equal work divisions are expected to predict birth transitions, it is possible that such domestic work division effects are observed in addition to educational pairings effects. Educational pairings may be relevant both via combined current earnings and future earning potential or occupational status. Hence, they may represent both, current economic and social well-being, as well as a perceived insurance against future economic uncertainty and instability. Thus, according to the pooling theory, significant effects of (more equal) domestic and paid work divisions may partly be driving educational pairing effects, but not necessarily entirely, as the other mechanisms may be at play simultaneously.

The bargaining approach can be interpreted as predicting more equal negotiated work divisions when her share of resources is high, or higher than his. Hence, a possible effect of a hypogamous pairing should be absorbed by entering unpaid work divisions into the model, unless the bargaining advantage is used in order to outsource most domestic work to third parties. Finally, the 'doing gender' concept theorizes gendered behavior as a situated achievement (West and Zimmerman 1987). Gendered behavior in the sphere of domestic work is considered the product of gendered displays, with both men and women adjusting certain behaviors to what they believe is expected of them according to prevailing normative ideas. Individuals thus 'doing gender' engage in activities prescribed as gender appropriate, a behavior which may be heightened when other circumstances are running

against gendered norms, for example in hypogamous or highly educated homogamous couples which break with the traditional male breadwinner norm. No clear predictions of the 'doing gender' approach for childbearing behaviors arise, yet, homogamous highly educated or hypogamous couples may see higher birth rates when childbearing and childrearing are perceived as 'female' behaviors. On the other hand, increases in time spent with domestic work among women in such couples, in order to compensate, may lead to her feeling overwhelmed, less likely to opt for adding another child, and in turn lowered birth rates, at least regarding second births. In this case, educational pairing effects should be present in the baseline model, which are then rendered insignificant after entering domestic (but not paid) work divisions. These considerations lead to the following hypothesis:

H2 Potential effects of educational pairings are mediated by the division of housework and child care.

> ***H2a Controlling for paid and unpaid work divisions will render higher birth rates of hypergamous or hypogamous couples insignificant (economic theory and bargaining perspective).***
>
> ***H2b Increased birth rates of homogamous highly educated couples are mediated (at least partly) by domestic work division effects (pooling perspective).***
>
> ***H2c Decreased birth rates of hypogamous and highly educated homogamous couples are mediated by unpaid work divisions ('doing gender' perspective).***

Finally, change over birth cohorts can be expected. Given that increases in women's tertiary educational attainment gained momentum in Germany only in the 1980s and 1990s (in West Germany) (Ammermueller and Weber 2005) and that their labor force participation rate steadily increased from 46% in 1970 to 71% in 2016 (OECD source 1), it seems likely that couples of the 1950-1965 cohort are the most likely to have adhered to the male breadwinner-female homemaker model, and those couples would have the highest birth rates of their cohort. Given women's increasing educational attainment and economic resources, couples in the 1966-75 cohorts may start to display pooling behavior, a trend to be continued by the 1976-86 cohort. Bargaining may be present in particular in the youngest cohort, as both hypogamous couples and men's involvement in domestic work have become more common in the 2000s (Esteve et al. 2012; Bianchi et al. 2012). In addition, a reform of parental leave policies in 2006 has led to a shortening of women's time away from the labor market and increases in paternal leave taking (Spiess and Wrohlich 2008). Traditional gender norms have been and remain relatively strong in Germany, and traditionalization of gendered work divisions after the first birth is widespread (Grunow and Evertsson 2016). Hence, compensation behavior according to the 'doing gender' concept may be present throughout all birth cohorts, and be of importance particularly regarding transition to second births.

3. Method

3.1 Data and Sample

The data for the analyses come from the German Socio-Economic Panel (SOEP) and span the waves 1984-2010[2]. The German SOEP is a longitudinal household survey with yearly waves collected since 1984. The start sample consisted of a little less than 6,000 West-German households (ca. 12,000 individuals), including an oversample of 'foreigners' (first and second wave immigrants without German citizenship). Over the years, several refreshment samples have been added, amongst others a sample of East-German households in 1990. For the purpose of this paper, the samples of 'foreigners' and 'immigrants' have been excluded. Attrition varies by subsample, but roughly speaking, about 50% of households were still being interviewed after 15 years (Spiess and Kroh 2008). The SOEP provides detailed information on fertility-, relationship-, educational-, and work-trajectories, and also includes questions on time use and fertility desires, making it an excellent sample to address the research question.

The unit of analyses are couples. Couples were selected into the analytical sample based on several conditions. They needed to consist of a man and a woman, be co-residential, either married or cohabiting. Only couples in first marriages (but all cohabitations before marriage) were selected, as second marriages are more likely to feature children from previous partnerships and may underlie different dynamics. The women's fertility histories were used for determining the parity status of the couple. Women needed to be childless in the first observed wave in order to be at risk of first birth, or be on parity one for the couple to be included into the sample on second births. Men's fertility histories were disregarded, hence, some of the men may have had additional children from other partnerships. Her age at the union formation needed to be 40 or younger (no restriction on his age). Three birth cohorts based on her birth year were formed: 1950-65, 1966-75, and 1976-85. These cohort cuts were chosen to assure about equally large sample sizes, however, fewer couples fall into the youngest cohort. Selection criteria vary between cohorts, due to sample restrictions and changing social circumstances. Only few couples cohabit in the two older cohorts, here, only married couples were selected. There are no East German couples in the sample before 1990, hence, the oldest cohort consists of West German couples only. The youngest cohort includes married and cohabiting West and East German couples. Relative socio-economic resources and work division may relate to birth timing differently in cohabiting versus married or West versus East German couples, due to differences in legal responsibilities or persistent differences in gendered behavior in the West and East. Interaction effects between the indicators of interest and cohabitating or East German status however were largely insignificant and therefore dismissed. After listwise deletion of missing values, this strategy yields a sample of 1231 couples at risk of a first birth of whom 491 experience a first birth event during the panel duration. For the analysis of the second birth transition,

[2] The estimations are based on the Scientific Use File of the SOEP. This is a slightly reduced sample covering 95% of the original full SOEP sample available to researchers located outside of Germany.

there are 1011 eligible couples at parity one when first observed, and 480 observed subsequent second births in this sample.

Appendix table 1 shows descriptive statistics of the final estimation sample (combined first and second birth samples), by person months. Since the SOEP is not a cohort study, the cohorts differ somewhat in terms of when during their lifespan they have been observed. Women in the oldest birth cohort were between 19 and 35 when they were first observed in 1984. This means that in this cohort, women who had their first or second birth later in life are likely to be overrepresented, since those women whose first (and second) births had already occurred when they were first observed cannot be included. On the other hand, women in the youngest cohort were at most 35 during the most recent wave included in the analysis, meaning that women who have had children at younger ages are possibly overrepresented in this cohort. This situation is reflected in the decreasing average age at first birth in the cohort samples, ranging from 29 in the oldest to 25.6 in the youngest cohort, as well as in the decreasing ages at the begin of the union. The average age at first birth in (West) Germany was, however, 25 in 1980 and 29 in 2010 (online source 1[3]). While it is certainly not ideal that the cohort comparison is based on partly different life spans of the observed women, the models control for these demographic differences and more comprehensive data for Germany are, unfortunately, not available. The great advantage of the SOEP is that the data are of high quality and the measures are consistent over time and therefore well comparable over cohorts.

3.2 Models & Dependent Process

Cox proportional hazard models are used to estimate time to first and second births. A monthly time scale is used to reduce tied event times, ties were handled with the Efron method. When the birth month was not available (8% of events) June as birth month has been imputed. Time origin for first birth models is the month of the marriage or union formation (for cohabitors). Only few union dissolutions occur between the time of marriage and the birth of the first child. Similarly, there are relatively few observed union dissolutions after the birth of the first but more *before* the birth of a second child. Competing risks models, to account for possible bias of resources and work divisions via their effect on union stability, could not be estimated due to the low number of cases. Competing risk models using the full sample (all cohorts) to estimate the effect of resources and work divisions on time to union dissolutions yielded no significant relationships for neither birth transition (models not shown). Thus, it appears that censoring bias is not present or negligible.

[3] http://www.bpb.de/nachschlagen/zahlen-und-fakten/soziale-situation-in-deutschland/61556/alter-der-muetter

3.3 Measurements of Key Indicators and Control Variables

All time-varying covariates, including the educational-pairing variables, are lagged by one year. This strategy secures that relative resources are measured before or around the time of conception and not after the begin of the pregnancy.Appendix table 1 provides an overview and summary statistics of all covariates, separately for categorical and continuous measures.

Education is time varying and has been measured as highest degree completed. The German educational system features various types of post-secondary schooling. After high school completion, formalized occupational training is available as well as college/university education. To simplify, I collapsed education in three broad groups: 1) compulsory education or less, 2) 'Abitur' (high school degree which enables college entry) or apprenticeship training, 3) university education. The models contain dummies for educational pairings, or combinations of her and his education, with the category of both partners having 'Abitur' or apprenticeship (group 2) serving as the reference group. Thus, this variable differentiates between the following types of couples: Three different states of homogamy (low, medium, or highly educated), hypergamy (he highly she medium educated, he highly or medium she low educated), and hypogamy (she highly educated he lower, she medium, educated he low). **Enrollment** is time-varying and is available for both partners. It indicates enrollment in a university setting, apprenticeship, or high school. Only a very small proportion of men in the sample has been enrolled, his enrolment was therefore excluded from most models. **Paid work and work time** are time varying. A variable with six categories combines information on labor force status and full time versus part time work (working 35 or fewer weekly hours): 1) both work full time, 2) he works full time, she works part time (reference), 3) she works full time, he works part time, 4) both not in the labor force (includes inactivity and unemployment), 5) she works he not in labor force, 6) he works she not in labor force. **Income** measures are time varying and logged. The models contain measures for her and his yearly income from wages and salaries, and the yearly family income (including transfers). Additionally, there is a measure for **her share of the total family income**, measuring her contribution to the total (non-logged) yearly family income, ranging from 0-100%. Leaning on the bargaining argument, the effect of her relative income may differ with varying levels of the household income. I therefore tested several interaction terms between her income share (measured in percent from 0-100) and the logged household income (as a linear variable or income quartile). These were, however, insignificant and they are not included in the shown models. The **division of housework** is included as a ratio indicating the percentage she contributes to the total amount of household labor that is done among the two spouses on a typical week-day. An increase in this variable indicates an increase in her contribution to the total amount of housework. The same concept is applied to the **division of childcare** provided by the two partners and the **division of repair-work** done in the household by the partners.

The models control for his and her age at marriage/union formation, age interactions, her age at first birth, survey year, and whether the couple resides in East Germany. In order

to control for her fertility preferences, a variable measuring 'the importance of children' on a scale from 1-4 (very important to not at all important) is included.

4. Results

Sample descriptives (Appendix table 1) show distributions of the variables over all person years (both birth samples combined), by cohort. The distribution of couples' educational pairings differs across the cohorts, specifically regarding pairings including a highly educated spouse, reflecting educational expansion. Over the cohorts, the proportion of hypergamous couples with a highly educated male spouse and a female spouse with medium education has declined from 12.9% to about 8.5%. The proportion of highly educated homogamous spouses is highest in the middle cohort (1966-75) with 9.5%. It is only 5.8% in the youngest cohort (1976-85), possibly because educational trajectories are still in the process, reflected in a relatively high enrollment rate of female partners in this cohort with 3.6%. In Germany, the average age at university graduation was traditionally high in international comparison: It was between 27 and 28 years in the 2000 to 2006 period (Statistisches Bundesamt 2008), which explains why changes in the assortative mating pattern in this youngest cohort may still be expected through educational upgrading. The proportion of hypogamous couples, with her having more education than him, is slightly larger in the younger cohorts. Some cohort differences are also present in the paid and unpaid work divisions. Income ratios and domestic work divisions are somewhat more gender egalitarian in the youngest cohort, while paid work arrangements appear not to change, or rather reflect life-course differences, as the cohorts have partly been surveyed at different points in their life courses. For instance, 62% of childcare time is covered by her in the oldest cohort, while this amount has decreased to 57% in the youngest cohort. However, the proportion of couples with two working spouses is 68% in the oldest cohort, but only 64% and 58.5% in the two subsequent cohorts, likely reflecting that the sample is younger and more often enrolled in education with each subsequent cohort. Notably, the youngest cohort has the greatest share of childless couples still at risk for first birth, the event which has been shown to traditionalize family life in terms of gendered work arrangements (Grunow, Schulz and Blossfeld 2012).

Appendix tables 2-4 show the model results for *first birth transitions*, Appendix tables 3-5 results for *second birth transitions*, separately by birth cohort. The first model in each table shows the baseline model, including educational pairings and controls only. These confirm H1 (significant associations between educational pairings and fertility) for both birth transitions in all three birth cohorts. Yet, the educational pairing effects vary between cohorts and birth transitions. For first births, there is evidence for accelerated transition rates of hypergamous couples in the 1950-65 cohort, but only when she has medium and he has high education, supporting H1a (NHE). Wald tests which test the pairings against each other confirm the significant difference of hypergamous couples with a highly educated man to homogamous highly educated couples (chi2 4.84, p=.0279), and to hypogamous couples with a medium educated woman and a low educated man (p=0.0136), in addition

to the significantly elevated birth rate compared to the reference group (both medium). Hypogamous couples involving a highly educated woman also display accelerated first birth transitions, compared to homogamous highly educated couples (chi2=4.61, p=.0317) supporting H1c (Bargaining theory). In the middle cohort born 1966-75, homogamous highly educated couples have the highest first birth rates, yet, while the contrast to the reference group is significant, differences to hypogamous or hypergamous couples with one highly educated spouse are not. Hence, H1b (Pooling theory) is only partially supported. In the youngest cohort 1976-85, there is again weak support for H1a (NHE), as hypergamous couples with a highly educated man and a medium educated woman have the highest firth birth rate, significantly so compared to the reference group. Contrasts to the other pairings are, however, not significant. A clear pattern emerges with respect to second births. For all three birth cohorts, highly educated homogamous couples have the highest second birth hazards, supporting H1b (Pooling). In addition to the significant difference to the reference group, contrasts to hypogamous couples including a highly educated woman are (marginally) significant in all three birth cohorts (1950-65: chi2=2.95, p=.0860; 1966-75: chi2=9.74, p=.0018; 1976-85: chi2=2.17, p=.1405), the contrast to hypergamous couples is significant in the oldest cohort only (chi2=4.78, p=.0289). Hypergamous couples with a highly educated man and a medium educated woman also have higher second birth rates than the reference and remaining groups in the 1966-75 and 1976-85 cohort.

Results from the stepwise models entering paid and unpaid work divisions and income variables reveal some mediating effects on the educational pairing-fertility relationship for first birth transitions (apart from the oldest cohort) but not for second birth transitions. Regarding first births, in the 1950-65 cohort paid or unpaid work arrangements show no significant associations[4]. No mediating effects appear to be present; in the full model, the depressed birth rate of homogamous highly educated couples compared to hypergamous and hypogamous couples is still present and highly significant (chi2=6.03, p=.0141; chi2=5.83, p=.0157). In the middle and youngest cohorts, pairing differences become statistically insignificant after paid and unpaid work divisions are entered. In the 1966-75 cohort, paid work divisions appear to have a strong mediating effect, as the elevated birth rate coefficient of highly educated homogamous couples shrinks from .462 to .134 in the second model. As long as paid work divisions are not controlled for, the division of housework has a significant coefficient, each percentage increase he spends with housework increases the first birth hazard by 0.6%, also rendering the educational pairing effect insignificant. Once paid and unpaid divisions are controlled for, the housework division is no longer significant, yet, the elevated rate of highly educated homogamous couples is nearly reduced to zero. In the 1976-85 cohort, the elevated birth rate of hypergamous couples becomes insignificant only in the full model, suggesting that both paid and unpaid work divisions mediate this effect. Also, there are positive and highly significant effects of increases in his housework share and repair work, which remain stable

[4] Paid work arrangements shown are not significantly different from the reference group 'he works full time she works part time'. It is well possible that other contrasts are significantly different from each other when tested, yet, this is not in the focus of the current paper.

in the full model. In contrast to first births, neither paid nor unpaid work divisions appear to mediate the accelerated second birth hazards of highly educated homogamous couples, as coefficients and significance test results remain stable in the full models (1950-65: chi2=2.51, p=.1130; 1966-75: chi2=9.20, p=.0024; 1976-85: chi2=2.48, p=.1153). The significant contrast to hypergamous in cohort 1950-65 also remains stable (chi2= 4.03, p=.0447). The increased birth rate of hypergamous couples with a highly educated man and medium educated woman compared to the reference group, and compared to hypogamous couples in the middle cohort (chi1=4.88, p=.0271) also remains unchanged. The division of unpaid work shows some additional significant effects, but only in the 1966-75 cohort. Here, increases in his housework share and her childcare share are associated with higher second birth hazards. In sum, educational pairing effects on first birth hazards among couples born after 1965 seem to be mediated through both paid and unpaid work divisions, supporting H2 in general and H2a (NHE) and H2b (Pooling theory) in particular. There is no evidence for H2c (Doing Gender theory) at all, as controlling for unpaid work divisions does not lead to an increase in first or second birth hazards for hypogamous or homogamous highly educated couples. H2needs to be rejected for second birth transitions, and also for first birth transitions in the oldest cohort, as paid and unpaid work divisions don't appear to mediate the educational pairing effects here.

5. Discussion

Attempting to bring together two bodies of central literature in the couples-fertility realm, this paper investigates whether the emerging significant relationship between partners' educational pairings and their first and second birth hazards can be confirmed in the German context, whether it may be mediated through the partners' unpaid (and paid) work divisions, and whether these relationships vary between birth cohorts 1950-65, 1966-75, and 1976-85. Two main findings have emerged. First, my results confirm that partners' relative education, here expressed as educational pairings, is indeed an important additional piece of information in understanding the education-fertility relationship in the German context, in particular among highly educated. Highly educated homogamous couples have the highest second birth rate, significantly so compared to hypogamous couples and couples with two medium educated partners. Here, at first sight, his high education appears to be the central predictor of second birth transitions. This would be plausible in Germany, which features a strong male breadwinner tradition and still relatively high inactivity and part time work rates among mothers (Aisenbrey et al. 2009, European Commission 2016). Yet, after controlling for income and gendered arrangements of paid and unpaid work, these differentials in second birth rates remain, underscoring the relevance of both partners' education and their interaction for understanding childbearing behavior beyond what they imply for gendered role- and work divisions. In addition, hypergamous couples have also significantly lower second birth rates compared to couples with two highly educated partners. Regarding first births, homogamous highly educated couples have highest transition rates in the 1966-75 cohort, and hypergamous couples in the 1976-85 cohort, but differences between couples with one or two highly educated partners are not significant.

Furthermore, and this constitutes the second major finding, these less clear cut pairing effects on first births become insignificant once paid and unpaid work divisions are controlled for, while this is not the case for second births. Apart from the oldest cohort, associations between educational pairings and first birth hazards appear thus contingent on work divisions between partners. It is noteworthy that increases in his housework share predict a faster transition to first births, implying that domestic work divisions are partly behind educational pairing effects for first births. This is a novel finding in itself, as to date there is little information available on the association between housework divisions and first births. It also delivers conflicting evidence in comparison to one of the only studies available on this topic (Henz 2008), which showed higher first birth rates for German couples with traditional housework divisions, but in an older sample and with a different operationalization of housework. Social change may be behind this finding; perhaps today, a cooperative and balanced division of chores is a more decisive factor for women (and men) in making the transition to parenthood with a partner. Of course, this effect could also be spurious and express his family orientation, as the models control for her fertility preferences only. Still, this would not explain the growing strength in the association with first births over time.

Transition to second births are also accelerated as his participation in housework increases, but only in the middle cohort. While increases in his childcare share for the first child are associated with faster transition to second births, as was reported with the same data by Cooke (2004), this association is insignificant in my models. Furthermore, the association reverses in the middle cohort, where increases in her share of time spent with childcare are now positively and significantly related to subsequent second birth hazards. This finding may be different from Cooke's as more recent data was used, as a cohort design was applied, or as educational pairings were now modeled. Even though models control for her fertility preferences and gendered work divisions, it is possible that increases in her time spent with the first child are reflecting additional family preferences not measured otherwise, which may jointly determine the increased hazard to have second births.

Most interesting, however, is that educational pairing effects remain unchanged and significant in predicting second birth hazards after paid and unpaid work divisions, income, and important controls are added. Additional factors, which may either constitute less well-discussed functions of education or be spurious as they may influence both accelerated second birth rates and the selection into the homogamous highly educated pairing appear to be present. These might range from perceived future financial and career stability, more social support and stronger social networks, over higher relationship quality or better physical and mental health to better access to high quality health care. Education and combined educational capital of partners may thus stand for a whole range of social conditions and factors decisive for family formation and decision-making, and it would be fruitful for future research to examine the mechanisms through which education operates more deeply. Moreover, it is an open question whether possible effects of favorable social conditions may exhibit multiplicative rather than additive effects if they are present among both as compared to only one partner.

Of course, this study is not without limitations. Hazard models estimate time to event, meaning timing and quantum effects are intermingled. It is thus impossible to know whether these are pure timing effects, leading solely to differences in birth timing, or whether they imply quantum differences. It has been argued that highly educated women may experience higher second birth hazards due to a 'time squeeze' and the same logic may apply to highly educated homogamous couples. My models control for her age at first birth, and age of the partners at union formation, still such time squeeze effects might be present. Only panels with long observation times up to the end of the fertile life-span can address this problem, unfortunately, no cohort panel studies with such detailed information on both partners are available. Next, the cohort design implies that couples have been observed during somewhat different life stages, at least partly. The oldest cohort consists rather of couples having children later in life, while births at younger ages are likely overrepresented in the younger cohort. Combining all cohorts into one model would solve this problem, but might mask some important developments which can be shown by the current analysis, such as changes in the relationship between educational pairings and first births or effects of domestic work divisions. Also, couples are a selected sample, as non-partnered individuals are excluded. Most births occur to co-residential couples, so it seems justified to explore couple-dynamics in a couple-only sample more deeply, still, these findings cannot be generalized to the population as a whole. This is further complicated by potential differential selection (e.g. by education) into partnerships (Trimarchi and Van Bavel 2017), or possible differentials in union duration, and thus exposure time to birth risks, by educational pairings. These selection issues are potential sources of selection bias, and not a lot is known on such processes yet.

Finally, my results can be interpreted in light of competing family theories. Specialized (hypergamous) couples have higher transition rates to parenthood, offering some support for the New Home Economics approach. Consistent with the formulated hypotheses, the elevated birth rates of 'specialized' couples become insignificant once paid and unpaid work divisions are added to the models, further supporting the NHE approach. In order to test whether work divisions operate in the 'specialized' NHE direction, however, interaction effects between educational pairings and work divisions would need to be modeled, which was not feasible here due to low case numbers. Additionally, my results lend strong support to Oppenheimer's pooling approach. Couples with the highest combined education capital consistently display highest second birth transitions rates. This effect does not seem to operate through monetary or work division resources, thus, the pooling of such economic aspects or of responsibility for domestic work appear to be only two possible 'pooled-resources', while other resources, as mentioned above, may be at work in addition or instead and seem worth exploring. Finally, it is noteworthy that couple-effects and applicability of family theories appear to be parity specific. The decision of whether and when to enter parenthood seems to underlie different criteria than adding a second (and likely third) child to the family. Nonetheless, family and fertility theories are rarely explicitly nuanced by parity, which may be a necessary and fruitful next step in the theoretical literature on family formation.

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Appendix

Table 1: Descriptive sample statistics

Indicator	1950-65 cohort *percent*	1966-75 cohort *percent*	1976-85 cohort *percent*			
Education:						
she low/he low	1.84	3.3	1.66			
she low/he med.	6.19	8.24	8.93			
she low/he high	1.24	0.9	0.79			
she med./he low	4.29	6.37	6.29			
both medium	60.28	54.86	61.91			
she med./he high	12.85	8.11	8.44			
she high/he less	5.01	8.79	6.17			
she high/he high	8.3	9.44	5.81			
Work-related:						
both work	67.97	64.19	58.48			
she works/ he nilf[1]	6.67	4.23	8.31			
he works/she nilf[1]	23.31	28.4	24.93			
both nilf[1]	2.04	3.18	8.28			
both full time	40.07	42.42	42.26			
she ft[2]/he pt[3]	0.86	0.63	2.87			
both part time	1.16	1.1	1.88			
he ft[2]/she pt[3]	25.89	20.04	11.47			
she enrolled	0.25	1.36	3.64			
	1950-65 cohort *mean*	**1966-75 cohort *mean***	**1976-85 cohort *mean***	**1950-65 cohort *sd***	**1966-75 cohort *sd***	**1976-85 cohort *sd***
his log income	7.15	7.22	6.39	2.14	2.01	2.79
her log income	5.37	5.04	4.99	3.20	3.37	3.30
log hh[4] income	10.63	10.58	10.21	0.91	0.91	1.34
her ratio hh[4] inc.[5]	31.58	30.44	34.81	25.86	26.33	30.22
housework ratio	76.98	76.60	67.32	22.51	23.49	24.21
repair ratio	41.99	38.17	39.07	30.46	29.57	27.55
childcare ratio	62.13	64.34	57.10	19.01	19.16	16.24
her age at union	25.41	24.45	23.13	4.79	3.76	2.36
his age at union	28.55	27.51	26.97	7.06	4.89	4.71
Import. of childr.	1.98	1.72	1.75	1.05	0.86	0.83
age at first birth	29.32	27.79	25.66	4.39	4.51	3.25
Person months	43147	33507	12839			

[1] nilf = not in labor force [2] ft = full time [3] pt = part time [4] hh = household [5]inc.=income

Table 2: First birth transition hazards for birth cohort 1950-1965

	Education		Education and paid work		Education and unpaid work		Full model	
	β Coef.	SE	β Coef.	SE	β Coef.	SE	β Coef.	SE
Educational pairings								
both low	-1.062†	0.589	-0.671	0.597	-1.048†	0.591	-0.650	0.600
she low he higher	-0.034	0.264	-0.010	0.266	-0.023	0.264	-0.008	0.266
she medium he low	-0.595	0.393	-0.462	0.397	-0.642	0.397	-0.487	0.400
both medium					*reference*			
she medium he high	0.678**	0.279	0.694*	0.291	0.673*	0.281	0.682*	0.292
she high he lower	0.761*	0.344	0.863*	0.362	0.733*	0.345	0.860*	0.363
both high	-0.242	0.359	-0.328	0.381	-0.287	0.363	-0.372	0.385
Work and income								
she works / he not in lf			0.165	0.486			0.128	0.491
he works / she not in lf			-0.806	0.986			-0.847	0.997
both not in lf			-0.087	1.037			-0.179	1.051
both full time			0.500	0.332			0.476	0.334
she full-time / he part time			0.038	0.852			0.019	0.852
Her income (log)			-0.116	0.159			-0.124	0.161
Household income (log)			0.450†	0.263			0.454†	0.264
Her contribution to household income (percent)			-0.001	0.008			-0.001	0.008
Division of unpaid work								
Time spent with housework ratio					-0.003	0.004	-0.003	0.004
Time spent with repairwork ratio					-0.001	0.003	-0.001	0.003
Control Variables								
Age at union	0.245*	0.108	0.243*	0.112	0.251*	0.109	0.244*	0.113
Partner's age at union	0.237**	0.097	0.222*	0.102	0.243**	0.098	0.224*	0.103
Age interaction	-0.010***	0.004	-0.010**	0.004	-0.010**	0.004	-0.010**	0.004
Importance of children (Her)	-0.961***	0.122	-0.954***	0.123	-0.968***	0.122	-0.959***	0.123
N couple years	22828							
N events	173							

Table 3: First birth transition hazards for birth cohort 1966-1975

	Education		Education and paid work		Education and unpaid work		Full model	
	β Coef.	SE	β Coef.	SE	β Coef.	SE	β Coef.	SE
Educational pairings								
both low	-0.018	0.436	0.747	0.456	0.077	0.438	0.779	0.458
she low he higher	-0.338	0.234	-0.314	0.236	-0.289	0.235	-0.272	0.237
she medium he low	-0.167	0.287	-0.036	0.291	-0.169	0.287	-0.029	0.293
both medium								
she medium he high	0.362	0.229	0.198	0.235	0.330	0.230	0.189	0.235
she high he lower	0.125	0.280	0.071	0.287	0.085	0.281	0.061	0.287
both high	0.462*	0.223	0.134	0.234	0.359	0.227	0.078	0.236
Work and income								
she works / he not in lf			-0.263	0.475			-0.297	0.476
he works / she not in lf			0.801	1.895			0.817	1.893
both not in lf			-0.260	1.967			-0.214	1.968
both full time			0.300	0.282			0.288	0.282
she full-time / he part time			1.078	0.759			1.071	0.759
both part-time			0.528	0.545			0.463	0.548
Her income (log)			0.170	0.312			0.170	0.312
Household income (log)			0.460	0.323			0.453	0.322
Her contribution to household income (percent)			0.002	0.008			0.002	0.008
Division of unpaid work								
Time spent with housework ratio					-0.006*	0.003	-0.003	0.003
Time spent with repairwork ratio					0.003	0.002	0.003	0.002
Control variables								
Her enrollment	-0.529	0.516	-0.845	1.922	-0.569	0.516	-0.893	1.918
His enrollment	0.095	0.591	0.848	0.688	0.094	0.592	0.867	0.689
Age at union	0.122	0.112	0.169	0.119	0.116	0.113	0.166	0.119
Partner's age at union	0.096	0.094	0.159	0.100	0.090	0.095	0.156	0.100
Age Interaction	-0.005	0.004	-0.007†	0.004	-0.005	0.004	-0.007†	0.004
Importance of children (Her)	-0.301***	0.185	0.123***	0.197	-0.216***	0.188	0.165***	0.199
East German couple	-0.402	0.086	-0.482	0.089	-0.428	0.087	-0.494	0.089
N couple years	15378							
N events	234							

Table 4: First birth transition hazards for birth cohort 1976-1985

	Education		Education and paid work		Education and unpaid work		Full model	
	β Coef.	SE	β Coef.	SE	β Coef.	SE	β Coef.	SE
Educational pairings								
she low he any	-0.819	0.543	-0.547	0.577	-0.727	0.546	-0.521	0.574
she medium he low	0.275	0.426	0.448	0.451	0.115	0.446	0.424	0.474
both medium								
she medium he high	0.634*	0.328	0.635†	0.340	0.613†	0.332	0.529	0.347
she high he lower	0.288	0.442	0.365	0.451	0.219	0.443	0.272	0.455
both high	0.115	0.463	0.091	0.475	0.223	0.464	0.150	0.474
Work and income								
she works / he not in lf			-0.253	0.565			-0.791	0.589
he works / she not in lf			1.056	2.102			0.363	2.087
both not in lf			0.432	2.046			-0.353	2.035
both full time			0.231	0.436			0.048	0.434
she full-time / he part time			-1.138	1.134			-1.340	1.125
Her income (log)			0.259	0.343			0.172	0.341
Household income (log)			-0.080	0.204			-0.086	0.211
Her contribution to household income (percent)			-0.004	0.008			-0.004	0.008
Division of unpaid work								
Time Spent with housework ratio					-0.014**	0.005	-0.015***	0.005
Time Spent with repairwork ratio					-0.009*	0.004	-0.009*	0.005
Control variables								
Her enrollment	0.147	0.674	-0.900	2.138	0.091	0.681	-0.479	2.110
Age at union	-0.461	0.340	-0.479	0.346	-0.372	0.342	-0.418	0.352
Partner's age at union	-0.445	0.279	-0.455	0.283	-0.380	0.280	-0.417	0.287
Age interaction	0.020	0.012	0.020	0.012	0.017	0.012	0.018	0.012
Importance of children (Her)	-0.541***	0.156	-0.570***	0.158	0.618***	0.242	0.774***	0.269
Cohabiting	-0.943***	0.262	-1.016***	0.268	-0.590***	0.158	-0.638***	0.161
East German couple	0.560*	0.239	0.702**	0.264	-1.070**	0.267	-1.158**	0.273
N couple years	7960							
N events	84							

Table 5: Second birth transition hazards for birth cohort 1950-1965

	Education		Education and paid work		Education and unpaid work		Full model	
	β Coef.	SE	β Coef.	SE	β Coef.	SE	β Coef.	SE
Educational pairings								
both low	-0.533	0.724	-0.503	0.725	-0.479	0.727	-0.448	0.728
she low he higher	0.058	0.298	0.034	0.299	0.084	0.299	0.040	0.302
she medium he low	0.064	0.370	0.155	0.374	0.095	0.370	0.236	0.376
both medium								
she medium he high	0.065	0.281	0.035	0.288	0.087	0.289	0.038	0.295
she high he lower	0.089	0.385	0.072	0.389	0.090	0.388	0.059	0.393
both high	0.818**	0.272	0.746**	0.279	0.808**	0.275	0.741**	0.281
Work and income								
she works / he not in lf			-0.071	0.568			-0.182	0.604
he works / she not in lf			-0.260	0.650			-0.244	0.657
both not in lf			-0.115	0.736			-0.153	0.747
both full time			-0.209	0.275			-0.278	0.284
she full-time / he part time			0.761	1.084			1.108	1.109
Her income (log)			0.022	0.117			0.034	0.120
Household income (log)			0.183	0.176			0.199	0.182
Her contribution to household income (percent)			-0.005	0.008			-0.009	0.008
Division of unpaid work								
Time spent with housework ratio					-0.001	0.005	-0.002	0.005
Time spent with childcare ratio					-0.006	0.005	-0.009	0.006
Time spent with repairs ratio					0.003	0.003	0.003	0.003
Control variables								
Age at union	0.276**	0.109	0.279**	0.110	0.282**	0.112	0.284**	0.112
Partner's age at union	0.121	0.106	0.121	0.107	0.131	0.108	0.128	0.109
Age interaction	-0.006	0.004	-0.006	0.004	-0.006	0.004	-0.006	0.004
Age at first birth	-0.147***	0.036	-0.149***	0.036	-0.148***	0.036	-0.152***	0.037
Importance of children (Her)	-0.210	0.159	-0.223	0.160	-0.217	0.163	-0.229	0.165
N couple years	20725							
N events	178							

Table 6: Second birth transition hazards for birth cohort 1966-1975

	Education		Education and paid work		Education and unpaid work		Full model	
	β Coef.	SE	β Coef.	SE	β Coef.	SE	. β Coef	SE
Educational pairings								
both low	-0.626	0.464	-0.683	0.468	-0.608	0.464	-0.672	0.470
she low he higher	0.041	0.239	0.007	0.240	0.063	0.240	0.027	0.241
she medium he low	0.028	0.271	0.083	0.272	0.038	0.280	0.098	0.281
both medium								
she medium he high	0.529*	0.228	0.490*	0.230	0.520*	0.229	0.493*	0.230
she high he lower	-0.283	0.311	-0.300	0.312	-0.279	0.310	-0.310	0.312
both high	0.794***	0.204	0.773***	0.212	0.781***	0.206	0.753**	0.215
Work and income								
she works / he not in lf			0.725†	0.412			0.839†	0.438
he works / she not in lf			2.349†	1.298			2.394†	1.313
both not in lf			2.233†	1.306			2.249†	1.322
both full time			-0.793**	0.313			-0.801**	0.330
Her income (log)			0.383†	0.215			0.386†	0.218
Household income (log)			0.061	0.137			0.050	0.139
Her contribution to household income (percent)			-0.008	0.008			-0.006	0.008
Division of unpaid work								
Time spent with housework ratio					-0.007*	0.004	-0.007†	0.004
Time spent with childcare ratio					0.012**	0.005	0.011*	0.005
Time spent with repairs ratio					0.000	0.002	0.001	0.002
Control Variables								
Her enrollment	1.270†	0.740	-0.975	1.469	1.329†	0.745	-0.971	1.487
Age at union	0.259*	0.119	0.272*	0.121	0.245*	0.119	0.264*	0.121
Partner's age at union	0.176†	0.104	0.190†	0.106	0.178†	0.105	0.197†	0.106
Age interaction	-0.008†	0.004	-0.008*	0.004	-0.007†	0.004	-0.008*	0.004
Age at first birth	-0.099**	0.039	-0.103**	0.040	-0.092*	0.039	-0.098	0.040
Importance of children (Her)	-0.232†	0.123	-0.237*	0.123	-0.223†	0.124	-0.234†	0.124
East German couple	-0.502**	0.171	-0.414*	0.177	-0.452**	0.172	-0.382*	0.177
N couple years	18411							
N events	241							

Table 7: Second birth transition hazards for birth cohort 1976-1985

	Education		**Education and paid work**		**Education and unpaid work**		**Full model**	
	β Coef.	SE	β Coef.	SE	β Coef.	SE	β Coef.	SE
Educational pairings								
both low	-0.030	0.710	-0.219	0.786	0.007	0.718	-0.087	0.788
she low he higher	-0.309	0.560	-0.167	0.565	-0.299	0.568	-0.144	0.574
she medium he low	-0.207	0.634	0.065	0.659	-0.148	0.639	0.084	0.659
both medium								
she medium he high	0.868*	0.409	1.080**	0.424	0.837*	0.418	1.057*	0.433
she high he lower	0.125	0.645	0.060	0.755	0.147	0.652	0.052	0.755
both high	1.343*	0.628	1.604*	0.663	1.198†	0.654	1.507*	0.687
Work and income								
she works / he not in lf			-1.241	1.086			-1.242	1.098
he works / she not in lf			3.335	2.303			3.089	2.299
both not in lf			3.005	2.336			2.766	2.332
both full time			-0.738	0.493			-0.707	0.507
she full-time / he part time			0.032	1.438			0.159	1.458
Her income (log)			0.489	0.370			0.450	0.371
Household income (log)			0.078	0.100			0.071	0.101
Her contribution to household income (percent)			0.003	0.009			0.003	0.010
Division of unpaid Work								
Time spent with housework ratio					0.000	0.007	-0.002	0.007
Time spent with childcare ratio					0.002	0.008	0.001	0.009
Time spent with repairs ratio					0.003	0.005	0.002	0.005
Control variables								
Her enrollment	3.282***	0.912	-0.309	2.469	3.263***	0.922	-0.075	2.468
Age at union	-0.451	0.408	-0.456	0.458	-0.496	0.414	-0.434	0.458
Partner's age at union	-0.253	0.330	-0.280	0.366	-0.287	0.335	-0.256	0.365
Age interaction	0.013	0.015	0.014	0.016	0.015	0.015	0.013	0.016
Age at first birth	-0.036	0.089	-0.108	0.104	-0.027	0.090	-0.095	0.106
Importance of children (Her)	-0.371	0.276	-0.402	0.279	-0.354	0.280	-0.381	0.283
Cohabiting	-0.009	0.296	0.010	0.307	0.061	0.305	0.053	0.311
East German couple	-0.215	0.354	-0.132	0.365	-0.239	0.356	-0.150	0.369
N couple years	5000							
N events	68							

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