Education of Divorced Individuals and their (Ex-)Partners: Exploring the Mortality Disadvantage in Finland, 1987-2020

Lydia Palumbo[1], Cecilia Potente[2] & Marika Jalovaara[1]

Introduction

Family dynamics have changed dramatically in richer countries since the second half of the last century (Raley & Sweeney, 2020; Sobotka & Berghammer, 2021). Numerous studies have investigated how marital status relates to health and mortality (Roelfs et al., 2011; Shor et al., 2012). Notably, individuals who experienced divorce have, on average, higher mortality risks than their married counterparts (Franke & Kulu, 2018; Kravdal et al., 2018; Lorenz et al., 2006; Martikainen et al., 2005; Metsä-Simola & Martikainen, 2013), with men generally having a higher risk than women (Shor et al., 2012). Indeed, divorce can have negative implications for individual health and well-being. First, those with poor health might be more likely to divorce and, at the same time, survive less (Lyngstad & Jalovaara, 2010). Second, divorce is considered a significant life stressor (Dupre & Meadows, 2007; Hughes & Waite, 2009; Kalmijn, 2017; Liu & Umberson, 2008; Williams & Umberson, 2004), as it often implies conflict and economic loss (Amato, 2010; Conger et al., 2010), as well as engaging in risky behaviours and unhealthy lifestyles due to the absence of a spouse's control and regulation (Hemstrom, 1996).

The literature has also documented significant mortality differentials in relation to socioeconomic status (SES): low-SES individuals have a higher mortality risk than their high-SES counterparts (Elo, 2009). Within couples, both partners' SES could contribute to widening or reducing the mortality disparities between married and divorced individuals (Kravdal, 2017; Kravdal et al., 2018). Previously, only male partners' education was likely to shift such disparities more than female ones' (Becker, 1993; Parsons & Bales, 1955). Nowadays, with women's educational expansion resulting in the rise of highly educated homogamous couples, women's education has also gained significance (Blossfeld, 2009; Sweeney, 2002; Sweeney & Cancian, 2004).

When considering the potential consequences of partners' SES on married couples that have not (yet) divorced, Ross & Mirowsky (2006) describe the presence of resource substitution and multiplication. In the case of substitution, high-SES partners use their resources to compensate for the health and mortality disadvantages of low-SES partners. In the case of resource multiplication, couples with the most educated partners have the lowest mortality risk over all the other possible educational arrangements.

When considering divorced couples, the mechanisms underlying how previous partners' SES relates to mortality change. Low-SES partners have been found the most likely to experience a loss of economic resources across different contexts, e.g., due to the loss of the benefits from income pooling, making it harder for them to afford high-quality healthcare and leading to higher mortality rates (Amato, 2000, 2010). Further, given the knowledge gap in health behaviours (Hwang & Jeong, 2009), a break-up with highly-educated spouses may deprive the low-educated of partners likely to engage them in a healthy lifestyle. However, high-SES partners are likely to be economically

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[1] University of Turku
[2] Erasmus School of Health Policy and Management, Erasmus University, Rotterdam
L.P. and C.P. have contributed equally to this work.

damaged too, due to new post-divorce expenses that may reduce the resources allocated to the care of themselves, e.g. child and spouse support, which are likely to be higher if the previous partner had low resources (Hakovirta et al., 2019; Hiilamo, 2009). Among divorced couples, the presence of children likely strengthens the ties between parents and intensifies the economic transfers between ex-spouses, thereby partially compensating for the economic and emotional losses from divorce (Weiss & Willis, 1993).

This paper delves into this understudied area, examining whether divorced men's and women's mortality differs from married ones' according to their education but also the education of the (ex-) partner. Although other studies have considered the partner's role in individual mortality (Kravdal, 2017; Kravdal et al., 2018), few have included the effect on mortality risk of the previous partner's education after divorce.

Thus, we formulate two hypotheses:

HP1: Individuals who experience divorce have a mortality disadvantage that depends on their own education but also their (ex-) partner's education.

HP2: Divorced couples where both partners are highly educated have the lowest mortality rates. Divorced couples with both low-educated partners, instead, have the highest mortality risk.

We will test these hypotheses using Finnish register data. The relationship between divorce and mortality in Finland aligns with the one of other Western countries (Martikainen et al., 2005). Both married men and women's lack of resources has been demonstrated to potentially raise the risk of divorce (Jalovaara, 2001, 2003). However, the role of partners' education in moderating such disparities has not yet been studied. The entity of the post-divorce economic loss has been shown to be modest for both men and women, as potential child or spouse support depends on both partners' resources (Hakovirta et al., 2019). However, the high female employment rate, which is one of the highest in the OECD area (OECD, 2023), may have rendered the disparities between homogamous highly-educated couples and the other arrangements quite sharp.

Data and Methods

We used register data on the Finnish full population to investigate whether experiencing a divorce could heighten the mortality risk among married men and women aged 50 or above between 1987 and 2020. We included individuals who were married at age 50 and exposed to the risk of divorcing, as well as individuals who had already divorced. The sample consisted of 916,921 men and 921,145 women born in Finland between 1932 and 1970, corresponding to 937,117 and 932,568 couples, given the presence of re-partnered individuals.

The dependent variable was the time to death, which was measured through a continuous daily scale. In the case of right-censored individuals, the date at the end of the study –31.12.2020– was considered. The covariates of interest were three categorical variables. First, the individuals' own education and the one of their spouses, which was operationalised using three ordinal categories ranging from low (elementary) to high (bachelor-level or above). Second, marital status, which was a time-varying indicator for whether the individuals were married or divorced in each year they were in the dataset. Additionally, both individual and partner's education were interacted with marital status. We controlled for a binary indicator of age (50–64 and 65+), whether a cohabitation had

preceded the marriage and the length of the marriage. This last variable was time-varying in the case of ongoing marriages and time-invariant if the marriages had ended.

We used Cox regressions to model how the time to death relates to union dissolution and (ex-) partner's characteristics. We stratified by sex and parenthood, as the distribution and the allocation of resources between partners are likely to differ if children are involved, especially after a divorce. The survival baseline function was represented by time since the entry of the study. We clustered the standard errors at the identifier level due to the presence of individuals with more than one observation and used the Efron method to address tied events. We graphed the results through survival curves, where the continuous covariates were fixed at their mean and the categorical variables at their most frequent value. The only exceptions were the two covariates of education, which were fixed at both their highest and lowest values, and categorical age, which has been fixed at its oldest category, despite the mean falling into the youngest one.

Preliminary Results

We start with the descriptive results in Table 1, which are divided by gender and divorce experience. The death percentages among men and women are 17.1% and 7.8%, respectively. Low-educated account for more than half of the observations, most likely because we also include in the analysis a sizable share of cohorts born before World War II. For the same reasons, the proportion of marriages preceded by cohabitation is limited, despite premarital cohabitation being the norm nowadays.

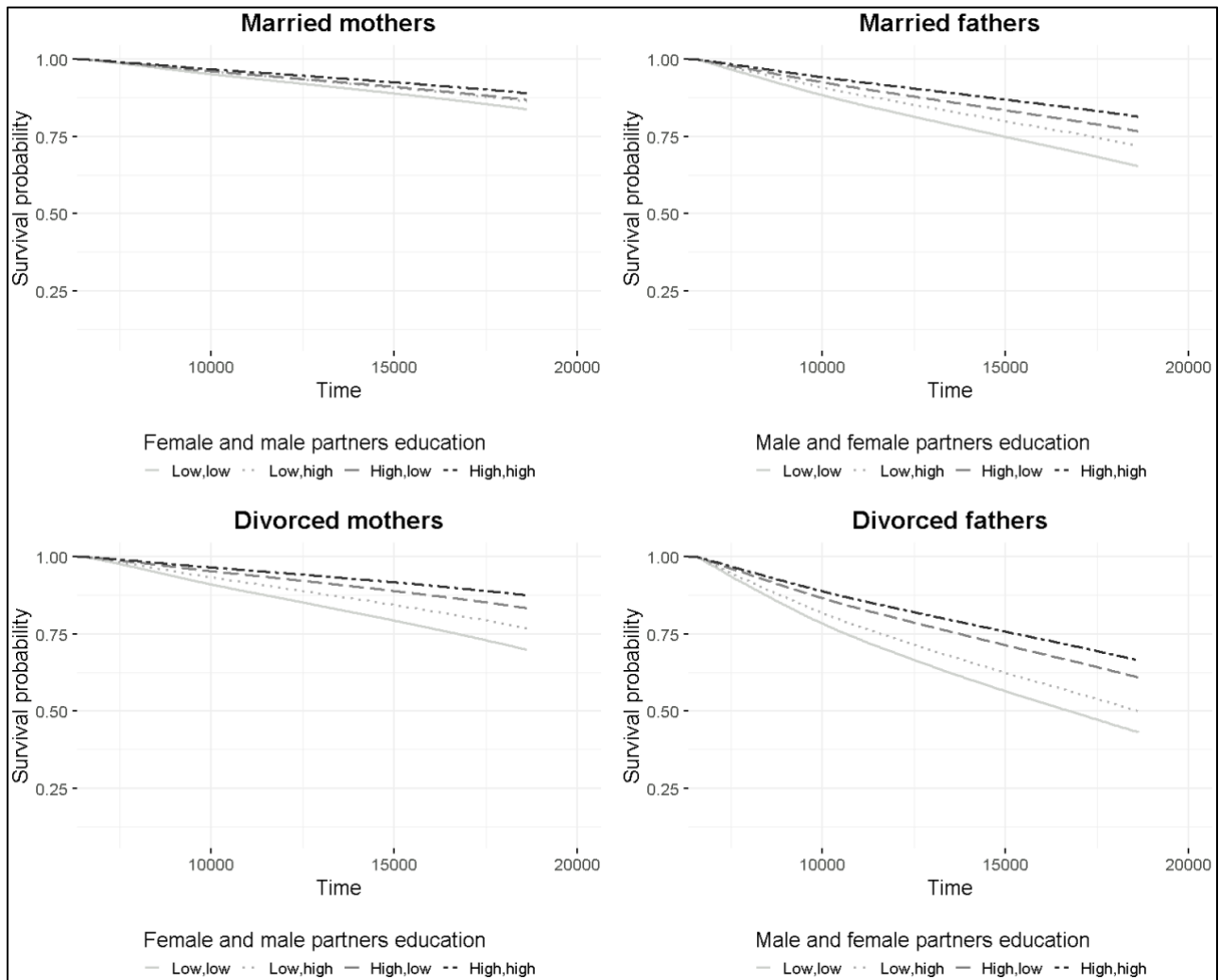**Table 1: Descriptive statistics by gender and experience of divorce**

	MEN		WOMEN	
	Ever divorced	Never divorced	Ever divorced	Never divorced
	(N=187,278)	(N=729,643)	(N=185,929)	(N=753,216)
Main covariates				
Own education				
Low	58.2	64.6	57.2	65.2
Intermediate	28.3	22.7	32.2	25.9
High	13.5	12.7	10.6	8.9
Partner's education				
Low	51.6	60.6	59.8	67.1
Intermediate	37.2	29.7	26.5	20.5
High	11.3	9.7	13.7	12.4
Control variables				
Pre-marital cohabitation	3.9	2.5	2.7	1.8
Mean age	59.6	61.3	62.4	60.7
Mean length	24.0	32.8	25.6	34.5
Presence of children	81.1	86.8	81.6	86.6

Source: Own computations from Statistics Finland datasets (1987−2020). The statistics are computed over all observations.

Figure 1 presents the survival curves for fathers' and mothers' mortality. In line with our first hypothesis, we see that married individuals have higher survival rates than divorced ones, although these differences are more pronounced when we consider fathers. The effect of the couple's socioeconomic composition on individuals' mortality is similar for both mothers and fathers: the mortality rates of the individuals within couples with at least one low-educated partner are higher than homogamous high-educated couples. However, couples where one partner is low-educated

and the other is highly educated present a higher survival rate than homogamous low-educated couples. This confirms that the accumulation of resources is important within married and divorced couples. Although these differences exist for both sexes, men appear to present the highest disparities based on their partner's education. Marital status also plays an important role, as divorced fathers present the largest socioeconomic differences.

Figure 1: Survival curves by individual and partner's education and experience of divorce, stratified by gender. Unions with children are considered [1,2,3]

When we consider childless married individuals, we do not find particular differences in the size and the direction of the survival curves from the ones of married parents. Yet, when considering childless men who experienced a divorce (Figure 2), we find that the SES gradient becomes even more pronounced. Different from other combinations of sex and parenthood status, if divorced childless men are highly educated but their ex-partner is not, they present a significantly higher mortality risk than homogamous high-educated couples.

Figure 2: Survival curves by individual and partner's education and experience of divorce, stratified by gender. Unions without children are considered
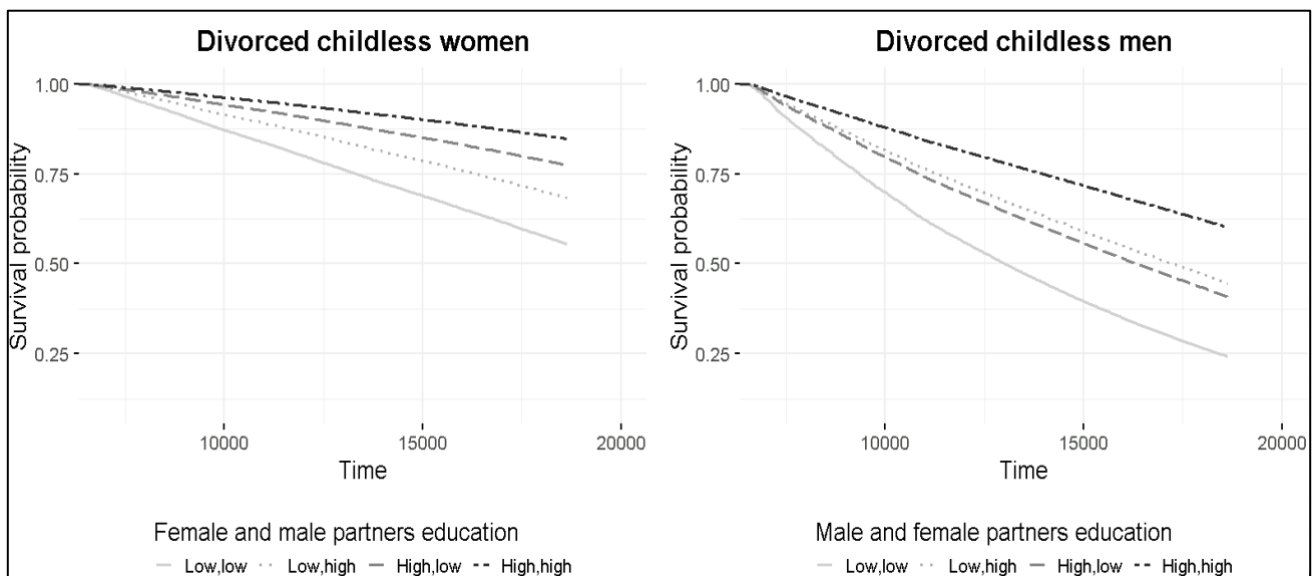
Source: Own computations from Statistics Finland register data (1987-2020)
[1] Estimates derived from a Cox regression model stratified by sex and parenthood and specified as follows: main effect of marital status, individual and partner's education, interaction between marital status and individual education, interaction between marital status and partner's education, age category, indicator for pre-marital cohabitation and length of the marriage. [2]For creating these figures, we only presented estimates for individual low and high education to highlight major contrasts. The curves represent mortality of the age group 65+ for those who have not experienced a pre-marital cohabitation (the majority), fixed at their mean length.

Discussion and Next Steps

In this study, we introduced a new perspective when investigating the mortality risk following divorce, as we hypothesised and empirically verified that both (ex-) partners' resources were related to mortality after divorce. Our preliminary results first show a mortality disadvantage of divorced people compared to married individuals, which exists across sexes and parenthood statuses. However, the heightened mortality risk greatly depends on both the individual and partner's education, thereby confirming HP1. Second, our results show the development of this socioeconomic disadvantage. In line with HP2, we found that divorced couples where both ex-partners were highly educated have the lowest mortality, those with both low educated the highest, and those with one low-educated and one highly educated are instead in-between. Divorced men showed the sharpest socioeconomic differences, especially if childless.

While these results are still in their early stages, they paint a picture that deviates from the typical narrative of Nordic countries, like Finland, known for their sociodemocratic regimes with low levels of inequality (Esping-Andersen, 2002). The analyses suggest that divorce can have long-term effects

on survival, which may be even more pronounced if the resources of the previous household were low or not the wealthiest. Additionally. it is important to note that disadvantaged divorced men are the ones witnessing the steepest decline in survival when they were in a couple with at least one low-educated spouse, thereby representing a potential area of vulnerability. The fact that divorced childless men represent the sample with the sharpest disadvantage suggests that parenthood may have a protective role for fathers, although we cannot exclude the presence of selection mechanisms.

Future work should better investigate the implications of these differentials with the aim of better designing policies to mitigate health inequalities, especially after divorce, e.g., by considering causes of death as an outcome. Also, we will need to disentangle more thoroughly potential health selection mechanisms characterising union dynamics. Further, given the wide presence of cohabitation as both an alternative and precursor to marriage (Jalovaara, 2012; Sassler & Lichter, 2020), we could also extend the analysis to include cohabitation dissolution.

Acknowledgments

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