



# DEMOGRAPHIC RESEARCH

*A peer-reviewed, open-access journal of population sciences*

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## **DEMOGRAPHIC RESEARCH**

**VOLUME 47, ARTICLE 28, PAGES 883–918**

**PUBLISHED 7 DECEMBER 2022**

<https://www.demographic-research.org/Volumes/Vol47/28/>

DOI: 10.4054/DemRes.2022.47.28

*Research Article*

**Do the consequences of parental separation for children’s educational success vary by parental education? The role of educational thresholds**

**Wiebke Schulz**

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# **Do the consequences of parental separation for children's educational success vary by parental education? The role of educational thresholds**

**Wiebke Schulz<sup>1</sup>**

## **Abstract**

### **BACKGROUND**

Research shows that children's social background influences the extent to which they experience educational disadvantages when their parents separate. However, while some studies find larger separation penalties for children from lower social backgrounds than for children from higher backgrounds, other studies find the opposite. The present study builds on this research by examining heterogeneous parental separation effects by parental education for lower (mid-secondary) and higher (higher-secondary) educational thresholds.

### **METHODS**

Analyses are based on a sample of children (and their siblings) born in the 1970s and 1960s (N = 6,855 children), drawn from the German Life History Study. A series of linear probability models are estimated; additional analyses include sibling-fixed-effects models.

### **RESULTS**

No separation disadvantages for children from higher status backgrounds were found, for either outcome. Children from lower educational backgrounds had fewer chances of completing mid-secondary education; this was true to a lesser extent for higher-secondary education. Sibling fixed effects show the same pattern but also indicate that results may be partly due to unobserved family characteristics.

### **CONTRIBUTION**

The findings of this study support the compensation perspective. In a context of high educational inequality and high socioeconomic disparities between children who experience parental separation and those who do not, children from lower educational backgrounds face the risk of not reaching mid-secondary and to a lesser extent higher-secondary education if their parents separate. Looking only at higher educational

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<sup>1</sup> Universität Bremen – SOCIUM Forschungszentrum Ungleichheit und Sozialpolitik, Bremen, Germany.  
Email: [wschulz@uni-bremen.de](mailto:wschulz@uni-bremen.de).

outcomes perhaps obscures unequal family separation consequences that may contribute to persistent educational inequalities.

## 1. Introduction

The role of the family of origin in shaping children's life chances has been addressed extensively in the social science literature. When parents separate,<sup>2</sup> children face disadvantages in life chances such as health, well-being, and socioeconomic position in later life (McLanahan Tach, and Schneider 2013; Thomson and McLanahan 2012). One of the most important disadvantages relates to education because of its pivotal importance for a wide range of outcomes across the life course. Despite the relevance of this topic, it is unclear whether all children are influenced by parental separation in equal measure. In fact, a growing body of research casts doubt on the view that parental separation is an unequivocal source of educational disadvantage (Amato 2000; Härkönen, Bernardi, and Boertien 2017; McLanahan Tach, and Schneider 2013). Most notably, one line of research examines whether the disadvantages associated with parental separation are conditioned by children's socioeconomic backgrounds; the results have been mixed. Some studies find that children from higher status backgrounds display smaller declines in educational performance and attainment (Augustine 2014; Grätz 2015; Mandemakers and Kalmijn 2014). Other studies find the opposite, namely that children from higher status backgrounds suffer more than children from lower status backgrounds (Bernardi and Radl 2014; Biblarz and Raftery 1993; Martin 2012; Sandefur and Wells 1999).

This study contributes to the discussion on heterogeneous parental separation effects by examining variations in children's lower and higher levels of educational attainment. Its main research question is: Do variations in the link of parental separation by parental educational background differ for children's chances of attaining lower and higher levels of education; i.e., mid- and higher-secondary education?

In answering this question, this study will contribute to the field by re-evaluating the hypothesis of heterogeneous separation consequences for children's educational success. Explanations suggest that better-off families can use their social and economic resources to compensate for the disruption to educational success caused by parental separation. Others suggest the opposite – that children from higher status backgrounds have more resources to lose upon separation and therefore experience larger negative consequences regarding their educational attainment. However, both processes may be at work. For lower educational outcomes, children from higher status backgrounds may experience smaller penalties owing to compensation. Higher outcomes, by contrast, are socially

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<sup>2</sup> This definition includes all cases of separation and divorce that cause a family to separate permanently.

selective, so that losses in resources that foster the attainment of higher levels of education may be more pronounced for children from higher status backgrounds.

The German context is particularly suited for this analysis: the socioeconomic disadvantages of children who experience parental separation are marked (Leopold and Leopold 2016). In addition, the social selectivity of transitions to higher education is pronounced (Horn 2009). The only study to date on heterogeneous separation effects in Germany found that the separation penalty, for both grades and academic track attendance, was restricted to children from lower social backgrounds (Grätz 2015). By focusing on completed levels of education, this study addresses how educational background shapes the interplay between children's experiences of parental separation and structural conditions; i.e., educational thresholds in a highly stratified education system.

The analyses are based on a sample of children born in the 1970s and 1960s drawn from the German Life History Study (GLHS) (Mayer 2015). These data comprise information on the completed educational levels of the respondents and their siblings, in total 6,855 children. The main analyses estimate a series of ordinary least squares (OLS) regressions. Additional analyses check the robustness of the results. One important issue is that associational models might suffer from selection bias regarding separation (Steele, Sigle-Rushton, and Kravdal 2009). If the characteristics of the parents that cause them to separate are also negatively related to the children's educational attainment, conventional approaches may overestimate the consequences of parental separation and differentials therein. Siblings experience parental separation at different ages; i.e., one sibling might experience parental separation before turning 16 or 18, meaning before mid-secondary or higher-secondary education has been completed, while another sibling will have already passed this age by the time their parents separate. The age difference at separation between siblings from the same family is used in order to remove the influence of time-invariant characteristics of the family. Additional sensitivity checks assess whether a mother or father's educational background is more important in conditioning separation consequences, consider parental social status as an alternative indicator of parental social status, and assess whether results differ if only divorces are considered as separations.

## **2. Background**

### **2.1 How parental separation impacts children's educational attainment**

Declines in children's educational outcomes caused by parental separation have been explained by a loss of available resources and changes to socialization practices (Amato 2000). Upon separation, children may lose out on social, financial, and informational

resources that foster their learning and hence educational attainment (Astone and McLanahan 1991; Jonsson and Gähler 1997). In addition, the family relationships that foster children's development might be disrupted (Cheadle, Amato, and King 2010).

The key focus of the present study is to investigate variations in parental separation consequences for different educational background groups. Moving beyond existing studies, this study will relate the explanations for differentials attributed to educational background groups to a lower and a higher educational outcome. We start by discussing the compensation perspective and then argue that this explanation may not be applicable to higher educational outcomes.

## **2.2 Compensation for lower educational outcomes**

According to the compensation perspective, children from lower status backgrounds should suffer more from parental separation than children of better-educated parents. This expectation follows from the notion of compensatory advantage (Bernardi 2014; Boudon 1998), according to which advantaged parents can mobilize socioeconomic and cultural resources to soften the consequences of parental separation by drawing on resources that are not available to children from lower social backgrounds. First, upon separation, better-educated parents might prevent disruptions to learning processes and hence declines in academic performance. Changes to available resources in privileged families may not be as detrimental as in less privileged families because the advantage of having better-educated parents includes the availability of a stock of cultural goods. These include books at home and/or the financial means to afford stimulating leisure activities (such as playing a musical instrument), which have been shown to have a positive impact on a child's skill development (Schellenberg 2006). Moreover, better-educated parents might prevent indirect consequences of separation because they are better informed and aware of the effects on their children's well-being. Possible detrimental effects include a move to a different neighborhood after the divorce and a change of school environment, which might increase children's risk of poorer academic performance (Metzger et al. 2015). Maintaining stable family relations is another way to prevent declines in educational performance. The greater involvement of better-educated fathers and mothers in the upbringing of their children (Kalmijn 1999; Sayer, Gauthier, and Furstenberg 2004) has been shown to extend to separated parents. Research shows that after separation, highly educated nonresidential fathers show higher involvement in terms of contact (Cheadle, Amato, and King 2010), parenting (Grätz 2017; Seltzer 1994) and overnight stays (Westphal, Poortman, and Van Der Lippe 2014). In sum, children with better-educated parents are less likely to experience crucial changes in their environment and to

the relationship they have with their parents after separation, and thus might be less disturbed by the experience of parental separation.

In West Germany, children who experience parental separation have been shown to be at high risk of suffering from socioeconomic hardship (Leopold and Leopold 2016): in the 1980s, two-thirds of all single-parent households lived below the poverty line (Frick, Krause, and Vortmann 1990). The labor force participation of mothers was low and the absence of daycare and after-school facilities were major obstacles to the labor force participation of women with young children (Misra, Moller, and Budig 2007; Collins 2020). As a result, after a separation many children experienced changes to their daily routines if mothers increased their labor force participation (Drobníč 2000). In view of this, in West Germany one would expect separation to have an aggravated impact on the chances of successfully completing mid-secondary education for families with lower educational backgrounds.

*Hypothesis 1:* Parental separation is less negatively related to low levels of educational attainment for children from higher educational backgrounds than for children from lower educational backgrounds.

### **2.3 More to lose for high educational outcomes**

The compensation hypothesis has been suggested in some form or another by several authors in the past, but so far the evidence has been inconsistent (Härkönen, Bernardi, and Boertien 2017: 175). These mixed findings may be explained by the fact that studies usually generically relate these mechanisms to various educational outcomes.

This explanation may not be applicable to higher educational outcomes: in fact, for these cases, separation consequences may be reversed – that is, separation consequences are more pronounced for privileged children when it comes to higher levels of educational attainment. The main reason for this is that transitions to higher education are subject to selectivity and therefore at higher educational transitions the student body becomes increasingly homogenous regarding ability, aspiration, and most importantly social background (Mare 1980: 298–299). Parental education may condition parental separation effects in the following way. First, children from lower social backgrounds who successfully transition are especially selected, in terms of ability and motivation (Damian et al. 2014; Shanahan et al. 2014); hence, for these children from lower social backgrounds, disturbances caused by parental separation may be less harmful to their chances of attaining higher educational qualifications. Second, lower status children have less access to social origin resources that improve their chances of attaining higher levels of schooling in the first place; these include informational resources on the returns of

higher education (Ehlert et al. 2017) and financial resources. By comparison, higher status children usually have access to these resources: in comparison to lower status children they miss out on resources that would have been available if their parents had not separated. These arguments have been referred to as the 'more to lose' or 'floor effect' hypothesis (Bernardi and Boertien 2016; Kalmijn 2010).

Bernardi and Comolli (2019) recently made a related argument for differential social background effects. They distinguish rare educational outcomes, i.e., academic failure, and common outcomes, such as university attendance, drawing on a threshold notion. How rare an outcome is depends on children's social backgrounds, which might lead to heterogeneous effects. Lower status children may be closer to the threshold of educational failure and might fall just below the threshold due to parental separation. Higher status children might fall just below the threshold for university attendance. The authors' analysis provides partial support for Spain: the risk of retaking is higher for lower status groups, whereas for university attendance they find no variation by social background.

The West German context is very well suited for testing the heterogeneous effects of parental separation consequences because the inequalities of its educational opportunities are very dependent on social origin (Blossfeld, Blossfeld, and Blossfeld 2015; Breen et al. 2009); moreover, the education system is very stratified and hierarchically organized (Allmendinger 1989; Kerckhoff 2010). Ability is tracked early and this has been shown to reinforce the influence of early academic performance on educational inequality, and overall it has been related to larger socioeconomic inequality in achievement (Horn 2009; Van de Werfhorst and Mijs 2010). After a comprehensive elementary school, at around age 11 students begin attending separate lower, intermediate, or higher secondary tracks, the higher, academic track opening the way to university education. Pupils are streamed into tracks based on their performance, assessed by teachers and parents. Following the argument on social selectivity, one might expect for higher educational outcomes that:

*Hypothesis 2*: Parental separation is more negatively related to high levels of educational attainment for children from higher educational backgrounds than for children from lower educational backgrounds.

### **3. Data and methods**

The data for this study comes from the German Life History Study (GLHS) (Mayer 2015). This survey was carried out by means of face-to-face interviews and computer-assisted telephone interviews. It contains detailed information on the respondents' educational qualifications, as well as information on the educational and occupational attainment of their parents and on whether their parents' marriage has ever been dissolved



due to separation or divorce. In addition, respondents provide information on the educational qualifications and birth years of their siblings. For this research the data was reorganized so that each sibling constitutes an observation. These additional cases enlarge the sample size and provide supplementary analyses using fixed-effects models. The GLHS hence meets the high data requirements of the study design. Alternative data sources, such as the German Socioeconomic Panel Study (SOEP), do not include sufficient information on siblings' completed educational attainment (see also Grätz 2015: 5) to enable the use of sibling fixed effects as robustness checks. Although retrospective life history data can suffer from problems of memory bias, the central information – the experience of parental union separation, and the respondent's own educational attainment and that of their siblings – are important events, and these have been found to be reported most reliably (Dex 1995). While the data on these events was collected retrospectively, it is thus likely that the respondents remembered correctly not only their own educational attainment but also that of their siblings.

Our analysis comprises cohorts born in 1964 and 1971 (collected 1998–1999). Because respondents who participated in the surveys had younger (born after 1971) and older (born before 1959) siblings, the analytical sample includes respondents and siblings born between 1939 and 1975 (for descriptive information see Tables A-1 and A-2).

When the GLHS data was collected, rigorous plausibility checks were carried out to ensure data quality (Mayer 2015: 138), resulting in little missing information regarding parental education. The few cases with missing information were excluded from the analyses (father's education is missing in 4.3% of cases, mother's education in 2.7% of cases). This leaves us with a total sample of 6,855 cases.

### 3.1 Dependent variables

We use two dependent variables in the analyses to measure distinct levels of attainment. The first relates to the completion of mid-secondary education (*Realschule*) (for an overview of the education systems see Figure A-1). For all respondents and siblings who completed at least the mid-secondary level this variable is coded 1, otherwise the variable is coded 0. The second dependent variable measures whether individuals completed higher-secondary education, i.e., the *Abitur* that is a prerequisite for entering higher education and that provides access to higher status vocational training occupations. Table 1 presents the descriptive statistics. The lower outcome, mid-secondary education, is more common: two-thirds of all children attain at least mid-secondary education. By contrast, the attainment of higher-secondary education is much more selective – only around one-third attain the *Abitur* (for a cross-tabulation of parental and children's educational attainment see Table A-3).

**Table 1: Analysis sample – West Germany – All siblings (N = 6,855)**

	Mean/%	sd	min	max
<b>Parent's education</b>				
Lower secondary or less	.658	.474	0	1
Mid/higher secondary	.223	.416	0	1
Tertiary	.120	.325	0	1
<b>Parents' social class (N=6319)</b>				
ESeC low	.642	.480	0	1
ESeC mid	.250	.433	0	1
ESeC high	.109	.311	0	1
<b>Sibling characteristics</b>				
Mid-secondary education	.633	.482	0	1
Higher secondary ( <i>Abitur</i> )	.284	.451	0	1
Sibling order	2.153	1.344	1	12
<b>Total number of siblings</b>	3.424	1.70	1	31
<b>Respondent</b>				
<b>Male</b>	.403	.490	0	1
<b>Year of birth</b>	.515	.500	0	1
	1965	5	1939	1975
<b>Separation &lt;=16</b>				
<b>Separation &lt;=18</b>	.056	.066		

### 3.2 Independent variables

The main independent variable is parental separation, i.e., parental divorce or separation up to the age threshold before the respective educational level is completed. Respondents were asked whether their parents' marriage had ever been dissolved, due to either separation or divorce, and in what year. Of all siblings, 5.6% experienced parental separation before the age of 16 and 6.6% before the age of 18 (see Table 1). Note that due to data restrictions our operationalization of separation excludes children born outside marriage. For the birth cohorts under study, around 6% of respondents were born out of wedlock (Klärner 2015). For the first dependent variable – mid-secondary education – all parental separations before and including the age of 16 are considered, the reference category being children who did not experience parental separation below the age of 16. For higher-secondary education the age threshold is 18, the reference category being siblings who did not experience parental separation below the age of 18. Research suggests that a child's age at separation can matter in terms of how harmful the separation is for their educational attainment, and that not all experiences of parental separation should be treated the same way. Hence, additionally, in the coding of parental separation, different age thresholds for each different level of educational attainment are used and include age categories (see 'Sensitivity analyses' below).

Parental education was measured using the dominance principle, according to which the highest level of educational attainment determines a child's educational background (Erikson 1984). It is constructed using a collapsed educational scale (low: up to lower-secondary education with and without training; middle: intermediate/higher-secondary

education with and without training; high: tertiary education). Measuring social background based on parental education has the advantage that this measure is more stable over parents' life courses than parental socioeconomic position and therefore less likely to change as a consequence of parental separation. Moreover, many mechanisms draw on informational resources and parental behavioral variation; these mechanisms are better captured with education than with indicators of status or income (for Germany see Schulz et al. 2017). Additional analyses replicate the main analyses with single measures of a father's and mother's education level and socioeconomic position (see 'Sensitivity analyses' below).

The variable 'male' is coded 1 for male siblings and 0 for female siblings; additionally, 'birth year' is included for each sibling. Further control variables are 'birth order', which is included as a categorical variable ranging from 1 to 5 and hence also captures the well-established first-born advantage (Härkönen 2014), and 'number of siblings'. As it is likely that respondents report their own educational qualifications with more accuracy than that of their siblings, all models further include information on 'respondent'.

### **3.3 Analytical strategy**

We estimated linear probability models predicting educational attainment. The estimates from those models enable a straightforward comparison across models and the interpretation of interactions. Additionally, the estimates are comparable to marginal effects (Mood 2010). One disadvantage of linear probability models is that they might lead to unreliable estimates if the outcome is highly skewed (Cox and Wermuth 1992). This is not the case for our analyses (see Table 1). All the main models include all siblings, and in the Appendix these analyses are replicated in a sample comprising only respondents (see Table A-4). The results are very similar.

### **3.4 Multivariate results**

The following models for the two dependent variables were estimated separately. First, the average association between parental separation and educational attainment was estimated by comparing those who did not experience parental separation with those who did. In the next step, the models included variation across educational background by interacting the main independent variable measuring 'parental separation' with parental education.

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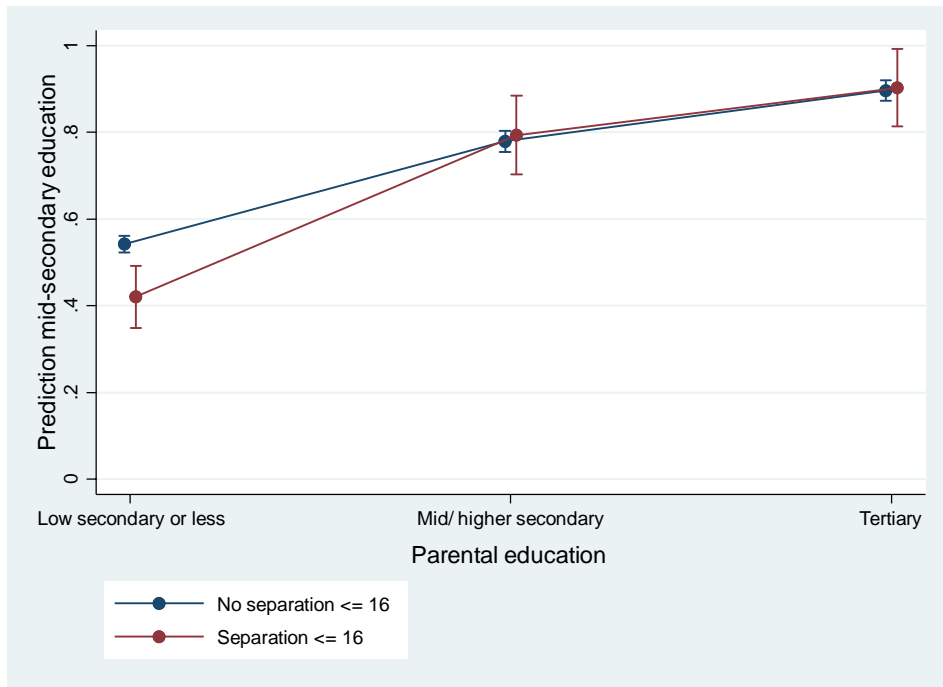
Parental separation is negatively associated with children's chances of attaining mid-secondary education (Table 2, Model 1). The point estimates indicate that children whose parents separate before their children reach the age of 16 are 7 percentage points less likely to complete mid-secondary education, a substantial difference. Model 2 includes the interaction of parental separation with educational background and shows that separation consequences are limited to children from low educational backgrounds. These children are 12 percentage points less likely to complete mid-secondary education if their parents separate. For children from medium or higher educational backgrounds the estimates do not indicate any disadvantages associated with parental separation.

**Table 2: Models predicting mid-secondary and higher-secondary education (N = 6,855)**

	M1: Mid Secondary		M2: Mid Secondary		M3: Higher Secondary		M4: Higher Secondary	
	b	se	b	se	b	se	b	se
<b>Parental separation &lt;=16<sup>a</sup></b>	-.071	(.028)	-.122	(.038)				
<b>Parental separation x parental education</b>								
Mid/higher secondary			.136	(.061)				
Tertiary			.129	(.060)				
Parental separation <=18 <sup>a</sup>					-.052	(.023)	-.060	(.023)
<b>Parental separation x parental education</b>								
Mid/higher secondary							.051	(.059)
Tertiary							-.041	(.089)
<b>Parental education</b>								
Low (ref.)								
Middle	.245	(.015)	.237	(.016)	.209	(.017)	.205	(.017)
High	.361	(.015)	.354	(.015)	.519	(.022)	.521	(.022)
<b>Birth order</b>								
First-born (ref.)								
Second-born	-.038	(.012)	-.039	(.012)	-.045	(.011)	-.045	(.011)
Third-born	-.042	(.017)	-.042	(.017)	-.042	(.015)	-.043	(.015)
Later-born	-.043	(.024)	-.042	(.024)	-.058	(.019)	-.058	(.019)
<b>Number of siblings</b>	-.041	(.006)	-.041	(.006)	-.020	(.004)	-.020	(.004)
<b>Year of birth</b>	.008	(.001)	.008	(.001)	.005	(.001)	.005	(.001)
<b>Male</b>	-.099	(.011)	-.099	(.011)	.000	(.010)	.000	(.010)
<b>Respondent</b>	.001	(.011)	.001	(.011)	-.031	(.010)	-.031	(.010)
<b>Constant</b>	-15.345	(2.890)	-15.381	(2.888)	-8.945	(2.465)	-8.944	(2.468)

Note: S.E. in parenthesis. <sup>a</sup> No separation being reference.  
Source: GLHS West. Own calculations.

**Figure 1: Predicted probabilities for mid-secondary education (with 95% confidence intervals)**



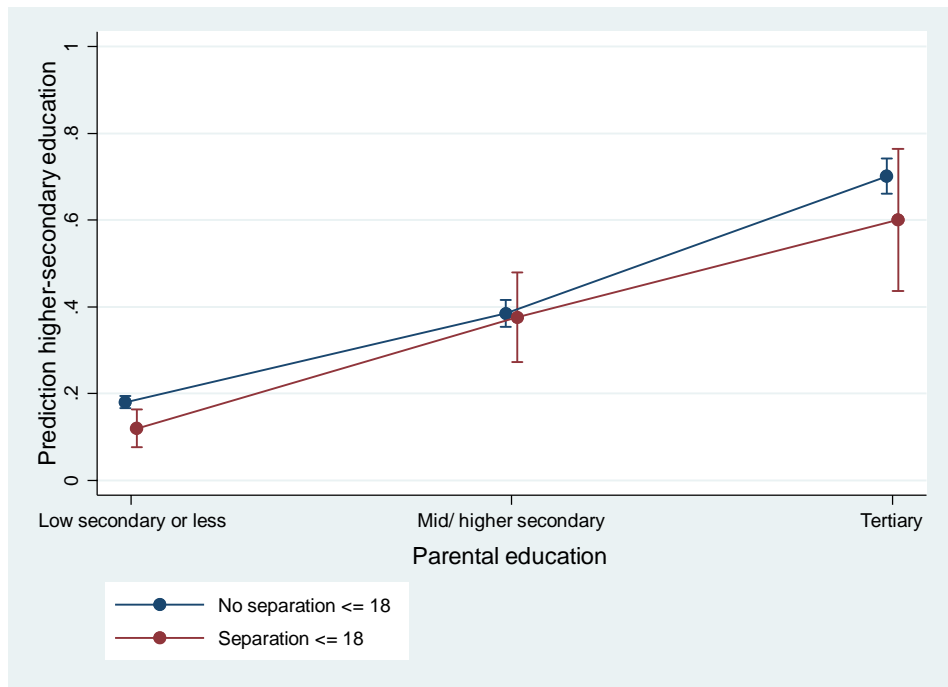
Note: Predictions are based on Model 2, Table 2.

Figure 1 depicts the predicted probabilities of completing mid-secondary education, split by educational background group. The stratification of educational attainment is clearly visible: the higher the parental educational background the more likely children attain mid-secondary education. Children from low educational backgrounds who experience parental separation have lower chances of reaching mid-secondary education than children who do not experience separation; their probability of attaining mid-secondary education is reduced from .54 to .42. For children from mid- and high-educational backgrounds the predicted probabilities of attaining mid-secondary education do not vary meaningfully according to separation experience. Hence, for the case of mid-secondary education, the consequences of parental separation are limited to children from low status backgrounds, which provides support for the compensation perspective (Hypothesis 1).

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The baseline model for the second outcome (Table 2 models 3 and 4) – higher-secondary education – shows that separations are associated with a 5-percentage point reduction in the chances of successfully completing higher-secondary education. Variation by educational background shows that for children from low educational backgrounds separations are associated with a reduction of around 6 percentage points in the likelihood of attaining higher-secondary education; for children from high education backgrounds this figure is 4 percentage points but uncertain, as indicated by the large standard error (see also Figure 2). While children from lower educational backgrounds who experience parental separation are disadvantaged in their chances of completing higher-secondary education, children from medium and higher education backgrounds are not. In sum, these findings provide no support for a more-to-lose pattern (Hypothesis 2).

**Figure 2: Predicted probabilities for higher-secondary education (with 95% confidence intervals)**



Note: Predictions are based on Model 4, Table 2.

### 3.5 Sensitivity analyses

A number of sensitivity checks were conducted. The first includes dummies for whether the child was aged 1–5, 6–11, or 12–16 at the time of separation, the reference category being children who did not experience parental separation below the age of 16 (see Table A-5). For higher-secondary education the age threshold is 18; the analyses include dummies for whether the child was aged 1–11, 12–15, or 16–18 at the time of separation the reference category being siblings who did not experience parental separation below the age of 18.

In line with earlier research (Sigle-Rushton et al. 2014), separations close to educational completion (at ages 12–16) are most harmful. More specifically, children who experience parental separation at ages 12 to 16 are 14 percentage points less likely to complete mid-secondary education. Estimates for earlier separations are of smaller size and uncertain. Overall, models including the interaction of parental separation with educational background split by age at separation replicate the main findings: separation consequences are more pronounced for children from low educational backgrounds. These children are 21 percentage points less likely to complete mid-secondary education if they experience separation close to completion; the corresponding figure for early childhood is 15. The estimates do not indicate any disadvantages associated with parental separation for children from medium or higher educational backgrounds. Regarding higher-secondary education, the patterns likewise resemble those from the main analyses, showing the most pronounced disadvantages for children from low status backgrounds. Interestingly, for children from middle educational backgrounds, separations between ages 12 and 15 are strongly positively associated with higher-secondary education. This is unexpected and could not be replicated with social status as an alternative measure for social background (not shown).

Second, based on the sibling sample, the robustness of our results regarding unobserved heterogeneity at the family level is scrutinized. In this specification, family-specific time-constant unobserved effects are controlled for and the models yield unbiased estimates of the effect of family dissolution on educational attainment, even if the unobserved family-specific effects are not independent of the experience of family dissolution and other variables (for a general discussion see, for example, Allison 2009). The estimates of the sibling-fixed-effects models can be interpreted as the probability of reaching an educational outcome for siblings who did and did not experience parental separation before or after attaining the educational outcome. Hence, the interpretation of these estimates differs substantially from the main analyses, as the sibling-comparison design estimates the relative effects of separation, while the between-family comparison indicates the association with parental separation (see Appendix for further details). The baseline models (see Table A-6) show a much smaller and uncertain link between family separation and educational attainment for mid-secondary education. Regarding variation

by educational background, estimates are likewise uncertain but point to the same pattern as the main analyses: no disadvantage of parental separation for children from higher educational backgrounds. Estimates for higher-secondary education are close to zero and do not meaningfully vary by parental education. In sum, this suggests that unobserved stable family characteristics may overestimate separation effects and variation therein across educational backgrounds, in particular for higher-secondary education.

Third, earlier research has found divergent results for variation in the consequences of parental separation depending on how the educational background of children was operationalized (cf. Bernardi and Boertien 2016). By measuring parental education based on the dominance principle, it is usually assumed that the highest educational level conditions family relationships and the availability of resources following separation. However, because the child generally lives with the mother after parental separation, her resources might be especially influential. To investigate whether the results are robust to measuring parental education using either the mother's or the father's education, we conducted additional analyses (Tables A-7 and A-8). Overall, the results are very similar to the main analyses but indicate that a mother's education is more important in conditioning separation effects.

Fourth, we replicated the analyses with a measure of parents' socioeconomic standing instead of parental education, using the European Socio-Economic Classification (ESeC) (Table A-9). The ESeC allocates individuals to different social class positions based on their occupation and employment status (see Rose and Harrison 2010; Wirth et al. 2010). For these robustness checks the bottom category comprised lower grade white-collar workers, skilled workers, and semi- and non-skilled workers. The intermediate group comprised higher-grade white-collar workers, petit bourgeoisie, and higher-grade blue-collar workers, and the highest group higher and lower salariat. The sample sizes were reduced due to missing data in the parental employment variables. The results are very similar to the main analyses.

Fifth, separation consequences may vary according to whether parents separated or divorced. In additional analyses only divorces were coded as separations: leaving these out did not alter the findings (see tables A-10). Due to the small number of separations (6.5%), more detailed analyses were not possible.

## **4. Discussion and conclusion**

This study contributes to our understanding of educational background variation in parental separation by analyzing its consequences for lower and higher educational thresholds in Germany. The main finding of this study is that variation in parental separation consequences by parental educational background are in line with the



compensation perspective: the consequences of parental separation for completing mid-secondary education – and somewhat also for higher-secondary education – were most severe for, and indeed limited to, disadvantaged children.

Thus, while children from a lower educational background experienced negative separation consequences, children from a higher educational background did not, irrespective of the outcome. In sum, this means that our analyses support the compensation perspective (cf. Grätz 2015; Mandemakers and Kalmijn 2014). Hence, these findings suggest that compensation may aggravate existing inequalities. In a context with high socioeconomic disparities between children who experience parental separation and those who do not, as well as high educational inequality – in this case in West Germany – children from lower education backgrounds face the risk of not reaching mid-secondary and (to a lesser extent) higher-secondary education if their parents separate. Unequal family separation consequences may hence contribute to persistent educational inequalities.

The mixed findings for heterogenous separation consequences across social background indicate that in a context with a strongly stratified and hierarchically organized education system, only disadvantaged children face separation consequences, particularly at a low threshold (mid-secondary education). These unequal heterogenous consequences would be missed when only looking at higher levels of educational attainment. More broadly, this suggests that studies examining heterogenous consequences, for example regarding well-being and cognitive abilities, should move beyond mean effects and look at various points of the outcome distribution.

Another interesting finding is that the protective role of highly educated parents is driven by mothers. In West Germany, with low levels of maternal employment, this might indicate that one dimension of social background may buffer losses in another dimension. A tentative hypothesis could be that the large relative losses in socioeconomic resources experienced by children from higher status backgrounds may be compensated for by highly educated parents, especially mothers. This might also imply that studies focusing on income decline after separation might not be easily generalized to children's educational outcomes (cf. Leopold and Leopold 2016).

The following limitations of the study need to be discussed. The main analyses of this study are based on associational models, comparing children whose parents separated with those who did not. To gauge how sensitive these results are to selection into separation, sibling-fixed-effects models were estimated. Results on mid-secondary education are imprecise but show the same patterns of variation by educational background. The estimates indicate no consequences of parental separation for higher-secondary education. In conjunction with the uncertain estimates from the main analyses regarding higher-secondary education, this indicates that the disadvantages observed in the associational models might be due to unobserved family characteristics – that is, it is

likely that these children would have done worse than children who did not experience separation even if their parents had not separated. While sibling-fixed-effects models provide substantially different estimates and generalizing their results to the entire population requires strong assumptions (McLanahan Tach, and Schneider 2013), we cannot therefore exclude the possibility that at least part of the observed disadvantages associated with parental separation is due to selection into separation. Future research should address these selection issues; studies with large samples using administrative data might be a promising step forward (cf. Barclay and Hällsten 2021).

Second, the present study did not directly shed light on the mechanisms by which better-educated parents might ameliorate the risk of educational disadvantage. More research is needed on mechanisms that might vary by parental education; i.e., that enable higher status parents to prevent negative repercussions. These might include social, cognitive, and psychological resources that have a valuable compensatory effect on children's educational success. Moreover, the theoretical mechanisms discussed here focus on the role of parents, while the decision regarding the most demanding educational tracks is usually taken in conjunction with teachers. Teachers have been shown to be more likely to recommend that children from higher social backgrounds take the academic track, even if their performance is equal to that of children from lower backgrounds (Dollmann 2011). This bias may also prevent teachers from recommending that higher status children opt for lower tracks, despite possible reductions in their performance following separation.

A third limitation pertains to the cohorts under study. The cohorts on which the study is based were born in the 1960s and 1970s, under specific circumstances such as a highly stratified educational system and low maternal employment. While this has to be kept in mind when generalizing the findings, they complement and support analyses of more recent cohorts in a study employing sibling fixed effects in West Germany (Grätz 2015). That study found that the dissolution penalty regarding both grades and academic track attendance – the first and most important milestone en route to higher-secondary education – was restricted to children from lower social backgrounds. Importantly, Grätz's study includes more recent cohorts born in the 1980s and 1990s, for whom the academic track became standard and increasingly accessible to children from lower social backgrounds. Whether this pattern extends to the attainment of tertiary education, which continues to be more selective regarding social background (Blossfeld, Blossfeld, and Blossfeld 2015), remains to be seen. For studies on the heterogenous educational effects of parental separation, it might be useful to follow up on the stratification and differentiation of education systems in assessing differentials in educational separation consequences across countries, and it may also inform discussions on changes within countries over time (Härkönen, Bernardi, and Boertien 2017: 15).

All in all, this study contributes to the ongoing debate on the heterogeneous consequences of parental separation. It shows that considering more than one outcome illustrates the dynamics between family processes and inequality that might otherwise go unrecognized. More research is needed to fully explain the heterogeneous consequences of parental separation, which is an increasingly common experience in most Western societies.

## **5. Acknowledgments**

This study uses data from the German Life History Study (GLHS) headed by Karl Ulrich Mayer between 1979 and 2010 and funded through the German National Science Foundation (DFG), the Max Planck Institute (MPI) for Human Development in Berlin, and the Center for Research on Inequalities and the Life Course (CIQLE) at Yale University. The author thanks Philipp M. Lersch, Heike Solga, Katya Ivanova, Jan Paul Heisig, and Karl Ulrich Mayer for helpful advice. Earlier versions were presented at seminars at WZB Berlin, and at the ISA RC28 spring meeting 2018.

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## Appendix

**Table A-1: Descriptives – Main respondents only (N = 2,760)**

	mean	sd	min	max
Parent's education				
Lower secondary or less	.621	.485	0	1
Mid/higher secondary	.250	.433	0	1
Tertiary	.129	.335	0	1
Parents' social class				
ESeC low	.621	.485	0	1
ESeC mid	.269	.443	0	1
ESeC high	.111	.314	0	1
Sibling characteristics				
Mid-secondary education	.682	.466	0	1
Higher secondary ( <i>Abitur</i> )	.299	.458	0	1
Sibling order	1.981	1.235	1	11
Male				
Year of birth	.533	.499	0	1
Age at separation <=16	1967	3	1964	1971
Age at separation <=16				
1–5	.012	.110	0	1
6–11	.022	.147	0	1
12–16	.025	.157	0	1
No separation <=16	.940	.237	0	1
Age at separation <=18				
1–11	.034	.182	0	1
12–15	.021	.142	0	1
16–18	.014	.118	0	1
No separation <=18	.931	.254	0	1

**Table A-2: Descriptives – Sibling sample (excluding single children) (N = 6,245)**

	Mean/%	sd	min	max
Parent's education				
Lower secondary or less	.663	.473	0	1
Mid/higher secondary	.218	.413	0	1
Tertiary	.119	.324	0	1
Parents' social class (N = 5972)				
ESeC low	.642	.479	0	1
ESeC mid	.247	.431	0	1
ESeC high	.110	.313	0	1
Sibling characteristics				
Mid-secondary education	.626	.484	0	1
Higher secondary ( <i>Abitur</i> )	.279	.448	0	1
Sibling order	2.219	1.353	1	12
Respondent	.369	.482	0	1
Male	.516	.500	0	1
Year of birth	1965	5	1939	1975
Age at separation <=16				
1–5	.011			
6–11	.021			
12–16	.025			
No separation <=16	.942			
Age at separation <=18				
1–11	.033			
12–15	.021			
16–18	.014			
No separation <=18	.933			
Within-family variance				
experience of separation				
Separations <=16	.014			
Separations <=18	.011			

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**Table A-3: Cross-tabulation of children's mid-secondary and higher-secondary attainment and parental educational attainment**

	Parental education			Total
	Low Education	Mid Education	High Education	
<b>Children's education</b>				
Less than higher secondary	3,747	917	241	4,905
Higher secondary	762	609	579	1,950
Total	4,509	1,526	820	6,855

	Parental education			Total
	Low Education	Mid Education	High Education	
<b>Children's education</b>				
Less than mid secondary	2,159	289	66	2,514
Mid secondary	2,350	1,237	754	4,341
Total	4,509	1,526	820	6,855f

**Table A-4: Models predicting mid-secondary and higher-secondary education – Main respondents only (N = 2,760)**

	M1: Mid Secondary		M2: Mid Secondary		M3: Higher Secondary		M4: Higher Secondary	
	b	se	b	se	b	se	b	se
Age at separation <=16 <sup>a</sup>	-.041	(.035)	-.088	(.045)				
Age at separation x parental education								
Mid/higher secondary			.105	(.081)				
Tertiary			.138	(.104)				
Age at separation <=18a					-.081	(.031)	-.069	(.041)
Age at separation x parental education								
Mid/higher secondary							.027	(.071)
Tertiary							-.159	(.096)
Parental education								
Low (ref.)								
Middle	.220	(.020)	.213	(.020)	.210	(.019)	.208	(.020)
High	.319	(.025)	.310	(.026)	.505	(.024)	.516	(.025)
Birth order								
First-born (ref.)								
Second-born	-.003	(.020)	-.003	(.020)	-.034	(.019)	-.035	(.019)
Third-born	-.050	(.027)	-.051	(.027)	-.041	(.026)	-.042	(.026)
Later-born	-.025	(.038)	-.024	(.038)	-.046	(.037)	-.048	(.037)
Number of siblings	-.044	(.008)	-.044	(.008)	-.023	(.007)	-.022	(.007)
Year of birth	.007	(.002)	.008	(.002)	.008	(.002)	.007	(.002)
Male	-.119	(.017)	-.119	(.017)	-.018	(.016)	-.018	(.016)
Constant	-13.916	(4.708)	-14.012	(4.707)	-14.565	(4.531)	-14.374	(4.531)

Notes: S.E. in parenthesis. <sup>a</sup> No separation being reference.  
Source: GLHS West. Own calculations.

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**Table A-5: Models predicting mid-secondary and higher-secondary education by age at separation (N = 6,855)**

	M1: Mid Secondary		M2: Mid Secondary		M3: Higher Secondary		M4: Higher Secondary	
	b	se	b	se	b	se	b	se
Age at separation <=16 (no separation being reference)								
1-5	-.082	(.053)	-.150	(.070)				
6-11	-.037	(.040)	-.038	(.058)				
12-16	-.145	(.038)	-.216	(.049)				
Age at separation x mid/higher secondary parental education								
1-5			.239	(.112)				
6-11			-.022	(.092)				
12-16			.212	(.081)				
Age at separation x tertiary parental education								
1-5			.098	(.117)				
6-11			.042	(.086)				
12-16			.207	(.078)				
Age at separation <=18 (no separation being reference)								
1-11					-.097	(.029)	-.080	(.026)
12-15					.038	(.041)	-.048	(.041)
16-18					-.122	(.038)	-.084	(.042)
Age at separation x mid/higher secondary parental education								
1-11							-.041	(.072)
12-15							.368	(.098)
16-18							-.099	(.083)
Age at separation x tertiary parental education								
1-11							-.041	(.115)
12-15							-.035	(.138)
16-18							-.007	(.144)
Parental education								
Low (ref.)								
Middle	.256	(.015)	.248	(.016)	.214	(.017)	.210	(.017)
High	.367	(.015)	.361	(.016)	.523	(.022)	.524	(.022)
Year of birth	.011	(.001)	.011	(.001)	.006	(.001)	.006	(.001)
Male	-.100	(.011)	-.100	(.011)	-.001	(.010)	.000	(.010)
Sibling order	-.041	(.006)	-.041	(.006)	-.030	(.004)	-.030	(.004)
Respondent	.025	(.011)	.025	(.011)	-.018	(.010)	-.019	(.010)
Constant	-21.437	(2.653)	-21.482	(2.653)	-11.549	(2.257)	-11.561	(2.256)

Notes: S.E. in parenthesis. <sup>a</sup> no separation being reference.

Source: GLHS West. Own calculations.

**Table A-6: Models predicting mid-secondary and higher-secondary education – Sibling fixed effects (N = 6,855)**

	M1: Mid Secondary		M2: Mid Secondary		M3: Higher Secondary		M4: Higher Secondary	
	b	se	b	se	b	se	b	se
Age at separation <=16a	-.033	(.064)	-.026	(.082)				
Age at separation x parental education								
Mid/higher secondary			-.034	(.142)				
Tertiary			.036	(.234)				
Age at separation <=18a					-.000	(.068)	-.008	(.082)
Age at separation x parental education								
Mid/higher secondary							.024	(.151)
Tertiary							.022	(.354)
Birth order								
First-born (ref.)								
Second-born	-.077	(.014)	-.077	(.014)	-.057	(.013)	-.057	(.013)
Third-born	-.100	(.023)	-.100	(.023)	-.062	(.021)	-.062	(.021)
Later-born	-.154	(.034)	-.154	(.034)	-.093	(.031)	-.093	(.031)
Year of birth	.016	(.003)	.016	(.003)	.007	(.003)	.007	(.003)
Male	-.096	(.012)	-.096	(.012)	.021	(.011)	.021	(.011)
Respondent	.002	(.011)	.002	(.011)	-.033	(.010)	-.033	(.010)
Constant	-31.144	(5.409)	-31.152	(5.413)	-12.908	(5.052)	-12.941	(5.057)

Notes: S.E. in parenthesis. <sup>a</sup> No separation being reference.

Source: GLHS West. Own calculations.

While the estimates of sibling-fixed-effects OLS linear probability models do not provide causal effects comparable to an experimental setting as in a random trial, they provide a robust effect – net of stable family characteristics – on an individual. The alternative, conditional logistic regression with fixed sibling effects describes a group-level effect (Petersen and Lange 2020: 81) and thus for the purpose of this study is much harder to interpret.

The baseline model for the probability,  $M_{ij}$ , that child  $i$  of family  $j$  attains mid-secondary education may be written as:

$$M_{ij} = b_1 A_{ij}^{(1)} D_j + b_2 A_{ij}^{(2)} D_j + b_3 A_{ij}^{(3)} D_j + b_4 X_{ij} + s_j \quad (1)$$

where  $A_{ij}^{(1)}$ ,  $A_{ij}^{(2)}$ , and  $A_{ij}^{(3)}$  are dummies for whether the child was aged 1–5, 6–12, or 13–16 at the time of separation. Not having experienced separation is the reference group.  $D_j$  is a separation indicator (1 if experienced separation, 0 otherwise),  $X_{ij}$  is a vector of child characteristics that can vary between siblings (year of birth, birth order, sex). The ‘ $b$ ’s are the corresponding coefficients, and  $s_j$  is a sibling fixed effect.

In a second model, the following interactions with whether the parents had low education ( $E_j = 1$  if low, 0 otherwise) were added to Equation (1):

$$M_{ij} = b_6 A_{ij}^{(1)} D_j E_j + b_7 A_{ij}^{(2)} D_j E_j + b_8 A_{ij}^{(3)} D_j E_j \quad (2)$$

Note that the main effect of parental education cannot be estimated as it does not vary between siblings. In this specification, family-specific time-constant unobserved effects are controlled for and the models yield unbiased estimates of the effect of parental separation on educational attainment even if the unobserved family-specific effects are not independent of the experience of parental separation and other variables (for a general discussion see, for example, Allison 2009). Sibling-fixed-effects models have been discussed as one way of approximating the causal effects of parental separation on a child's outcomes (McLanahan Tach, and Schneider 2013), but these models also have a number of features that should be kept in mind when interpreting the results. First, sibling analyses exclude families with only one child. It is difficult to assess whether the effect of separation differs for siblings and only children. Second, the sibling fixed effects are identified by the differences between siblings who experienced parental separation at different ages (Sigle-Rushton et al. 2014). Thus, one sibling experienced parental separation; the other, older sibling, passed the age threshold and hence is not counted as having experienced the separation. Siblings are usually spaced closely, so that late divorces close to the chosen age threshold are more common in the sample of siblings that diverge in their experience of separation. If late divorces were especially harmful, the analysis might overstate the consequences for educational attainment. For this reason, all models include dummies for age categories at separation. Third, the estimates hinge on the assumption that the family environment would have remained stable for siblings who did not experience separation before the age threshold if the parents had not separated. It is reasonable to assume that the actual (physical) separation of the parents causes most of the turmoil for family relations and is also more significant for changes in available resources. At the same time, it is likely that parental conflict increases towards separation and hence the family environment would also have worsened for the older sibling who did not experience separation before the age threshold. Unfortunately, the data do not include information on family conflict and so estimates may underestimate the separation effect for the older sibling. Fourth, the models additionally assume that the effects of the response of time-constant characteristics remain unchanged across siblings and influence all siblings in a family in the same way. Examples of such family background characteristics include social and biological traits transmitted from parents to children, parenting style, and family, cultural, and socioeconomic capital; they also include the broader context, such as neighborhoods. If these shared influences are the



same, they cannot explain differences in educational attainment between siblings. While there is no way to address the full range of possible confounders at the individual level – which would include, for example, personality characteristics – we include information on the available characteristics that differ between siblings and that are related to educational attainment, such as birth order and sex (Sigle-Rushton et al. 2014). Taken together, the data allowed us to include a number of factors that might otherwise decrease the external validity of estimates of sibling fixed effects models.

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**Table A-7: Models predicting mid-secondary and higher-secondary education – Variation by maternal education (N = 6,732)**

	M1: Mid Secondary		M2: Higher Secondary	
	b	se	b	se
Age at separation <=16a	-.120	(.036)		
Age at separation x maternal education				
Mid/higher secondary	.128	(.061)		
Tertiary	.156	(.066)		
Age at separation <=18a			-.066	(.024)
Age at separation x maternal education				
Mid/higher secondary			.008	(.070)
Tertiary			-.027	(.109)
Maternal education				
Low (ref.)				
Middle	.243	(.015)	.262	(.020)
High	.337	(.022)	.578	(.032)
Birth order				
First-born (ref.)				
Second-born	-.036	(.012)	-.041	(.012)
Third-born	-.040	(.017)	-.040	(.016)
Later-born	-.045	(.025)	-.058	(.019)
Number of siblings	-.045	(.006)	-.025	(.004)
Year of birth	.008	(.002)	.004	(.001)
Male	-.106	(.011)	-.007	(.011)
Respondent	.004	(.011)	-.031	(.010)
Constant	-14.618	(3.072)	-7.797	(2.670)

Notes: S.E. in parenthesis. <sup>a</sup> no being reference.

Source: GLHS West. Own calculations.

**Table A-8: Models predicting mid-secondary and higher-secondary education – Variation by paternal education (N = 6,585)**

	M1: Mid Secondary		M2: Higher Secondary	
	b	se	b	se
Age at separation <=16a	-.099	(.040)		
Age at separation x paternal education				
Mid/higher secondary	.128	(.069)		
Tertiary	.096	(.067)		
Age at separation <=18a			-.034	(.028)
Age at separation x paternal education				
Mid/higher secondary			.000	(.071)
Tertiary			-.058	(.094)
Paternal education				
Low (ref.)				
Middle	.241	(.016)	.230	(.020)
High	.334	(.015)	.512	(.023)
Birth order				
First-born (ref.)				
Second-born	-.043	(.012)	-.050	(.011)
Third-born	-.050	(.017)	-.051	(.015)
Later-born	-.058	(.025)	-.066	(.019)
Number of siblings	-.043	(.006)	-.023	(.004)
Year of birth	.009	(.002)	.006	(.001)
Male	-.102	(.011)	-.002	(.011)
Respondent	-.001	(.011)	-.033	(.010)
Constant	-17.827	(2.992)	-11.514	(2.514)

Notes: S.E. in parenthesis.

Source: GLHS West. Own calculations. a no being reference.

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**Table A-9: Models predicting mid-secondary and higher-secondary education – Variation by parental social status (N = 6,319)**

	M1: Mid Secondary b	se	M2: Higher Secondary b	se
Age at separation <=16a	-.104	(.039)		
Age at separation x parental ESeC				
Middle	.146	(.062)		
Higher	.026	(.103)		
Age at separation <=18a			-.054	(.028)
Age at separation x parental ESeC				
Middle			.047	(.065)
Higher			-.085	(.100)
Parental ESeC				
Low (ref.)	.000	(.)	.000	(.)
Middle	.213	(.017)	.225	(.018)
High	.292	(.020)	.392	(.027)
Birth order				
First-born (ref.)	.000	(.)	.000	(.)
Second-born	-.050	(.012)	-.056	(.012)
Third-born	-.057	(.018)	-.057	(.016)
Later-born	-.058	(.026)	-.082	(.021)
Number of siblings	-.042	(.007)	-.022	(.005)
Year of birth	.010	(.002)	.007	(.001)
Male	-.102	(.012)	.000	(.011)
Respondent	-.011	(.011)	-.033	(.010)
Constant	-18.813	(3.137)	-14.145	(2.776)
N	6,319		6,319	

Notes: S.E. in parenthesis. <sup>a</sup> no separation being reference.

Source: GLHS West. Own calculations.

**Table A-10: Models predicting mid-secondary and higher-secondary education – Divorces only (N = 6,855)**

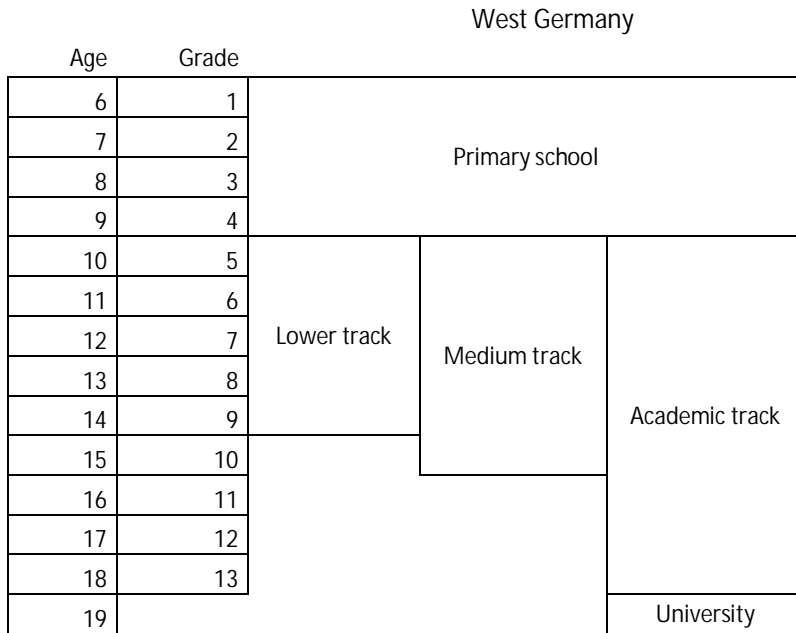
	M1: Mid Secondary b	se	M2: Higher Secondary b	se
Age at separation <=16a	-.121	(.038)		
Age at separation x parental education				
Mid/higher secondary	.126	(.064)		
Tertiary	.123	(.062)		
Age at separation <=18a			-.062	(.024)
Age at separation x parental education				
Mid/higher secondary			.017	(.061)
Tertiary			-.043	(.094)
Parental education				
Low (ref.)				
Middle	.238	(.016)	.207	(.017)
High	.354	(.015)	.521	(.022)
Birth order				
First-born (ref.)				
Second-born	-.038	(.012)	-.045	(.011)
Third-born	-.042	(.017)	-.043	(.015)
Later-born	-.042	(.024)	-.059	(.019)
Number of siblings	-.041	(.006)	-.020	(.004)
Year of birth	.008	(.001)	.005	(.001)
Male	-.099	(.011)	.000	(.010)
Respondent	.001	(.011)	-.031	(.010)
Constant	-15.379	(2.888)	-9.037	(2.466)

Notes: S.E. in parenthesis. <sup>a</sup> no being reference.

Source: GLHS West. Own calculations.

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**Figure A-3: Education system in West Germany (simplified illustration)**



Source: Own presentation