Divorce and inequality

*Stratification in the risk and consequences of union dissolution*

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CHAPTER 2

Linking union dissolution to inequality

A risk-and-consequences approach to divorce and diverging poverty rates
ABSTRACT

Scholars have argued that divorce drives inequality between education groups over the life course. Two pathways play a role in this process: stratification in the risk of divorce and the stratification in the consequences of divorce. While previous work has examined these pathways in isolation, both pathways should be studied simultaneously to understand whether and how divorce drives inequality. In this study, we propose a new approach that incorporates both pathways and apply it to the link between divorce and poverty. Using administrative data from the Netherlands, we followed the marriage cohorts 2003 to 2005 (N = 179,018) during a period of 10 years. Decomposition analyses showed that, in the 10 years following marriage, divorce explained 12% of the educational difference in poverty in the overall population and 26% in mothers. Among childless men and women, divorce increased poverty differences due mainly to greater economic consequences for the less educated. Among mothers, divorce increased poverty differences due to both higher risk and greater consequences for the less educated. Among fathers, divorce was unrelated to poverty. We conclude that divorce is a major driver of divergence in poverty rates over the life course. Our approach sets an agenda for the analysis of life events and life-course inequalities.

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2.1 INTRODUCTION
Divorce rates in Europe and the United States have increased markedly over the past half century and have stabilized at high levels (Amato and James 2010; Kennedy and Ruggles 2014). A growing literature links divorce to economic inequality (Haskins 2015; Lundberg et al. 2016; McLanahan 2004). Implicit in this literature is the idea that highly educated individuals are concentrated in an advantageous life-course trajectory of postponed family formation and marital stability. Less-educated individuals, in contrast, are concentrated in an adverse trajectory of early family formation and divorce. Consequently, highly educated individuals are believed to accrue the continuous economic benefits of a stable marriage, whereas less-educated individuals are believed to incur prolonged economic losses following divorce.

These arguments suggest that divorce is a driver of cumulative inequality between education groups over the life course (Dannefer 1987; Ferraro et al. 2009). One pathway in this process is stratification in the risk of divorce, as less-educated individuals are more likely to experience a divorce (Härkönen and Dronkers 2006; Martin 2006). Another pathway is stratification in the consequences of divorce, as less-educated individuals may be more likely to fall into poverty following divorce (Smock 1994; Vandecasteele 2010).

However, existing literature has not fully addressed the degree to which divorce drives the life-course divergence in poverty rates. Previous studies have focused either on stratified risk or on stratified consequences, but not on both pathways. A focus limited to risk ignores the possibility of unequal consequences of divorce for poverty and, conversely, a focus limited to consequences ignores the possibility of an unequal risk of divorcing in the first place.

The present study is the first to assess both pathways simultaneously, resulting in a fuller picture of how divorce contributes to the life-course divergence in poverty rates between education groups. We introduce an approach that accounts for both for stratification in the divorce risk and stratification in the divorce consequences. We then apply this approach to longitudinal administrative data from the Netherlands to examine whether and how these pathways contribute to poverty divergence between education group throughout the early and middle stages of the adult life course. A major benefit of these administrative data, compared to survey data, is the absence of (selective) attrition, addressing a problem faced by many studies on divorce and poverty. Moreover, the large case numbers and long observation window allow us to analyze differences across important subgroups. We investigate the role of divorce in poverty divergence not only for the overall population, but also separately for mothers, fathers, childless women, and childless men.

Our study has implications for policy and for stratification research in general. If poverty rates diverge because of stratification in the risk of divorce, this could warrant policies that address the reasons behind elevated divorce risks in less-educated individuals or that
weak the overall link between divorce and poverty. If poverty rates diverged because of stratification in the consequences of divorce, this could warrant policies that protect less-educated divorcees from falling into poverty or that alleviate divorce-inducing strains in general. Furthermore, the distinction between risk and consequences easily extends to other research on the role of life events in generating social inequalities.

2.2 THEORETICAL BACKGROUND

2.2.1 Divorce and poverty

Divorce implies changes of great economic significance. The most important change concerns the loss of partner income: most partners partially pool their incomes during marriage (Heimdal and Houseknecht 2003) and access to this income is barred upon divorce. Another change concerns the loss of economies of scale, which amount to almost one third of the total expenditures compared to singles (Browning et al. 2013). Divorce poses an additional challenge when children are involved, since their cost of living is mostly borne by the resident parent.

Numerous empirical studies have demonstrated the economic consequences of divorce for men and women with and without children (Hoffman and Duncan 1988; Holden and Smock 1991; Kalmijn 2005b, 2015; Leopold and Kalmijn 2016; Poortman 2000; Tach and Eads 2015). Men tend to experience little changes in their economic situation. They might be more likely to receive unemployment or disability benefits following divorce, but these effects tend to be short-lived. Spousal alimony and child support typically consume only a small part of their incomes. Women, in contrast, rely heavily on partner income, and when children are involved, they become the resident parents in the large majority of cases. Increases in employment or the receipt of child support are usually insufficient to compensate for the loss of partner income. As a consequence, women experience sizable drops in household income, per capita income, and income-to-needs ratios, and many women – especially those with children – fall into poverty following divorce.

Economic losses, and in particular falling below the poverty line, pose a serious threat to the well-being of families. Income poverty is closely related to material deprivation. Average rates of income poverty are similar to those of subjective poverty and material deprivation, individual income poverty is a good predictor of material hardship, and poor households are much more exposed to moderate and extreme deprivation than nonpoor households (Bradshaw and Finch 2003; Willitts 2006). Income poverty is also related to a range of other adversities. Among adults, poverty has been associated with lower emotional well-being, more signs of depression, poorer self-rated health, and higher mortality rates (Backlund et al. 1999; Kahneman and Deaton 2010; Kennedy et al. 1998; Mackenbach et al. 2005; Martikainen et al. 2003). Among children, poverty has been associated with poorer parent-rated and self-rated...
health, fewer years of completed schooling, and lower earnings in adulthood (Currie et al. 2007; Duncan et al. 1998, 2010). Moreover, the effects of economic losses are strongly nonlinear. Income losses entail increasingly more adversities as one moves down the income distribution, and falling into poverty is particularly detrimental.

For these reasons, researchers and policymakers have paid specific attention to poverty. Welfare policies aimed at reducing poverty are widespread: housing benefits, subsidized services, family allowances, social insurance, and income tax credits are common across the industrialized world (Kenworthy 1999). Family policies also aim at reducing poverty. This is particularly the case in Anglo-Saxon countries like the United States, but also in continental European countries like the Netherlands and Switzerland (Thévenon 2011). In light of the adversities associated with poverty and its relevance for policy, we focused on poverty as our main outcome of interest. In additional analyses, we looked at the entire income distribution to complete the picture.

The links between divorce and poverty vary across the life course. Although in many countries poverty rates are fairly stable by age, transitions in and out of poverty are particularly common during the early and middle stages of the adult life course (Kangas and Palme 2000; Rank and Hirschl 1999). As divorce has become a common experience in these life-course stages, we consider educational stratification in the divorce risk and consequences as a driver of educational divergence in poverty rates during these stages. Only the consideration of both pathways allows us to assess the extent to which divorce drives divergence in poverty rates. Limiting the study to the stratified risk would assume that divorce consequences are equal across education groups, ignoring differential consequences, whereas limiting the study to stratified consequences would condition the population on divorcees, ignoring the differential risk of divorcing in the first place.

Throughout this study, we defined inequalities along educational lines, because education is a relatively stable indicator of social status over the adult life course, in contrast to other indicators such as employment status, income, or occupational prestige. Moreover, educational attainment is less endogenous to divorce than these alternative indicators (Ross and Wu 1996).

2.2.2 Educational gradient in risk
Goode (1962, 1963) has provided an explanation as to why the risk of divorce differs between socioeconomic strata. His core premise is that marriages in the lower strata experience more internal strain. Such strain could stem from economic hardship, problems in the social network, or greater substance abuse, among other things (Trail and Karney 2012). When normative barriers to divorce are sufficiently low, the marital strain of the lower strata should
express itself in the form of higher divorce rates. The result would be a negative gradient in divorce risk, whereby those in the lower strata are more likely to divorce.

Empirical evidence supports Goode’s prediction. Normative barriers to divorce are an important explanation of variation in the educational gradient in divorce across countries and time (Härkönen and Dronkers 2006; Matysiak et al. 2014). In those countries and periods in which barriers to divorce are lower, as indicated by higher divorce, extra-marital childbearing, cohabitation and female labor market participation rates, the educational gradient in divorce risk is more negative.

Studies have further shown that, currently, most Western countries exhibit a negative gradient in divorce risk. Less-educated individuals are at higher risk of divorce in Finland (Jalovaara 2003), Germany (Cooke 2006), Japan (Raymo et al. 2004), the Netherlands (De Graaf and Kalmijn 2006), Norway (Lyngstad 2004), South Korea (Park and Raymo 2013), Sweden (Andersson et al. 2006), Taiwan (Chen 2012), the United Kingdom (Boertien and Härkönen 2018), and the United States (Martin 2006), to name a few. In most countries, this negative gradient is substantial. For example, of all US women married between 1990 and 1994, 14% of those with a master’s degree divorced within 10 years, compared to 38% of those who completed high school, and 46% of those without a high school diploma (Martin 2006).

The role of parenthood in the risk gradient has not been examined in these studies. It therefore remains unclear whether the risk gradient varies between parents and childless couples. With an eye on the economic consequences of divorce, this is an important question, as growing up in poverty entails long-term consequences for both adults and their children.

### 2.2.3 Educational gradient in consequences

A negative educational gradient is also expected for the consequences of divorce, in terms of falling into poverty. First, less-educated individuals are overrepresented in the lower tail of the income distribution. The loss of partner income therefore disproportionately increases their probability of falling below the poverty line. Second, less-educated individuals have poorer prospects of economic recovery from divorce. The two main recovery strategies are repartnering and (re)employment. Repartnering is somewhat less common among less-educated individuals, although the differences are small (Shafer and James 2013). Employment is also a less viable strategy for less-educated individuals, because there is less labor demand for them and because their lower earning capacity yields fewer gains from increasing their labor supply (Tamborini et al. 2015).

Empirical evidence on the gradient in divorce consequences is mixed. A number of studies have included an interaction of education and divorce as a control variable. These studies have been inconsistent, finding that the economic consequences of divorce are more severe for the less-educated population (Brewer and Nandi 2014; Mauldin 1991; McKeever and
Wolfinger 2001; Poortman 2000; Smock 1994; Vandecasteele 2010), for the highly educated population (Bernardi and Boertien 2016; Jansen et al. 2009; Smock et al. 1999; Vandecasteele 2011), or finding no educational difference (Unk 2004). Reasons for these inconsistent findings could be the use of different outcomes, as losing income differs from falling below the poverty line, variation in the observation windows, as especially longer-term recovery may diverge between education groups, or selective panel attrition, as more vulnerable divorcees tend to drop out and this selectivity varies by panel. Only one study has explicitly focused on the consequence gradient. Tach and Eads (2015) examined relative losses in household disposable income among mothers who divorced. They found little educational differences, albeit with some variation across cohorts. Translating these results to poverty instead of relative income losses would suggest a negative educational gradient in consequences.

The roles of gender and parenthood in the consequence gradient have not been explored to date, but it is likely that both are important. Regarding gender, less-educated women more often specialize in unpaid housework than highly educated women (Craig and Mullan 2011). The resulting depreciation of their human capital renders them particularly vulnerable to the consequences of divorce, suggesting that the negative educational gradient in divorce consequences is stronger among women than men. Regarding parenthood, child custody acts as a barrier to employment and implies that the postdivorce household income is shared with more household members. Custody is typically granted to women, even more so in families with lower incomes (Cancian et al. 2014), suggesting that the gradient in divorce consequences is most negative among mothers, somewhat negative among childless men and women, and least negative among fathers. Empirical evidence on these subgroups is scarce, however. One study has found a stronger negative gradient among men than among women (Poortman 2000), yet another study found no gender differences (Jansen et al. 2009). A study accounting for parenthood found that mothers always experienced the economic consequences of divorce, irrespective of education, whereas fathers and childless men and women did so only if they had attained less education (Brewer and Nandi 2014).

2.3 THE DUTCH CONTEXT

All divorces in the Netherlands are considered no-fault. When children are involved, legal custody is by default exercised jointly, though in practice the majority of children reside with their mother (Poortman and Van Gaalen 2017). The average divorce procedure takes one month in bilateral, three and a half months in unilateral but uncontested, and eleven months in contested cases (Ter Voert 2009). Our analysis therefore accounted for the possibility that couples separated in advance of the legal divorce.

Poverty rates are relatively low in the Netherlands. In 2009, the poverty rate defined as a disposable income below 60% of the national median was 13.3% (OECD 2020). This was
somewhat lower than the poverty rates in Germany (15.7%) and the United Kingdom (17.4%) and far lower than the United States (23.4%). Dutch poverty rates differ considerably by education level, though the differences are small compared to other European countries (Eurostat 2018). Poverty increases slowly during the early and middle stages of the life course, from about 5% at age 18 to 8% at age 35 (Statistics Netherlands 2018).

Regarding the risk of divorce, the Netherlands has witnessed an increase that was almost entirely driven by individuals with less education. As a result, the positive educational gradient in divorce risk that existed for the 1942-1964 Dutch marriage cohorts has reversed into a negative educational gradient for later cohorts (De Graaf and Kalmijn 2006). Marriage and divorce rates are similar to those in other European countries (OECD 2019). The 2009 crude marriage and divorce rates in the Netherlands were 4.4 and 1.9 respectively, comparable to those in Germany (4.6 and 2.3) and the United Kingdom (4.3 and 2.0), but lower than those in the United States (6.8 and 3.5). Hence, the educational gradient in the risk of divorce probably plays a similar or even larger role in other contexts.

Regarding the economic consequences of divorce, the Dutch welfare state is relatively generous with corporatist features. Maternity leave is universally available at a 100% replacement rate and at a similar duration as in other European countries. Paid parental leave is also universal and is high in amount but short in duration compared to other European countries. Child allowances have a universal and a means-tested component and are average compared to other European countries (Saraceno and Keck 2010). All of these schemes are more extensive than in the United States. In addition, social assistance provides a means-tested scheme for all residents in the Netherlands, topping up income to 70% of the full-time minimum wage. Partner alimony and child support provide two other partially means-tested schemes, taking account of predivorce and postdivorce incomes as well as the number of children (TREMA 2013). These means-tested schemes are designed to alleviate losses in the lower part of the income distribution. Hence, the educational gradient in the consequences of divorce may play a larger role in less generous welfare states.

2.4 DATA AND METHOD

2.4.1 Data
We used individual-level administrative data, spanning the years 2003 to 2015. These data comprise information about all individuals with a Dutch social security number, which is granted to every citizen at birth and to everyone else with legal residence in the Netherlands. They combine information from the municipal registers, education registers, social insurance bank, and revenue service. The data can be requested via Statistics Netherlands (https://www.cbs.nl/en-gb/our-services/customised-services-microdata). The analysis code is available on the Open Science Framework (https://osf.io/mkcq5).
Our study population comprised all individuals who entered their first marital union between the ages of 18 and 35. The lower age bound represents the minimum age of marriage. The upper bound represents the age at which most first marital unions in the Netherlands have formed and in which labor market careers and families are typically established (Mulder et al. 2006). Experiments with higher age bounds did not change the results. From this population, we selected all individuals married in 2003, 2004, or 2005 ($N = 346,793$). We included only individuals outside of full-time education, because students behave distinctly in terms of nuptial and fertility (Ní Bhrolcháin and Beaujouan 2012) and because poverty among students is a temporary phenomenon that is not indicative of long-term economic well-being ($N = 328,354$). We further restricted the study population to individuals for whom educational attainment was available ($N = 206,261$). We then removed individuals who had missing information on income or the number of children in one or more years. This resulted in a study population of 179,018 individuals. They were followed for 10 years after the year of marriage, resulting in 1,969,198 person-year observations.

We focused on marital unions only, because they could be identified more reliably than cohabiting unions. Moreover, marriage continues to be the preferred arrangement in the Netherlands, as most first unions are marital unions and the majority of cohabiting unions eventually transition into marital unions (Mills 2004). Nonetheless, the focus on marital unions may be selective. We therefore performed a robustness check using all coresidential unions to see if the selectivity of marriage influenced the results.

Our large study population enabled us to shed light on various subgroups. We defined four subgroups: childless men, childless women, fathers, and mothers. Childless men and women were defined as individuals who did not have children before divorce or within 10 years of marriage. Fathers and mothers were defined as individuals who had at least one child before divorce or within 10 years of marriage, including children born before marriage (12.9% of the study population), also if the children were allocated to the partner following divorce. These definitions ensured that the composition of the subgroups remained stable over time. Nonetheless, a downside was that the subgroups could not be directly compared, as the probability of becoming a parent depended in part on the duration of the marriage. The distribution over the four subgroups was 9,313 childless men (5.2%), 10,798 childless women (6.0%), 74,595 fathers (41.7%), and 84,312 mothers (47.0%).

2.4.2 Measures
Marital status was measured as being in a marriage or not. Divorce was measured using binary indicators for the year before, the year of and the year after divorce, as well as linear time since divorce. Educational attainment was measured as the highest category of completed education observed in the observation window of a person. The categories were “lower” (International
Standard Classification of Education: lower secondary education or below; Dutch: basis, voortgezet, mbo-1), “intermediate” (upper secondary, postsecondary non-tertiary, short-cycle tertiary; mbo-2, 3, 4, havo, vwo), and “higher” (bachelor’s, master’s, doctorate; hbo, wo, doctor). The lower category comprised individuals who either dropped out of education or did not continue beyond compulsory education, the intermediate category comprised those who completed upper secondary or vocational education but did not enter college, and the higher category comprised those who obtained a professional or academic college degree. Sex was coded as male or female. The measure of children gave the maximum number of biological, adopted or stepchildren present in the household in a given year, regardless of age.

Household disposable income was measured as the annual sum of earnings, business income and property income after taxes and transfers. Income was negative in 0.4% of the cases because of negative business income or overdue tax payments or transfers. It was top-coded and bottom-coded at respectively plus and minus one million euros, and equivalized using the square root scale, which is widely used in income research and easy to implement (e.g., Atkinson et al. 1995; Solt 2016). Our key outcome of interest, poverty, was a binary indicator of having a household disposable income below 60% of the annual median of the entire Dutch population. This measure of relative poverty is consistent with the European Commission’s definition of poverty and other research on poverty. Note that income was measured after addition and subtraction of all taxes and transfers registered by the Dutch revenue service. It thus included partner alimony, which is registered, but not child support, which is not registered. To see if the omission of child support affected the results, we performed a robustness check using a correction for child support entitlements and obligations.

The definition of time was chosen in accordance with our analytic purposes. Life-course research typically defines time as age. However, our goal was to measure poverty within the population at risk of experiencing a divorce. The onset of divorce risk differed across individuals as they married at different ages. To measure time consistently across individuals, we therefore defined time as the time since entry into marriage. Time intervals were specified in years because income taxes are filed annually.

2.4.3 Analytic strategy

In a first step, we examined the educational gradient in the risk of divorce. This was done using life tables. The life tables showed the divorce hazard over the time since marriage, conditional on not being divorced yet. We estimated the tables separately for each education group, whereby educational differences in the hazard rates expressed the gradient in divorce risk.

Next, we examined the educational gradient in the consequences of divorce. This was done using linear probability regression models. The models showed the changes in poverty
before and after divorce. We estimated the models separately for each education group, whereby educational differences in the coefficients $\beta$ expressed the gradient in divorce consequences. The consequences were modeled as

$$Y_{it} = \alpha + \beta_1 X_{1it} + \beta_2 X_{2it} + \beta_3 X_{3it} + \beta_4 X_{4it} + \gamma T_{it} + \varepsilon_{it}$$

where $Y_{it}$ denotes a binary poverty indicator of individual $i$ at time since legal divorce $t$, $\alpha$ an intercept, $X_{1it}, X_{2it},$ and $X_{3it}$ indicators of the year before, the year of, and the years after divorce, $X_{4it}$ linear time since divorce, $T$ time since marriage dummies, and $\varepsilon_{it}$ a normally distributed error term with mean zero. This specification implies that divorce-related poverty was modeled to start one year before the divorce, allowing us to capture the consequences of separations that preceded legal divorce, followed by a sudden change in the year of divorce, and a vertically shifted linear trend in the years after divorce. These divorce-related poverty changes are net of changes related to marriage duration. We tested several other functional forms, such as quadratic and logarithmic specifications of time since divorce, but the current specification proved most parsimonious while adequately describing the consequences.

After estimating the gradients in risk and consequences, we examined how they contributed to the overall difference in poverty rates between lower and higher education groups. This was done using the Kitawaga method (Kitagawa 1955), also known as the Blinder-Oaxaca method (Blinder 1973; Oaxaca 1973). The Kitagawa method decomposes the overall poverty difference between lower and higher education groups into three main components, from which a fourth component can be extracted (Winsborough and Dickinson 1971). The main benefit of this fourfold decomposition is that the contributions of risk and consequences to the poverty difference can be fully disentangled. This allows for counterfactual poverty scenarios in which either the risk or the consequences component is changed while holding constant the other component (Iams and Thornton 1975). Another consideration in this decomposition is the reference group. Comparisons between education groups can be made from the viewpoint of either the lower or the higher educated. We set the higher education group as the reference group, assuming that policymakers prefer to reduce educational differences in poverty by lifting the lower educated out of poverty rather than by pushing the higher educated into poverty (Jones and Kelley 1984). We also performed a robustness check using the lower educated as the reference group.

The decomposition was conducted as follows. The overall poverty difference was defined as

$$R = \bar{Y}_L - \bar{Y}_H$$

$$= (a_L + \beta_L \bar{X}_L + \gamma_L \bar{T}_L) - (a_H + \beta_H \bar{X}_H + \gamma_H \bar{T}_H)$$
where the subscript $L$ denotes the lower educated and $H$ the higher educated, $\bar{X}$ the divorce risk variables with scores obtained from the life tables, and $\beta$ the divorce consequences coefficients obtained from the regression analyses. Educational differences in $\bar{T}$ were due merely to different observation periods and were therefore set to zero. Rearranging this equation, the overall poverty difference was then defined as

$$
R = (\alpha_L - \alpha_H) + (\gamma_L - \gamma_H)\bar{T} + \beta_H(\bar{X}_L + \bar{X}_H) + (\beta_L - \beta_H)\bar{X}_H + (\beta_L - \beta_H)(\bar{X}_L - \bar{X}_H)
$$

The first row represents the part of the poverty difference that is unrelated to divorce (or “intercept component”). The second row represents, from left to right, the part of the poverty difference that is attributed to the educational gradient in divorce risk (or “endowment component”), the part that is attributed to the educational gradient in divorce consequences (or “coefficient component”), and the part that is attributed to the simultaneous occurrence of the educational gradients in divorce risk and divorce consequences (or “interaction component”). The intercept component was not of interest in the present study and therefore not further analyzed. The endowment component and the coefficient component were the main estimands of interest, indicating the separate contributions of the educational gradients in divorce risk and consequences to the educational difference in poverty rates. The sum of the endowment, coefficient and interaction components gives the joint contribution of the gradients in divorce risk and consequences to the poverty difference. It should be noted, though, that the interaction component is not an interaction in the statistical sense (Iams and Thornton 1975). It simply indicates that the joint contribution of risk and consequences to the poverty difference is less than the sum of their separate contributions. Hence, it does not have a substantive interpretation and is best thought of as a residual term (Skopek and Leopold 2019).

In addition to their contribution to the overall poverty difference, we examined how the contributions of the educational gradients in risk and consequences unfolded over the life course. To accomplish this, we decomposed the poverty difference at each time point since entry into marriage. That is, we applied multiple cross-sectional Kitagawa decompositions to longitudinal data (Skopek and Leopold 2019). We used these decompositions to simulate three sets of counterfactual poverty trajectories for the lower educated. The first set predicted their poverty rates if they had had the same divorce risk as the higher educated. The second set predicted their poverty rates if they had had the same consequences of divorce as the higher educated. The last set predicted their poverty rates if they had had both the same risk and the same consequences of divorce as the higher educated. Poverty lines remained unchanged and
linked to annual median incomes in the entire Dutch population, to avoid simulated changes in median incomes. We thus obtained a detailed picture of how the stratified experience of divorce shaped poverty trajectories over the life course.

Our analysis did not include control variables, in line with our aim of providing a population-level description of the associations between education, divorce and poverty “as is”. To illustrate, consider the possibility that lower educated individuals marry younger and that younger age at marriage is associated with higher divorce risk. Controlling for age at marriage would cancel out this substantive difference – we were not interested in a scenario in which different education groups were equal on all characteristics relevant to divorce, but rather in the actual risk gradient resulting from existing differences in these characteristics. Similarly, controlling would change the consequence gradient in undesirable ways. Although the relationship between divorce and poverty might be confounded by characteristics associated with educational attainment, these differences could be the reason for expecting a consequence gradient. Control variables would be appropriate only if we were interested in the mechanisms underlying educational differences in consequences, but those mechanisms were outside the scope of this study. Finally, variables related to our selection of the study population, such as marriage cohort or period, might influence educational differences in risk or consequences. We did not control for marriage cohort, because our population covered marriages between 2003 and 2005 and cohort effects were unlikely in this small range. In additional analyses (not shown), we used period dummies to control for changes across calendar years. These dummies reduced poverty rates in some years, but changes between education groups were negligible.

2.5 RESULTS

2.5.1 Descriptive results

Differences in poverty. Table 2.1 presents descriptive statistics at entry into marriage. Educational differences were most pronounced with respect to employment, children and poverty. Lower educated individuals, and especially lower educated women, less often worked in paid employment, had more children, and had higher poverty rates upon entering their first marriage. Whereas only 2% of the higher educated lived in poverty when they entered marriage, this percentage was 5% for the intermediately educated, and 13% for the lower educated. This means that the lower educated started their marriages with poverty rates seven times as high as those of the higher educated.
Table 2.1 Descriptive statistics at entry into marriage by sex and education level

<table>
<thead>
<tr>
<th></th>
<th>All</th>
<th>Men</th>
<th>Women</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Lower</td>
<td>Intermediate</td>
<td>Higher</td>
</tr>
<tr>
<td></td>
<td>Lower</td>
<td>Intermediate</td>
<td>Higher</td>
</tr>
<tr>
<td>Age</td>
<td>28.65</td>
<td>28.51</td>
<td>28.84</td>
</tr>
<tr>
<td></td>
<td>(3.73)</td>
<td>(3.97)</td>
<td>(3.72)</td>
</tr>
<tr>
<td>Born abroad</td>
<td>0.09</td>
<td>0.22</td>
<td>0.10</td>
</tr>
<tr>
<td>Employed</td>
<td>0.92</td>
<td>0.85</td>
<td>0.95</td>
</tr>
<tr>
<td>Full-time equivalent</td>
<td>0.85 (0.27)</td>
<td>0.84 (0.32)</td>
<td>0.93 (0.21)</td>
</tr>
<tr>
<td>Children: 0</td>
<td>0.74</td>
<td>0.67</td>
<td>0.72</td>
</tr>
<tr>
<td>Children: 1</td>
<td>0.20</td>
<td>0.23</td>
<td>0.21</td>
</tr>
<tr>
<td>Children: 2</td>
<td>0.05</td>
<td>0.08</td>
<td>0.06</td>
</tr>
<tr>
<td>Children: 3+</td>
<td>0.01</td>
<td>0.02</td>
<td>0.01</td>
</tr>
<tr>
<td>Total household income</td>
<td>36,214 (16,390)</td>
<td>28,857 (12,826)</td>
<td>31,707 (16,763)</td>
</tr>
<tr>
<td>Household disposable income</td>
<td>2,3825 (10,558)</td>
<td>18,065 (7,073)</td>
<td>20,578 (7,578)</td>
</tr>
<tr>
<td>Below poverty line</td>
<td>0.04</td>
<td>0.11</td>
<td>0.05</td>
</tr>
<tr>
<td>N persons</td>
<td>179,018</td>
<td>9,989</td>
<td>30,448</td>
</tr>
</tbody>
</table>

Notes: Mean values in the study population. Standard deviations are shown in parentheses.
Source: Statistics Netherlands, own calculations.

The poverty rates of the education groups diverged substantially over the time since marriage. This is shown in the upper panel of Figure 2.1. The lower educated were more likely to live in poverty from the outset, and their probability of living in poverty increased at a steeper rate than that of the higher educated. Whereas the poverty rate upon marriage was 2% and increased to 3% ten years later for the higher education group, the corresponding increases were from 5% to 10% for the intermediate education group, and from 13% to 22% for the lower education group.

At the same time, the middle and lower panels of Figure 2.1 reveal important differences between subgroups. Among childless individuals, poverty differences were small and increased little over time. Among parents, in contrast, poverty differences were large and increased considerably. This was best visible among mothers. The poverty rate of lower educated mothers nearly doubled from 15% in the year of marriage to 26% ten years later, a much worse trajectory than that of intermediate and higher educated mothers and a divergence unparalleled in other subgroups.
Figure 2.1 Observed poverty trajectories

Notes: The distribution over the four subgroups was 9,313 childless men (5.2%), 10,798 childless women (6.0%), 74,595 fathers (41.7%), and 84,312 mothers (47.0%).

Source: Statistics Netherlands, own calculations.
Educational gradient in risk. The first pathway by which divorce could contribute to poverty divergence was the negative educational gradient in the risk of divorce. Lower educated individuals may have experienced a steeper increase in poverty rates because they divorced more often than higher educated individuals.

Figure 2.2 confirms the existence of a strong educational gradient in the risk of divorce. The figure shows the divorce hazard, or the probability of experiencing a divorce in a given year among those who had not yet divorced, over the time since marriage. Lower educated individuals had higher divorce hazards over the entire marriage duration. This applied to all subgroups (though no direct comparisons can be made between subgroups). Among childless individuals, the average divorce hazard rate was 5.7% for the higher educated, compared to 6.8% for the intermediately educated, and 7.1% for the lower educated. Among parents, these hazards rates were 0.8%, 1.7%, and 2.5%, respectively. Overall, a lower educated individual was about 2.5 times as likely as a higher educated individual to experience a divorce in any given year of the marriage.

Educational gradient in consequences. The other pathway by which divorce could contribute to poverty divergence was the negative educational gradient in the consequences of divorce. Lower educated individuals may have experienced a steeper increase in poverty rates because they were more likely to fall into poverty when they divorced.
Figure 2.3 Poverty rates by divorce duration

Notes: Estimates were obtained from linear probability regressions of the binary poverty indicator on time since legal divorce dummies, holding time since marriage dummies constant.
Source: Statistics Netherlands, own calculations.

Figure 2.3 confirms the existence of an educational gradient in the consequences of divorce. The figure shows the poverty rates in the years before, during and after legal divorce, holding constant the time since marriage. Lower educated individuals already had higher
poverty rates prior to divorce, but their relative position worsened greatly during and after divorce. This was observed for most subgroups. Among childless women, the poverty rate increased from 3% two years prior to divorce to 7% in the year of legal divorce for the higher educated, from 4% to 12% for the intermediately educated, and from 8% to 17% for the lower educated. Among childless men, the increases were similar. Among parents, in contrast, there were large sex differences. Mothers, and especially lower educated mothers, were very likely to become poor upon divorce. Their poverty rate increased from 6% two years prior to divorce to 23% in the year of legal divorce for higher educated mothers, from 15% to 49% for intermediately educated mothers, and from 27% to 58% for lower educated mothers. This means that over half of all recently divorced lower educated mothers lived in poverty. Fathers experienced little change in poverty upon divorce. If anything, their poverty rates slightly decreased.

The gradient in the consequences of divorce extended through the postdivorce period. Figure 2.3 shows that poverty differences that opened up at divorce persisted throughout subsequent years. Although there was a general tendency toward recovery, this recovery appeared to take longer for lower education groups, whose situation deteriorated most upon divorce. In other words, the losses related to divorce appeared to be prolonged for the lower educated, particularly for lower educated childless women and lower educated mothers.

### 2.5.2 Formal decompositions

In the next step of our analysis, we conducted several decompositions to examine the extent to which the educational gradients in divorce risk and divorce consequences contributed to poverty differences and their divergence over the life course. Divorce consequences were modeled using the specification set out in the methods section, which closely approximated the income process. We started by decomposing the poverty difference between lower and higher education groups during the observation period as a whole, without yet considering variation over the life course. The lower education group formed the reference category. Table 2.2 presents the results of this decomposition.

**Cross-sectional results for the overall population.** The left column of Table 2.2 shows the decomposition results for all subgroups combined. The poverty rate in this overall study population was 2.5% among the higher education group and 18.3% among the lower education group, amounting to an overall poverty difference of 15.8 percentage points (pp). Educational gradients in divorce risk and consequences contributed to this poverty difference, albeit not to a large extent. If the lower educated had had the same risk of divorce as the higher educated, their poverty rate would have dropped by 0.9 pp. If they had had the same consequences of divorce as the higher educated, their poverty rate would also have dropped by 0.9 pp. If they
had had both the same risk and the same consequences as the higher educated, their poverty rate would have dropped by 1.3 pp. In other words, the stratified experience of divorce explained 8.2% (1.3 pp) of the overall poverty difference between the lower and higher education groups averaged over the observation period as a whole.

**Cross-sectional results for childless individuals.** A different picture emerged when we zoomed in on the subgroups. Among childless men, the poverty difference between the lower and higher education groups was 7.4 pp. Divorce contributed to this difference largely through the gradient in consequences: the poverty difference would have diminished by 2.0 pp if lower educated childless men had had the same (lack of) consequences of divorce as higher educated childless men. The gradient in risk played a lesser role in this subgroup (0.5 pp). Jointly, the stratified experience of divorce, and in particular the consequences pathway, accounted for more than a quarter (2.1 pp) of the poverty difference among childless men.

The role of the gradient in the consequences of divorce was even more important in the second subgroup considered, childless women. Their poverty difference of 7.1 pp would have diminished by 3.3 pp if lower educated childless women had had the same consequences of divorce as higher educated childless women. Similar to childless men, the gradient in the risk of divorce hardly played a role in this subgroup (0.3 pp). Jointly, the stratified experience of divorce accounted for almost half (3.3 pp) of the poverty difference among childless women.

**Table 2.2** Kitagawa decomposition of the overall difference in poverty rates

<table>
<thead>
<tr>
<th></th>
<th>All</th>
<th>Childless men</th>
<th>Childless women</th>
<th>Fathers</th>
<th>Mothers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Poverty higher educated</td>
<td>0.025</td>
<td>0.019</td>
<td>0.025</td>
<td>0.022</td>
<td>0.029</td>
</tr>
<tr>
<td>Poverty lower educated</td>
<td>0.183</td>
<td>0.092</td>
<td>0.096</td>
<td>0.172</td>
<td>0.217</td>
</tr>
<tr>
<td>Poverty difference</td>
<td>-0.158***</td>
<td>-0.074***</td>
<td>-0.071***</td>
<td>-0.151***</td>
<td>-0.188***</td>
</tr>
<tr>
<td>(0.002)</td>
<td>(0.005)</td>
<td>(0.005)</td>
<td>(0.003)</td>
<td>(0.003)</td>
<td></td>
</tr>
<tr>
<td>Risk gradient</td>
<td>-0.009***</td>
<td>-0.005***</td>
<td>-0.003*</td>
<td>0.003***</td>
<td>-0.028***</td>
</tr>
<tr>
<td>(0.001)</td>
<td>(0.001)</td>
<td>(0.001)</td>
<td>(0.001)</td>
<td>(0.001)</td>
<td></td>
</tr>
<tr>
<td>Consequence gradient</td>
<td>-0.009***</td>
<td>-0.020***</td>
<td>-0.033***</td>
<td>0.006***</td>
<td>-0.023***</td>
</tr>
<tr>
<td>(0.001)</td>
<td>(0.004)</td>
<td>(0.004)</td>
<td>(0.001)</td>
<td>(0.001)</td>
<td></td>
</tr>
<tr>
<td>Divorce total</td>
<td>-0.013***</td>
<td>-0.021***</td>
<td>-0.033***</td>
<td>0.009***</td>
<td>-0.035***</td>
</tr>
<tr>
<td>(0.001)</td>
<td>(0.004)</td>
<td>(0.004)</td>
<td>(0.001)</td>
<td>(0.001)</td>
<td></td>
</tr>
<tr>
<td>N persons</td>
<td>114,754</td>
<td>5,443</td>
<td>6,486</td>
<td>48,017</td>
<td>54,808</td>
</tr>
<tr>
<td>N person-years</td>
<td>1,262,294</td>
<td>59,873</td>
<td>71,346</td>
<td>528,187</td>
<td>602,888</td>
</tr>
</tbody>
</table>

Notes: By construction, the divorce total equals the sum of the gradient in divorce risk, the gradient in divorce consequences, and an interaction term. The interaction term, which accounts for the fact that gradients in divorce risk and consequences occur simultaneously, is not of substantive interest to our study and therefore not shown. For simplicity, time since marriage dummies and group intercepts are not shown. Standard errors are shown in parentheses. See Table A.1 of the Appendix for a complete overview of the estimates underlying the overall decomposition. *p < .05, **p < .01, ***p < .001.

Source: Statistics Netherlands, own calculations.
Cross-sectional results for parents. The results were different for parents. Among fathers, divorce hardly contributed to poverty differences. If anything, lower educated fathers economically benefited from divorce as compared to higher educated fathers. Among mothers, however, divorce contributed substantially to poverty differences between education groups. Both the risk and the consequences pathway played a role here. The poverty difference of 18.8 pp between higher and lower educated mothers would have diminished by 2.8 pp if lower educated mothers had had the same divorce risk as higher educated mothers. The poverty difference would have diminished by 2.3 pp if lower educated mothers had had the same divorce consequences as higher educated mothers. Jointly, the stratified experience of divorce accounted for almost one fifth (3.5 pp) of the poverty difference among childless women.

Longitudinal results. In a final step, we decomposed the poverty difference at each time point to see how risk and consequences played out over the life course. These decompositions confirmed the previous findings: the gradient in divorce consequences contributed substantially to the educational divergence in poverty in the overall population, the gradient in divorce risk further contributed in the subgroup of mothers, and divorce played a minor role in the subgroup of fathers. Importantly, the longitudinal decompositions showed that the importance of risk and consequences increased over time. The continuous exposure to a higher divorce risk and the accumulation of its economic consequences widened the poverty differences between education groups as the life course unfolded, in line with the idea of cumulative inequality.

The results from these decompositions are illustrated in Figure 2.4. The “counterfactual risk” curves indicate the changes in poverty among the lower educated if they had had the same risk of divorce as the higher educated. The “counterfactual consequences” curves indicate the changes in poverty among the lower educated if they had had the same consequences of divorce as the higher educated. The “counterfactual risk and consequences” curves indicate the changes among the lower educated if they had had both the same divorce risk and divorce consequences as the higher educated. The figure clearly shows that, among childless men and women, poverty rates diverged mainly because of the gradient in divorce consequences. Among mothers, poverty rates diverged because of both the gradient in divorce risk and the gradient in divorce consequences. Among fathers, poverty divergence among fathers was hardly influenced by the gradients in divorce risk and divorce consequences.
Figure 2.4 Simulated poverty trajectories under counterfactual risk and consequences

Source: Statistics Netherlands, own calculations.

2.5.3 Robustness checks

We conducted several robustness checks. The first check concerned our focus on legal divorce rather than separation. Legal divorce is typically preceded by a separation from the household, which implies that incomes change prior to legal divorce. Hence, we predicted the year of
separation based on the number of nonchild household members reported in the tax returns. We then repeated the analysis using the predicted year of separation instead of the observed year of legal divorce (Figure A.1 of the Appendix). This analysis confirmed the main findings. The only notable difference was in line with our expectations: poverty increases in the years before legal divorce coincided with the moment of separation.

The second check concerned our decision to analyze the married population rather than the entire coresidential population. This decision was motivated by data quality and by the persistent popularity of marriage in the Netherlands. To assess the selectivity of our focus on marriage, we selected all first-observed coresidential unions using the Statistics Netherlands coresidence file. This file identified marital and cohabiting unions since 1995, based on marital status, joint taxation, joint social security entitlements, and parenthood, with some cases being imputed. We then repeated the analysis using all coresidential unions (Figure A.2). This showed a different pattern regarding poverty rates, as poverty did not diverge over the life course but rather remained constantly large. Yet, it confirmed the findings regarding the gradients in divorce risk and consequences, showing that the poverty difference would diminish if the lower educated had the same risk and/or consequences as the higher educated.

The third check concerned the reference group in the decomposition analysis. We conducted the decomposition from the viewpoint of the higher education group, assuming that policymakers prefer to reduce educational differences in poverty by lifting the lower educated out of poverty rather than pushing the higher educated into poverty. Alternatively, policymakers may view the low poverty rates of the higher education group as an unjust privilege that needs to be addressed. Hence, we repeated the analysis using the lower education group as the reference group (Figure A.3). This showed the same picture in reverse. There were slight differences in the relative importance of risk and consequences, but these were too small to affect our conclusions.

The fourth check concerned child support. Transfers between ex-partners take the form of spousal alimony and child support. Spousal alimony is registered by the Dutch revenue service and was therefore included in our income data. Child support is not registered, so our data might overestimate poverty among divorced mothers and underestimate it among divorced fathers. Hence, we approximated child support entitlements and obligations, using the norms set out by the Dutch TREMA group (2013). These norms stipulate monthly payments based on the joint income before divorce, individual incomes after divorce, and number of children involved. They can voluntarily be complied with in uncontested cases and are judicially enforced in contested cases. We added and subtracted the corresponding entitlements to child support from the divorcees’ incomes. We then repeated the analysis (Figure A.4). This resulted in slightly lower poverty rates among divorced mothers in all education groups as well as among divorced fathers with lower education, while not affecting
the poverty rates among divorced fathers with higher education. Nevertheless, these differences were too small to affect our conclusions.

The fifth check concerned the relationship between poverty and income. A fall into poverty could result both from being closer to the poverty line and from losing more income upon divorce. Our focus on a binary poverty outcome masked such differences. To obtain a fuller picture, we examined risk and consequences along the entire predivorce income distribution (Figures A.5 and A.6). This showed that lower educated individuals had a higher divorce risk at any given predivorce income, and that lower educated divorcees experienced larger divorce consequences for poverty at any given predivorce incomes. In addition, we examined the educational gradient in divorce consequences while holding constant predivorce income (Figure A.7). We specified the potential effect of predivorce income using restricted cubic splines to allow for nonlinearities (Harrell 2001). This showed that about half of the educational gradient in divorce consequences was due to educational differences in predivorce income. This applied to all subgroups, though predivorce income was somewhat more important for childless men than for childless women and mothers. All in all, these results suggest that lower educated divorcees suffered more from divorce both because they had lower predivorce incomes and because divorce hit them harder.

2.6 CONCLUSION

Previous research has suggested that divorce is linked to economic inequality (Haskins 2015; Lundberg et al. 2016; McLanahan 2004). According to this idea, divorce is a driver of life-course inequality between education groups. Although this is an influential idea in the demographic and sociological literature, studies have not directly assessed whether and how divorce drives economic inequality between education groups and its growth over the life course.

This study represents a first step toward closing this gap, focusing on the divergence in poverty rates throughout the early and middle stages of the adult life course. To assess the role of divorce more fully than previous studies, we introduced an approach that considers two pathways: stratification in the divorce risk and stratification in the divorce consequences. Using administrative data from the Netherlands (N = 179,018), our results confirmed that both pathways contributed to inequality over the life course. Less-educated individuals not only divorced more often (the risk pathway), but they were also hit harder by a divorce in terms of its consequences for poverty (the consequences pathway). Among childless men and women, the consequences pathway contributed more to poverty divergence than the risk pathway. Among mothers, risk and consequences both contributed to divergence in poverty rates. Among fathers, divorce was unrelated to poverty.
The contribution of divorce to the divergence in poverty rates was substantial. In the 10 years following marriage, up to two percentage points (12%) of the poverty difference between less-educated and highly educated individuals was explained by educational gradients in the risk of divorce, the consequences of divorce, or both. Zooming in on subgroups, the contribution of divorce was largest for mothers and childless women (six percentage points or 26%). These findings were robust to an alternative definition of divorce, to decomposition from the viewpoint of the less-educated rather than the highly educated group, and to conditioning on the population of married and unmarried cohabitants rather than the married population only. They were also robust to a correction for child support, which in reality is often underpaid (Huang et al. 2005). Further examination showed that, although less-educated individuals were mainly drawn from the lower end of the predivorce income distribution, they were also more likely to fall into poverty when predivorce income was held constant.

These findings demonstrate that divorce is a major driver of cumulative inequality between social groups. Compared to highly educated people, less-educated people marry in a disadvantaged economic position and falls further behind as it faces the adversities of divorce. Consequently, a focus on divorce is warranted for policies that aim at reducing economic inequality. When evaluating different policy options, the links between risk and consequences must be considered. For example, those who depend on their partner’s income may feel reluctant to divorce, and those who anticipate divorce may take action to minimize economic losses. Furthermore, the contribution of the risk gradient increases with the economic consequences of divorce, and the contribution of the consequence gradient increases with the incidence of divorce (Härkönen 2018). A reduction in either risk or consequences will therefore directly and indirectly diminish the contribution of divorce to cumulative inequality. Risk-oriented policies, such as extended joint taxation or stricter divorce legislation, are unlikely to be successful, as they do not address the reasons for divorce and may trap people in bad marriages (Huston and Melz 2004; Stevenson and Wolfers 2006). Consequence-oriented policies may be more effective. These policies could be universal, by providing a safety net against poverty, or could address the specific mechanisms underlying the (gendered) educational gradient in divorce consequences, by strengthening the employment of less-educated women or by promoting shared child care arrangements (Leopold and Kalmijn 2016). Our study is a first step towards understanding the role of risk and consequences, but further investigation of these pathways and their interactions is necessary.

Several questions remain. First, we studied relative income poverty. Poverty furthermore measures economic well-being at the bottom of the income distribution, but does not inform us about what happens in the middle or at the top. Also within the bottom of the distribution, the measure could be supplemented with other measures to get a more comprehensive view of economic well-being (Bradshaw and Finch 2003). Second, this study
did not identify the causal effects of divorce on poverty. Different mechanisms could underlie such causal effects, including the age of union formation, educational homogamy, employment, childcare arrangements, and institutional support. Particularly relevant is the rise in shared residence arrangements after divorce (Cancian et al. 2014), which alleviates part of the economic burden carried by the main resident parent, but which is difficult to observe in administrative data. Third, our analysis focused on the Netherlands. The Netherlands has a risk gradient similar to other Anglo-Saxon and Western European countries, but different from countries in Southern Europe and Latin America where the risk gradient is absent or even reversed. In addition, the Netherlands has a weaker consequence gradient and especially a lower poverty rate than other countries. Simulations have suggested that the relationships between education, family dynamics and poverty are relatively weak in the Netherlands compared to other countries (Härkönen 2018). Future research could extend our approach to the effects of divorce in other contexts.

Our approach sets an agenda for research on the stratification of life events. The cumulative inequality literature posits that life events, such as divorce and unemployment, are critical drivers of socioeconomic inequalities (Dannefer 1987; Ferraro et al. 2009). Analyzing these inequalities using a risk-and-consequences approach yields concrete benefits. For one, previous research has focused either on unequal risk (Härkönen and Dronkers 2006) or on unequal consequences (McKeever and Wolfinger 2001). Our approach integrates these pathways. Furthermore, a risk-and-consequences approach enables clear links between the analysis and policy perspectives. Recent work on poverty provides a good example of these linkages (Brady et al. 2017). A final benefit is the feasibility of the approach. As shown in the present study, the distinction between risk and consequences can be implemented using decomposition analysis. This facilitates a full assessment of the extent to which life events drive social inequalities.