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His and Her Education and Marital Dissolution: Adding a Contextual Dimension

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Abstract Educationally hypogamous marriages, where the wife is more educated than the husband, have been expected to be less stable than other educational pairings, in part because they do not conform to social norms. With the reversal of the gender gap in education, such marriages have become more common than in the past. Recent research suggests that this new context might be beneficial for the stability of hypogamous unions compared to other educational pairings. Here, we investigate how educational matches in married couples are associated with divorce risks taking into account the local prevalence of hypogamy. Using Belgian census and register data for 458,499 marriages contracted between 1986 and 2001, we show that hypogamy was not associated with higher divorce rates than homogamy in communities where hypogamy was common. Against expectations, marriages in which the husband was more educated than the wife tend to exhibit the highest divorce rates. More detailed analysis of the different types of educational matches revealed that marriages with at least one highly educated partner, male or female, were less divorce prone compared to otherwise similar couple types.

Keywords Assortative mating · Divorce · Education · Hypogamy

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1 Introduction

In most Western countries, the past decades have been marked by a substantial increase in educational levels, especially for women. Men traditionally held higher educational degrees than women, but since the mid-1980s, women started to surpass men in schooling levels (DiPrete and Buchmann 2006; Vincent-Lancrin 2008). The growing proportion of marriages in which wives are more educated than their husbands, so-called hypogamous marriages, can be seen as one consequence of the reversal of the gender gap in education (Esteve et al. 2012, 2016; Grow and Van Bavel 2015; Schwartz 2013; Schwartz and Han 2014).

In the past, quite some studies have shown that educational hypogamous marriages are more likely to dissolve than marriages with other educational pairings (see Schwartz and Han 2014 for a review). A higher proportion of couples in which wives have more education than their husband may increase the pool of divorce-prone couples among the married and divorce rates could be expected to rise (Van Bavel 2012). However, from recent research it remains unclear whether low marital stability necessarily is the price that women have to pay for being with a less educated husband. It may rather be that the low stability of hypogamous marriages is a phenomenon related to the rarity of these couples in societies that have been studied so far.

A recent American study by Schwartz and Han (2014) linked the changes in couples' educational composition across marriage cohorts to marital stability and reported that the positive association between hypogamy and divorce has disappeared in recent marriage cohorts, in which hypogamy was more common. The authors explained this finding with an attitudinal shift across marriage cohorts from a breadwinner marriage ideal to an egalitarian marriage ideal. Husbands with lower education than their wives might feel their gender identity as the main breadwinner or the household head to be threatened (Tichenor 2005). With men's and women's increasing emphasis on status equality in relationships, the severity of this threat might have declined (Schwartz and Han 2014).

So far, studies are lacking that consider the prevalence of educational hypogamous couples in other dimensions than time as a factor influencing marital stability. Yet, there are reasons to expect that the stability of hypogamous marriages also varies with their spatial distribution. Substantial heterogeneity between and within countries exists in the prevalence of hypogamy (De Hauw et al. 2017; Esteve et al. 2012, 2016; Grow and Van Bavel 2015). Cross-national studies show that gender attitudes are more egalitarian in contexts where women tend to pursue their own educational and professional careers (Kalmijn 2007). More positive attitudes toward egalitarian gender roles in certain contexts may contribute to a better social acceptance of hypogamous marriages. As a result, hypogamous marriages might be more stable in contexts with a higher level of hypogamy than in contexts in which these marriages are rare and socially less accepted. Cross-national studies suggest that contextual factors significantly affect marital stability (Cooke 2006; Liefbroer and Dourleijn 2006; Wagner and Weiss 2006). For example, Liebroer and Dourleijn (2006) investigated the link between premarital cohabitation and divorce and

showed that the negative impact of cohabitation on marital stability depends on how far cohabitation has diffused within a society.

In this study, we examine whether hypogamous marriages are more stable in communities where hypogamy is more common. By doing this, we follow the call for more research on how a couple's residential context matters for union stability in order to deepen our understanding of the determinants of family dynamics in Europe (Kulu 2012; Lyngstad 2011). Furthermore, we go beyond previous studies with our measurement of homogamy and heterogamy that allows a better understanding of differences in outcomes from earlier studies. Researchers have not been using the same operationalizations of educational heterogamy. In most American studies (Heaton 2002; Schwartz and Han 2014; Teachman 2002; Tzeng 1992), authors have emphasized the importance of relative educational differences and mainly used a difference measure of couple's educational match distinguishing between educational homogamy, hypergamy and hypogamy (see Eeckhaut et al. 2013 for a review). In contrast, European studies (Kaplan and Herbst 2015; Lyngstad 2004, 2006; Mäenpää and Jalovaara 2014) have tended to use compound measures which differentiate between the various combinations of the education of the man and the woman. This is the first study that compares the estimates for the effect of couple's educational match when using a simple difference measure with the estimates when using a more detailed compound measure.

We use Belgian census and register data from marriages contracted between 1986 and 2001. We find evidence that hypogamous marriages are associated with a higher risk of divorce compared to equal pairings, but only if hypogamy is relatively uncommon. In communities with a higher prevalence of hypogamy than average, dissolution risks are similar. In contrast to what we expected, hypergamous marriages have the highest dissolution rate. Moreover, marriages that involve a highly educated partner, irrespective of the gender of that partner, have a low dissolution rate. In the discussion, among other things, we will give recommendations for future research about the two applied measures examining the effect of educational heterogamy.

2 Theory and Hypotheses

In the divorce literature, marriages are assumed to be less stable when husband and wife do not share the same educational level for two reasons (Kalmijn et al. 2005). First, spouses with different levels of education potentially differ in their socioeconomic background, in their values, opinions and tastes, and in their lifestyles (Kalmijn 1994, 1998; Levinger 1976; Mäenpää and Jalovaara 2015). As a consequence of these dissimilarities, they are expected to experience more tensions and frustrations than their educational homogamous counterparts, resulting in a higher likelihood of union dissolution (Kalmijn et al. 2005; Lewis and Spanier 1979; Lyngstad 2006; Mäenpää and Jalovaara 2014). Second, society approves educational homogamy, because it contributes to the internal cohesion of social groups. Educational heterogamous marriages are seen as a threat to the homogeneity of groups and consequently may receive less support from social networks than

homogamous marriages. When spouses already experience troubles or frictions, support or disapproval from relatives and friends can make an important difference in a couple's dissolution risk (Blossfeld 2009; Kalmijn et al. 2005; Mäenpää and Jalovaara 2014).

Hypogamous marriages are supposed to risk even more negative judgments from society than hypergamous marriages (wives having less education than their husbands), because they do not correspond to the social norm that the husband should have at least as much education as his wife (Blossfeld and Timm 2003; Schwartz and Han 2014). This norm was underpinned by a male breadwinner-female homemaker paradigm that was most prevalent during the 20-year period directly after the Second World War. The paradigm implied that a high level of educational attainment, which generally reflects good labor market opportunities and a high earning potential, was an attractive feature for men in particular whereas for women a strong commitment to the family was most highly valued (Becker 1981; Dykstra and Poortman 2010; Oppenheimer 1997). Consequently, gender identities might also feel threatened in case of a hypogamous marriage: the more educated wife might have difficulties accepting that her husband is not keeping up with her (Brines 1994; Tzeng 1992), while the less educated husband might feel insecure about his male role identity as main breadwinner and household head (Breen and Cooke 2005; Brines 1994; Killewald 2016; Tichenor 2005).

In sum, theoretical arguments lead to the expectation that homogamous marriages are the most stable and that within the group of heterogamous marriages, couples in which the wife has the educational advantage have higher divorce risks than couples in which the husband has the educational advantage *(hypothesis 1)*. Empirical studies showed so far mixed support for this hypothesis. On the one hand, studies in Scandinavia reported that homogamy had little (Jalovaara 2003) or no stabilizing effect (Finnäs 1997; Kravdal and Noack 1989; Lyngstad 2004, 2006) on marriages. On the other hand, clear destabilizing effects of hypogamy (compared to homo- and hypergamy) were found for the USA (Bumpass et al. 1991; Goldstein and Harknett 2006; Heaton 2002; Teachman 2002; Tzeng 1992) and for some Western European countries (Blossfeld 2014; Kalmijn 2003; Müller 2003; Weis and Willis 1997). A recent US study by Schwartz and Han (2014) found that associations changed over time. The risk of marital dissolution for hypogamous marriages used to be higher than for hyper- and homogamous marriages formed prior to 1985, but hypogamous marriages formed thereafter actually were as stable as hypergamous marriages.

We expect that hypogamy is only related to lower marital stability (relative to homogamy) in communities in which hypogamy is not very common. In other words, we expect the relative lower stability of hypogamy to be related to the level of diffusion of hypogamous couples in a society. According to the literature on the diffusion of innovations, new behavior starts to spread among a small group of innovators, who differ from the rest of society through their lower integration into society and their lower risk aversion. As an innovation spreads, it is adopted by larger segments of the population who do not share these specific characteristics. This decreases the social costs of adopting this behavior for the remaining population. In consequence, differences in characteristics between adopters and

non-adopters of the innovation become smaller (Casterline 2001; de Feijter 1991; Liefbroer and Dourleijn 2006). Marriages in which the wife is higher educated than the husband can be seen as an innovation in mating behavior as a response to the shortage of highly educated men on the marriage market (Grow and Van Bavel 2015; Schwartz and Han 2014). At first, these marriages might be less desirable because of their non-normative gender role expectations and therefore be less stable. Once they become more common due to the remaining shortages, people might change their evaluation of its desirability. If individuals in a hypogamous marriage see others forming such relationships more frequently, their discomfort associated with that type of marital agreement might rapidly decline which can have a positive feedback on the stability of their own marriage. Looking at the local context within one country, we hypothesize that the stability of hypogamous marriages varies between communities depending on the commonness of this kind of marriages. More precisely, we expect the difference in divorce risk between hypogamy and homogamy to be larger in communities in which the prevalence of hypogamy is lower *(hypothesis 2)*.

Still, hypogamous marriages might differ in their risk of divorce according to their specific educational pairing. In modern dual-earner societies, a high educational attainment is expected to lower the risk of divorce for men as well as for women (Dykstra and Poortman 2010, Härkönen and Dronkers 2006; Jalovaara 2013; Sweeney 2002). The common theoretical reasoning is that the greater the socioeconomic resources he or she has the lower the propensity of divorce. If the husband or wife is unable to provide financial and psychosocial security to the household, the mutual esteem and affection among spouses might be undermined, which can lead to marital instability (Becker et al. 1977; Jalovaara 2013; Nock 2001). Accordingly, we expect that a higher combined educational attainment within each type of marriage (homogamy/hypergamy/hypogamy) generates lower divorce risks *(hypothesis 3)*. We assume, for example, that divorce risks among hypogamous marriages should be higher for combinations in which the wife has at most a higher secondary degree than for combinations in which she has a tertiary degree.

3 Method

3.1 Data and Sample

We use data from the 2001 Belgian census, which provides information for the entire Belgian population on demographic characteristics and the socioeconomic situation as it was on October 1, 2001. These data were individually and anonymously linked to the Belgian population registers from 2001 until 2006 by Statistics Belgium. The register data provide detailed information on the residence and childbearing for the period October 1, 2001–January 1, 2006.

We selected couples who got married when the wife was between 18 and 50 years old and who had been married for at most 15 years at the time of the census (n = 653,361). We needed information on spouses' educational careers in

order to be able to construct our educational categories. As information on education was only available for 2001, we excluded couples in which one of the spouses was still a student at that time (n = 2516; 0.4%). We also dropped marriages with missing information on both spouses' highest obtained educational qualifications (n = 41,867; 6%). Previous research showed that divorce risks vary according to the types of ethnic homogamous and heterogamous marriages (Eeckhaut et al. 2011). Since our focus is on education, we excluded marriages that involve foreign-born partners in order to avoid the complexity of marital stability in mixed and immigrant marriages (n = 141,610; 22%). The time of marital dissolution could only be identified if both spouses were still registered in Belgium in 2006. Thus, we omitted marriages in which at least one spouse migrated or died between 2001 and 2006 (n = 8254; 1%). In some cases (n = 159; 0.0%), it was also not possible to identify the time of marital dissolution due to missing or ambiguous information on changes in residence. Finally, we had to drop couples living in a municipality with less than 100 selected marriages (n = 456; 0.1%), because the key contextual variable, the proportion of hypogamous marriages in the community, would be unreliable for these municipalities. All aforementioned restrictions generated a final sample of 458,499 marriages (70% of the initially selected sample).

3.2 Variables

We use a multilevel piecewise constant hazard approach (Cleves et al. 2010, Mills 2011) to investigate the covariance between couples' educational matches, the proportion of hypogamous marriages in their local community and their risk of divorce. Marriage duration was treated as the process time variable, meaning that couples are followed up since marriage formation. Yet, they became at risk of divorce only after October 1, 2001, the time of census. This means that our data are left-truncated: the marriages were only observed given they had survived up to the start of the observation window. This implies a different selectivity for younger and older marriage cohorts: marriages formed 15 years prior to 2001 were, for example, more selective than marriages formed 5 years prior to 2001, because the former had more time to dissolve. However, by using marriage duration as the time variable and not the time since census, we adequately capture the different risks profiles (Guo 1993). We also carried out a separate analysis on marriages with a maximum duration of 5 years in 2001, and the main results about the association between educational pairings and divorce were in line with what is reported here. Right-censoring occurred at the end of the observation period, i.e., January 1, 2006 (n = 372,224; 81%), or when the couple moved to another municipality (n = 40,959; 9%). We censored the latter couples for the reason that the variable describing the proportion of hypogamous marriages in a couple's community would otherwise not be valid as it is derived from people's living situation in 2001. We allowed the baseline hazard to change yearly in the first 5 years after marriage formation because then the hazard differentiated the most. After the 5th year, we applied broader time intervals because then the hazard did not change very much from year to year.

By comparing partners' official residence changes between 2001 and 2006, we defined a couple as divorced if at least one of the partners had left the marital residence as registered in 2001. For convenience, we use the term "divorce" even though, strictly speaking we observe household dissolutions. In the large majority of cases, an officially registered household dissolution preceded a legal divorce. In Belgium, partners from a marriage are legally obliged to live under the same roof, which means that living apart together marriages are very uncommon (Belgische Federale Overheidsdiensten 2016). In addition, it seems unlikely that partners who temporarily breakup immediately register their new residency with the local authorities. According to our definition, around 10% (n = 45,316) of the married couples divorced within the investigated time frame.

The core explanatory variable in our analysis is *couple's educational match* measured by combining the information on the highest level of educational attainment of each spouse at the time of census. We distinguished between three levels of education: a low level, meaning that the person had no qualification or degrees up to lower secondary school (International Standard Classification of Education 1997 [ISCED97] categories 0–2); a medium level, referring to a diploma in upper secondary education (ISCED97 3–4); and a high level, indicating that the person completed tertiary education (ISCED97 5 − 6). First, we explore relative educational differences within couples by a difference measure, distinguishing between couples in which husbands (H) and wives (W) had the same educational degree (H = W, homogamy), couples in which husbands held a higher educational degree than the wives (H > W, hypergamy) and couples in which the wives' education exceeded the husbands' education (H < W, hypogamy). This categorical variable measures the presence and the direction of an educational difference between spouses, besides the absolute effects of spouses' education. In a second step, we focus on a more detailed, compound measure which makes a distinction between all nine (3 × 3) educational combinations by fully interacting his and her education. This measure incorporates both the effects of absolute levels of education of him and her and the effect of differences between their educational levels. Both measures are commonly used to operationalize the concept of educational heterogamy. Difference measures allow an easy interpretation, but they have been criticized for their inability to show whether the effect of heterogamy depends on absolute levels of education. Compound measures do avoid confounded effects; their drawback lays, however, in their difficult interpretation (Eeckhaut et al. 2013; Mäenpää and Jalovaara 2014). We use and compare both kind of measures to test whether two different operationalizations could lead to two different interpretations of the heterogamy effect.

Table 1 describes the absolute and relative frequencies of spouses' education. On the diagonal, the homogamous matches are listed. Hypergamous and hypogamous matches occupy the space left and right of the diagonal, respectively. In our sample, more women (44%) than men (36%) had a high schooling degree and educational homogamy (58%) was the most common educational match, followed by educational hypogamy (27%). Within the group of hypogamous and hypergamous marriages, about half of the marriages were between a medium educated person and

Table 1 Absolute (n) and relative (%) frequency of husbands' and wives' education

Husbands	Wives			All
	Low	Medium	High	
Low				
n	49,858	45,389	18,211	113,458
%	11	10	4	25
Medium				
n	28,633	91,635	58,132	178,400
%	6	20	13	39
High				
n	7722	33,357	125,562	166,641
%	2	7	27	36
All				
n	86,213	170,381	201,905	458,499
%	19	37	44	100

a high educated person. Among the homogamously married couples, matches between the highly educated were most common.

The *proportion of hypogamous marriages in the community* was calculated by dividing the number of hypogamous marriages in the couple's municipality of residence by the number of all marriages in that respective municipality. We used the municipality of residence (n = 589) as the spatial unit defining couple's local community. We believe that this unit is the most congruent with the daily rounds of an individual or couple living in Belgium. Another available administrative unit, like the arrondissements (n = 43), would be too large, especially for people living in a metropole or city like Brussels, Antwerp or Liège. Moreover, a study by Haandrikman et al. (2008) has shown that partner choice in The Netherlands—a country which is comparable to Belgium on relevant geographic dimensions (e.g., urbanization degree and population density, Eurostat 2016a, b)—still occurs mostly at the local, i.e., municipal, level. Another, Norwegian, study on how the decision to divorce is affected by characteristics of the local community has also used the municipality as special range of individuals' everyday activities (Lyngstad 2011). We grouped the proportions into terciles and distinguished between communities in which hypogamous marriages were spread less than average ($\geq$ 14.20–$<$ 25.05%), about average ($\geq$ 25.05–$<$ 27.98%) and more than average ($\geq$ 27.99–$<$ 46.16%). The geographic distribution of the proportions is shown in Fig. 1. For simplicity and readability, we dropped the decimal fractions of the proportions in this and subsequent figures and tables. The highest proportions of hypogamy were found in rural communities, which were mainly located in the southern (French-speaking) part of Belgium. Calculating and mapping the proportions separately for the three types of hypogamy showed some regional heterogeneity (maps not shown). The most common type of hypogamy (husband medium educated—wife highly educated) was most prevalent in the northern part of Belgium. In contrast, hypogamous marriages in the southern part of Belgium consisted often of a low

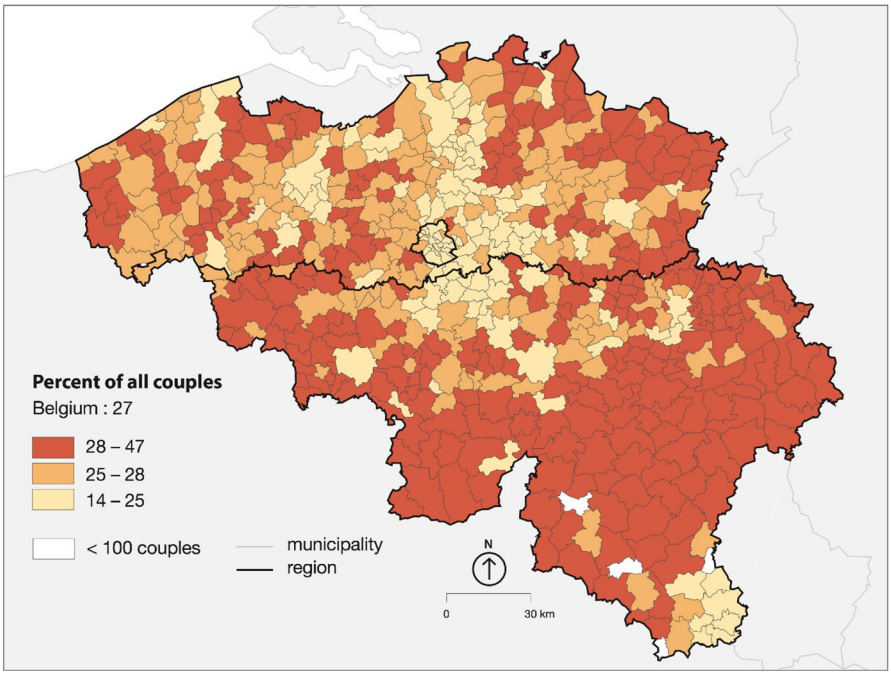

Fig. 1 Proportion of hypogamous marriages in the community

educated husband and a medium educated wife. In the Belgian capital, Brussels, the least common type of hypogamy (husband low educated—wife highly educated) was the most predominant. For simplicity and readability, we dropped the decimal fractions of the proportions in all subsequent figures and tables.

Differences in marital stability between different educational matches may result from other differences in couples' characteristics than educational matching. Thus, we add a range of control variables that according to previous research are expected to interact with couples' risk of divorce. Spouses who start their marriage at an early age are found to have higher divorce risks, presumably because they invested few resources in partner search and thus increased the likelihood of a mismatch (Berrington and Diamond 1999; Jalovaara 2013; Oppenheimer 1988). We included two measures of age at marriage: the *wife's age at marriage* was considered as a continuous variable, and a categorical variable on the *age difference*, denoting five different categories. Higher-order marriages are generally less stable than first-order marriages (Manlove et al. 2012; Poortman and Lyngstad 2007). The binary variable *marriage order* distinguishes between first- and higher-order marriages from the woman's point of view. If the woman did not declare a year of first marriage, the marriage order could not be defined ("missing"). Marriages that include children are less likely to divorce and this is especially true when several children are present and children are still in preschool age (Lyngstad and Jalovaara 2010). In the census questionnaire, women had to mention all birth years of each born child. Together with the birthdates of each new child born between 2001 and 2006, retrieved from

the National Register, we constructed the time-varying variable *parity and age of youngest child*. We distinguished between couples with one and two or more children and between couples with an infant and those with older children. Couples with lacking information are allocated to the "missing" category. Finally, we controlled for the municipality characteristics *region and urbanization* to capture other community aspects than the proportion of hypogamous marriages (Mortelmans et al. 2009). Belgium consists of three main regions: Flanders (northern, Dutch speaking part), Wallonia (southern, French-speaking part) and the Brussels-Capital Region (central, bilingual part). Regarding urbanization, we made a distinction between urban areas, suburban areas and rural areas. This distinction is based on the classification of Belgian municipalities into city regions (Luyten and Van Hecke 2007). Only the Brussels-Capital Region is a completely urban zone. The sample distribution of all covariates besides husband's and wife's education is presented in Table 2.

3.3 Analytic Strategy

For both the difference and the compound measure of couple's educational match, we present two models. The first model estimates how hypogamy on the couple and the community level is related to divorce while taking into account all control variables. This additive piecewise exponential hazard model can be written as follows:

$$h_{ijt} = \exp\left(\alpha_0 + \alpha_1 M_t + \beta E_{ij} + \gamma H_j + \delta C_{ij} + \varepsilon C_{ijt} + \zeta C_j + \eta_j\right) \quad (1)$$

where h_{ijt} denotes the hazard rate of marital dissolution at time t for the ith couple in the jth community, α_0 represents the fixed intercept, α_1 specifies how the baseline hazard varies over the time spells of marriage duration. β and γ are parameters for our main variables of interest, namely couple's educational match (E) and the proportion of hypogamous marriages in the community (H). Finally, δ and ε define the parameters for the time constant and time-varying control variables on the couple level, ζ are parameters for the community-level time constant control variable, and η represents the parameter for community random effects. We include a community-level random residual to capture clustering of couples living in the same community. The random effect term is assumed to follow a gamma distribution with a mean of one and variance θ. If the hypothesis that the variance of the random effect equals zero (H_0: $\theta = 0$) cannot be rejected, then there is no clear evidence of within-group correlation (Mills 2011), in this case within the communities.

In a second model, we additionally consider the interaction between couple's educational match and the proportion of hypogamous marriages in the community. By including this interaction and estimating its parameter θ in Eq. (2), we can test whether the effect of hypogamy on the couple level depends on the prevalence of hypogamy at the community level.

Table 2 Characteristics of the sample, by type of marriage

	H = W	H > W	H < W	All
Couple-level characteristics				
Wife's age at marriage (mean)	26	28	26	26
Age difference (%)				
Husband 0–3 years older	53	44	50	51
Husband 4–6 years older	17	19	19	18
Husband 7 years or more older	11	14	13	12
Wife 1–3 years older	14	14	14	14
Wife 4 years or more older	5	8	4	5
Marriage order (%)				
First marriage	82	70	84	81
Higher-order marriage	16	27	14	17
Missing	2	2	2	2
Parity and age of youngest child (%)[a]				
Childless	17	14	18	17
1 child, < 1 year	4	2	3	3
1 child, older	24	26	26	25
2 + children, < 1 year	5	4	5	5
2 + children, older	48	50	46	48
Missing	2	3	2	2
Community-level characteristics				
Proportion of hypogamous marriages in the community (%)				
Less than average (14–25%)	35	33	28	33
Average (25–28%)	33	34	33	33
More than average (28–47%)	32	33	39	34
Region and urbanization (%)				
Brussels-Capital	4	3	3	3
Flanders, urban	20	20	17	19
Flanders, suburban	29	28	29	29
Flanders, rural	21	21	23	22
Wallonia, urban	8	8	8	8
Wallonia, suburban	12	12	12	12
Wallonia, rural	7	8	10	8
n	267,055	69,712	121,732	458,499
%	58	15	27	100

H husband's education, *W* wife's education

[a]For this time-varying variable, the percentages are measured at the time of census

$$h_{ijt} = \exp\left(\alpha_0 + \alpha_1 M_t + \beta E_{ij} + \gamma H_j + \theta\left(E_{ij} * H_j\right) + \delta C_{ij} + \varepsilon C_{ijt} + \zeta C_j + \eta_j\right) \quad (2)$$

Suffixes − a and − b are used to differentiate between models using the difference measure (− a models) and models using the compound measure (− b models). As

the difference measure does not contain any information on spouses' absolute levels of education, we include that information as separate variables (husband's education and wife's education) in the—a models. The tables and figures present estimated hazard ratios with their respective 95% confidence intervals. The latter provide no indication of the sampling error because the estimates are based on population data, but they do provide a useful indication of the precision of the estimates.

4 Results

Table 3 displays the main estimates for Model 1a; i.e., the model applying the difference measure of couple's educational match but not yet interacting this with the local prevalence of hypogamy. In line with most recent research, we find a negative relationship between spouses' absolute levels of education and their risk of divorce. The estimates regarding couple's educational match, however, contradict our expectations: compared to homogamy, they show that hypergamy is positively associated with divorce (hazard ratio [HR] = 1.16), whereas hypogamy is not (HR = 1.01).

The importance of husbands' and wives' absolute education is highlighted even more in Table 4, displaying the results from Model 1b with the compound measure of couple's educational match. The estimates consistently show that the effect of

Table 3 Model 1a of marriage dissolution (using the difference measure): hazard ratios (HR) and 95% confidence intervals (CI)

	Model 1a	
	HR	95% CI
(Constant)	0.02***	(0.02–0.02)
Couple's educational match		
Homogamous (H = W)	1.00	
Hypergamous (H > W)	1.16***	(1.10–1.22)
Hypogamous (H < W)	1.01	(0.96–1.07)
Husband's education		
Low	1.16***	(1.11–1.22)
Medium	1.00	
High	0.77***	(0.73–0.80)
Wife's education		
Low	1.08**	(1.04–1.14)
Medium	1.00	
High	0.79***	(0.76–0.83)
Proportion of hypogamous marriages in the community		
Less than average (14–25%)	1.03	(0.98–1.08)
Average (25–28%)	1.00	
More than average (28–47%)	0.94**	(0.91–0.98)
Variance θ	0.02***	(0.01–0.02)
LR χ^2 (*df*)	9850.46 (34)	

H husband's education, *W* wife's education. The estimates for the control variables are omitted from this table, but are found in Table 5 of Appendix

* $p < .05$. ** $p < .01$. *** $p < .001$

Table 4 Model 1b of marriage dissolution (using the compound measure): hazard ratios (HR) and 95% confidence intervals (CI)

	Model 1b	
	HR	95% CI
(Constant)	0.02***	(0.02–0.02)
Couple's educational match		
Homogamous (H = W)		
Low–low	1.22***	(1.18–1.26)
Medium–medium	1.00	
High–high	0.60***	(0.58–0.62)
Hypergamous (H > W)		
Medium–low	1.25***	(1.21–1.30)
High–low	1.08*	(1.01–1.16)
High–medium	0.83***	(0.80–0.87)
Hypogamous (H < W)		
Low–medium	1.18***	(1.14–1.22)
Low–high	0.98	(0.93–1.03)
Medium–high	0.77***	(0.75–0.80)
Proportion of hypogamous marriages in the community		
Less than average (14–25%)	1.03	(0.98–1.08)
Average (25–28%)	1.00	
More than average (28–47%)	0.94**	(0.91–0.98)
Variance θ	0.02***	(0.01–0.02)
LR χ^2 (*df*)	9887.99 (36)	

H husband's education, *W* wife's education. The estimates for the control variables are omitted from this table, but are found in Table 6 of Appendix

* $p < .05$. ** $p < .01$. *** $p < .001$

heterogamy on marriage dissolution depends on wives' (W) and husbands' (H) absolute educational attainment. For low educated husbands and wives, being married to a highly educated spouse ($HR_H = 0.98$; $HR_W = 1.08$) was associated with a lower divorce rate than being married to a medium educated spouse ($HR_H = 1.18$; $HR_W = 1.25$) or with an equally educated spouse (HR = 1.22). For medium educated husbands as well as wives, we found that a downward marriage increased the divorce rate compared to being homogamously married with, respectively, 25% and 18%, while being upwardly married decreased the divorce rate with, respectively, 23% and 17%. Highly educated husbands and wives were the only respondents for whom a homogamous marriage was the most stable option (HR = 0.60, compared to all other combinations that involve a highly educated husband or wife). In sum, for men as well as for women, being married to a highly educated partner clearly stabilized their marriages.

The compound measure also allows a comparison of divorce rates of all types of hypergamous marriages with their hypogamous counterparts, in order to consider the gender dimension of educational matching. First, we see that every hypergamous match has a higher divorce rate than its hypogamous opponent. For example, the divorce rate of a hypogamous match in which the husband is low educated and the wife is medium educated is lower (HR = 1.18) than the one in case of the reverse situation in which the husband is medium educated and the wife is low

educated (HR = 1.25). This is also in line with the findings of the difference measure. However, not all hypogamous matches have by definition lower divorce rates than all hypergamous matches. Those couples in which the husband is highly educated and the wife is medium educated (HR = 0.83) have, for instance, a lower divorce rate than couples in which the husband is low educated and the wife is medium (HR = 1.18) or highly (HR = 0.98) educated.

Models 1a and 1b also include the proportion of hypogamous marriages in the community (Tables 3 and 4). These estimates indicate that, net of other controls, the divorce rate was 6% lower in communities where the proportion of hypogamous marriages was higher than average.

We expected the difference in divorce risks between hypogamy and homogamy to be larger in communities in which the relative proportion of hypogamy is lower. To test this hypothesis, we estimated the statistical interaction between the couple's educational match and the local proportion of hypogamous marriages. The results are presented in Fig. 2. The hazard ratios from Model 2a in Fig. 2a show that the negative correlation between the local prevalence of hypogamy and the divorce risk was indeed stronger for the group of hypogamous marriages. Moreover, hypogamous couples living in a community where this type of marriage is relatively uncommon had higher divorce rates than homogamous couples. Such hypogamous couples had about the same levels of divorce as hypergamous couples living in a community where hypogamy is very common. The more detailed compound measure of spouses' educational match in Fig. 2b shows that all types of hypogamous marriages had lower divorce rates in communities where hypogamy was more common. However, it seemed that most other educational matches—hypergamous couples, but also medium and highly educated homogamous couples—were also more stable in communities with a high proportion of hypogamous marriages. The lower divorce rate for homogamous couples living in a community with a high proportion of hypogamy is mainly due to a lower divorce rate in the group of medium educated homogamous couples in particular.

We carried out robustness checks with community-level measures describing the proportion of hypogamy in a compound way. In other words, we checked whether the proportion of each type of hypogamy separately (low–medium; low–high; medium–high) generated better model estimates or different conclusions than the models shown here. Yet, neither of the latter concerns was supported.

Unfortunately, the data did not include information on income. Data on employment were only available for one point in time, namely at the time of census. Robustness checks with indicators of employment status on the couple level (wife/husband works part-time, full-time or is unemployed) and the community level (proportion full-time employed wives) showed that the main results about the association between educational matching (couple and community level) and divorce remained the same. We chose to present results without information on employment because the causal direction between labor force participation and divorce has proven to be ambiguous. Particularly, women tend to anticipate a divorce by increasing their labor force participation and earnings to become more financially independent (Kreager et al. 2013; Schwartz and Gonalons-Pons 2016).

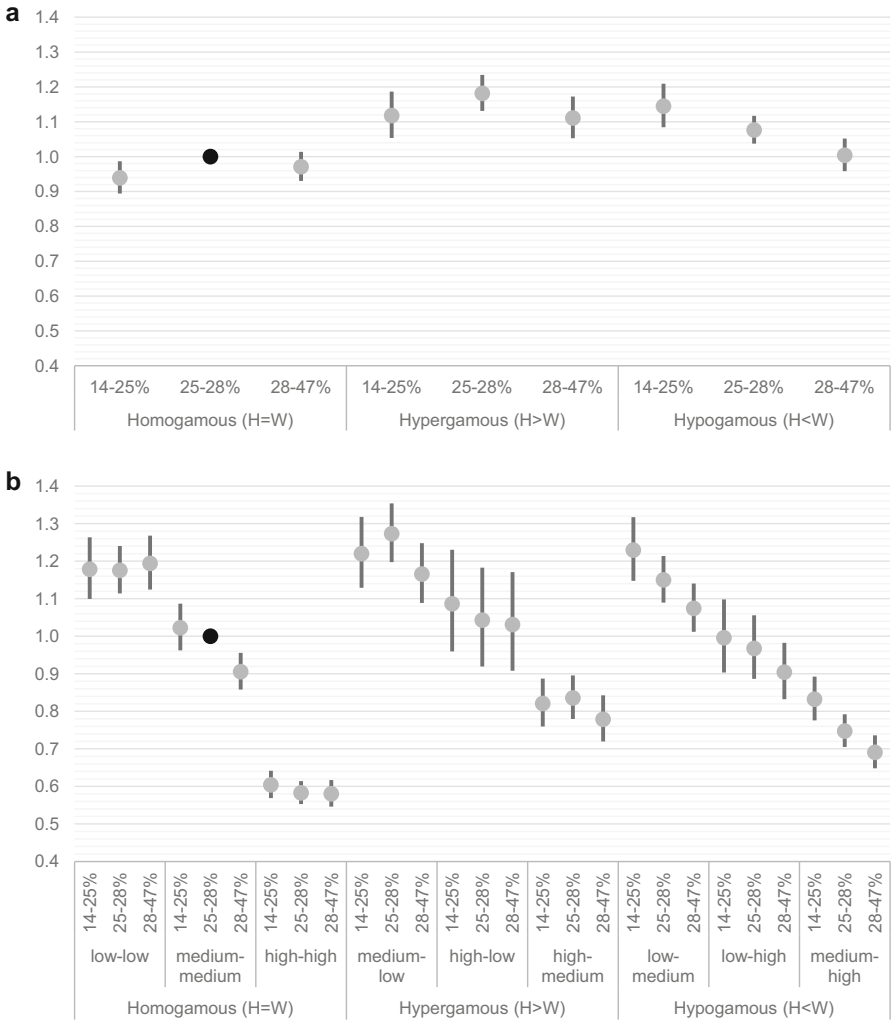

Fig. 2 Models 2a, b of marriage dissolution, hazard ratios of interaction between couple's educational match and proportion of hypogamous marriages in the community, with 95% confidence intervals. The black dot represents the reference category. **a** Model 2a (using the difference measure). **b** Model 2b (using the compound measure). Note *H* Husband's education, *W* Wife's education. The estimates for the control variables are omitted from this figure, but can be found in Tables 5 and 6 of the Appendix

5 Discussion

In previous empirical work, educational hypogamy (wife more educated than husband) has been linked to relatively high divorce risks compared to educational homogamy (wife and husband similarly educated) and educational hypergamy (wife less educated than husband). Given the growing prevalence of hypogamy (Esteve et al. 2012, 2016), the higher divorce risk of such unions would imply decreasing

marital stability in more recent and future cohorts. In this paper, we have investigated how couples' educational pairings and the prevalence of hypogamy in their local environment are associated with their risk of divorce. We focused on a sample of marriages in which hypogamy already exceeded the traditional hypergamy and compared two measures examining the effect of educational heterogamy. Our results contradict the traditional theories and pessimistic expectations regarding educational matching and divorce.

We hypothesized that homogamous marriages are the most stable and that within the group of heterogamous marriages, hypogamous marriages are still less stable than the hypergamous ones (*hypothesis 1*) because the former run against traditional gender role expectations while the latter are in line with them. However, the results of neither the "difference" nor the "compound" measure of educational differences support this hypothesis. Parameter estimates from the simple distinction between homogamy, hypergamy and hypogamy (i.e., the difference measure) show no difference in the risk of divorce between homogamous and hypogamous marriages after controlling for his and her level of education. Hypergamous marriages, on the contrary, did have an elevated risk of divorce. We compared heterogamous marriages with a similar amount of combined educational resources using the compound measure, for instance by comparing marriages in which the husband is low and the wife is medium educated with marriages in which the husband is medium and the wife is low educated. The risk of divorce for the hypergamous match was consistently higher than for its hypogamous counterpart. Yet, when we looked closer to all educational combinations, it turned out that not all types of hypergamous matches were more divorce prone than homogamous or hypogamous matches. Homogamy, for instance, was associated with a significantly lower divorce risk for highly educated husbands and wives but not always for couples with less education. For less educated men and women, a marriage with a more educated partner was strongly and consistently associated with more marital stability. In other words, the compound measure additionally highlights the stabilizing effect of having a partner with a high level of education, regardless of one's own level of education.

The unexpected finding that hypergamous marriages tend to have higher divorce rates could be explained by Belgium's relatively high female labor participation rates and high proportions of tertiary educated women. Potentially, hypergamous couples are less in line with current gender distributions in education and less compatible with increased gender-egalitarian norms in society than hypogamous couples (Goldscheider et al. 2015). Until deep into the twentieth century, the traditional assortative mating pattern of educational homogamy combined with educational hypergamy represented the most likely and most preferred types of matches given the distribution of educational attainment by gender and given traditional gender role expectations (Van Bavel 2012), also in Belgium (Nomes and Van Bavel forthcoming). Yet, in recent years, the reversal of the gender gap in education has not only made hypergamous matches less likely for purely numerical reasons (Grow and Van Bavel 2015), there is also evidence for rising egalitarian preferences in mate selection (Buss et al. 2001; Cherlin 2016; Sweeney and Cancian 2004; Zentner and Eagly 2015). More and more adults seek to build families based

on egalitarian roles, including gender equality with regard to employment and household chores. Financial or domestic burdens in the family are no longer expected to be exclusively men's or women's responsibility (Carlson et al. 2016; Cooke 2006). Entering and sustaining a homogamous or hypogamous marriage probably requires less specialized and more flexible attitudes from both partners, what could make these marriages more sustainable than hypergamous ones.

The results of the compound measure are, to some extent, in line with the hypothesis in which we expected that a higher combined educational attainment would decrease the likelihood of divorce within each type of marriage (*hypothesis 3*). The stabilizing effect of being highly educated or having a highly educated partner supports the theoretical reasoning that financial and psychosocial security—potentially provided by a high education—increase marital stability (Becker et al. 1977; Jalovaara 2013; Nock 2001). All in all, our results suggest that generally his and her absolute level of education matter more for divorce risks than the type of educational match.

Based on Schwartz and Han's (2014) "diffusion of innovation" argument, we expected the difference in divorce risks between homogamous and hypogamous marriages to be smaller in communities in which hypogamy is more common (*hypothesis 2*). The results show that hypogamous marriages were more divorce prone than homogamous marriages in communities where hypogamy was less common. In communities where hypogamy was more common, dissolution risks between homogamous and hypogamous marriages were similar. Yet, also homo- and hypergamous marriages experienced greater marital stability in communities with a higher proportion of hypogamous marriages. Hence, the proportion of hypogamy is not only correlated with the divorce risk of hypogamous marriages, but also of homo- and hypergamous marriages. In line with what we stated earlier, people in a hypogamous union might share some attitudes and values conform to the increased egalitarian norms and preferences toward partnerships. Consequently, a low proportion of hypogamy in the local community might reflect a low degree of gender-egalitarian norms of its inhabitants which can lead to a higher tendency for them to divorce. Recent evidence from the US has already shown that gender-egalitarian attitudes at the regional level are negatively associated with couples' risks of divorce (Pessin 2017). In the case of Belgium, higher proportions of hypogamy were found in the more secular part of the country, Wallonia (Mortelmans et al. 2009), which might suggest more gender-egalitarian attitudes of its inhabitants. Confirming this idea, Van den Troost (2000) reported that inhabitants of the more religious region, Flanders, value homogamy in terms of religious and political orientations as well as social background more than people in Wallonia. Yet, other research found more conservative family norms, notably more gender-traditional family role attitudes, in the more secularized region of Belgium (Jappens and Van Bavel 2012). For the Belgian case, it is thus difficult to evaluate how gender-egalitarian norms could explain why marriages, and especially hypogamous marriages, are more stable where hypogamy is more prevalent. Yet, the contextual information considered in this study focuses on community-level variation and is based on cross-sectional data. Consequently, we need to be careful not to "read history sideways" (Thornton 2001) by interpreting differences across

space as if they represent development over time. Future studies might address this drawback by combining regional data with time series data.

The "macro-structural opportunity perspective" (South et al. 2001) can offer an alternative explanation for the findings regarding the proportion of hypogamy in couples' local community. The perspective contends that people are more likely to end their marriage when they encounter many alternative potential partners. A community with a high prevalence of hypogamy might reflect the fact that especially higher educated female inhabitants face a restricted supply of similarly educated marital alternatives (Grow and Van Bavel 2015). Assuming a preference for educational homogamy, the lack of attractive alternatives for highly educated women, i.e., the lack of a sufficient number of highly educated men, supports the stability of hypogamous unions in communities where hypogamy is more common (Grow et al. forthcoming). Other scholars might investigate how local, but also regional or cross-national, variation in divorce can be explained by contextual patterns of educational matching after the inclusion of other contextual factors (e.g., sex ratios; average earnings, education and unemployment; population density; values and attitudes). This will broaden our knowledge on how spurious or causal the relationship is between the commonness of hypogamy and the decision to divorce.

The compound measure for couple's educational match revealed interesting and complex relationships that were hidden by the use of a difference measure. Furthermore, the compound measure appears to address most of the critique of difference measures, such as the often high correlations between variables for absolute education, and educational differences (multicollinearity). Compound measures are, unfortunately, not free from critique either. One of the drawbacks is that they necessitate a reduction of the available information on education when sample size is limited. The exponential number of possible combinations requires the merging of educational categories; otherwise, some combinations could suffer from small representations. For an in-depth theoretical comparison of difference and compound measures, we recommend the study of Eeckhaut and colleagues (2013). We believe that both measures are needed and useful in the study of education and divorce in order to get a complete picture. Scholars using only one type of measure should keep in mind the implications of their choice for the derived conclusions. In future work, it would be interesting to investigate the effect of educational heterogamy on divorce by diagonal reference models (DRMs; Sobel 1985). This analyzing technique uses characteristics of the homogamous couples as a reference for heterogamous couples. It appeared to be a good interpretable and parsimonious approach for examining the simultaneous effect of partners' absolute and relative educational positions (Eeckhaut et al. 2013; Eeckhaut 2017). We chose a multilevel event history approach instead because DRMs are not (yet) able to account for unmeasured factors within groups (i.e., couples living in the same community) that impact all group members. Furthermore, a recent Swedish study by Billingsley et al. (2016) that applied the DRM approach to the study of social mobility and demographic processes (fertility and mortality) show that these estimates do not differ from standard modeling.

One of the major changes in family behavior in industrialized societies is the growing prevalence of unmarried cohabitation. Unfortunately, we were not able to include unmarried cohabiting couples in our analyses. Previous research by Jalovaara (2013) on Finnish data showed that the effect of each partner's level of education was stronger in marriages than in cohabitations. The same might be true for educational differences. Some scholars (e.g., Blackwell and Lichter 2004) argued that unmarried cohabiters are more likely to be partnered with educationally dissimilar mates or that educationally dissimilar couples avoid marriage in favor of cohabitation because of the proven "looser bound" between unmarried cohabiting partners. However, recent American (Schwartz 2010) and European (Mäenpää and Jalovaara 2013; Verbakel and Kalmijn 2014) research found no or only limited evidence for both statements.

Another limitation concerns the fact that all investigated couples consisted of Belgian-born partners. We preferred to avoid the complexity of marital stability in mixed and immigrant marriages. This implies that our results apply to a selective sample of the Belgian population, and in some areas (e.g., in cities like Antwerp and Brussels, with a high proportion of immigrants) this selectivity may be very drastic.

To conclude, this study considered his and her educational level, the combination of educational levels in the couple and relative differences in educational levels. Beyond that, we accounted for the fact that these factors may vary in their association with divorce across communities. We showed that both his and her education matters for marital dissolution, but the local context does as well.

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Compliance with Ethical Standards

Conflict of interest The authors declare that they have no conflict of interest.

Appendix

See Tables 5 and 6.

Table 5 Models 1a and 2a of marriage dissolution: hazard ratios (HR) and 95% confidence intervals (CI) of baseline and control variables

	Model 1a		Model 2a	
	HR	95% CI	HR	95% CI
(Constant)	0.02***	(0.02–0.02)	0.02***	(0.02–0.02)
Marriage duration, in years (baseline)				
0–1	0.48***	(0.42–0.54)	0.48***	(0.42–0.54)
1–2	0.90**	(0.84–0.96)	0.90**	(0.84–0.96)
2–3	1.08*	(1.02–1.14)	1.08*	(1.02–1.14)
3–4	1.03	(0.98–1.08)	1.03	(0.98–1.08)
4–5	1.00		1.00	
5–8	0.92***	(0.89–0.96)	0.92***	(0.89–0.96)
8–11	0.77***	(0.74–0.81)	0.77***	(0.74–0.81)
11–15	0.62***	(0.59–0.64)	0.62***	(0.59–0.64)
15 +	0.52***	(0.49–0.54)	0.52***	(0.49–0.54)
Wife's age at marriage	0.94***	(0.94–0.94)	0.94***	(0.94–0.94)
Age difference				
Husband 0–3 years older	1.00		1.00	
Husband 4–6 years older	1.03*	(1.00–1.05)	1.03*	(1.00–1.05)
Husband 7 years or more older	1.12***	(1.09–1.15)	1.12***	(1.09–1.15)
Wife 1–3 years older	1.17***	(1.14–1.21)	1.17***	(1.14–1.21)
Wife 4 years or more older	1.57***	(1.50–1.64)	1.57***	(1.50–1.64)
Marriage order				
First marriage	1.00		1.00	
Higher-order marriage	1.51***	(1.47–1.56)	1.51***	(1.47–1.56)
Missing	1.26***	(1.18–1.34)	1.26***	(1.18–1.34)
Parity and age of youngest child				
Childless	1.00		1.00	
1 child, < 1 year	0.39***	(0.37–0.42)	0.39***	(0.37–0.42)
1 child, older	0.84***	(0.81–0.87)	0.84***	(0.81–0.87)
2 + children, < 1 year	0.40***	(0.38–0.42)	0.40***	(0.38–0.42)
2 + children, older	0.78***	(0.75–0.80)	0.78***	(0.75–0.80)
Missing	1.02	(0.96–1.08)	1.02	(0.96–1.08)
Region and urbanization				
Brussels-Capital	1.21***	(1.10–1.33)	1.21***	(1.10–1.33)
Flanders, urban	1.00		1.00	
Flanders, suburban	0.89***	(0.84–0.94)	0.89***	(0.84–0.94)
Flanders, rural	0.82***	(0.77–0.88)	0.82***	(0.77–0.88)
Wallonia, urban	1.33***	(1.23–1.44)	1.33***	(1.23–1.44)
Wallonia, suburban	1.17***	(1.10–1.24)	1.17***	(1.10–1.24)
Wallonia, rural	0.90**	(0.84–0.96)	0.90**	(0.84–0.96)

Table 5 continued

	Model 1a		Model 2a	
	HR	95% CI	HR	95% CI
Variance θ	0.02***	(0.01–0.02)	0.02***	(0.01–0.02)
LR χ^2 (*df*)	9850.46 (34)		9865.16 (38)	

* $p < .05$; ** $p < .01$; *** $p < .001$

Table 6 Models 1b and 2b of marriage dissolution: hazard ratios (HR) and 95% confidence intervals (CI) of baseline and control variables

	Model 1b		Model 2b	
	HR	95% CI	HR	95% CI
(Constant)	0.02***	(0.02–0.02)	0.02***	(0.02–0.02)
Marriage duration, in years (baseline)				
0–1	0.48***	(0.42–0.54)	0.48***	(0.42–0.54)
1–2	0.90**	(0.84–0.96)	0.90**	(0.84–0.96)
2–3	1.08*	(1.02–1.14)	1.08*	(1.02–1.14)
3–4	1.03	(0.98–1.08)	1.03	(0.98–1.08)
4–5	1.00		1.00	
5–8	0.92***	(0.89–0.96)	0.92***	(0.89–0.96)
8–11	0.77***	(0.74–0.81)	0.77***	(0.74–0.81)
11–15	0.62***	(0.59–0.64)	0.62***	(0.59–0.64)
15 +	0.52***	(0.49–0.54)	0.52***	(0.49–0.54)
Wife's age at marriage	0.94***	(0.94–0.94)	0.94***	(0.94–0.94)
Age difference				
Husband 0–3 years older	1.00		1.00	
Husband 4–6 years older	1.03*	(1.00–1.05)	1.03*	(1.00–1.05)
Husband 7 years or more older	1.12***	(1.09–1.15)	1.12***	(1.09–1.15)
Wife 1–3 years older	1.17***	(1.14–1.21)	1.17***	(1.14–1.21)
Wife 4 years or more older	1.57***	(1.50–1.64)	1.57***	(1.50–1.64)
Marriage order				
First marriage	1.00		1.00	
Higher-order marriage	1.51***	(1.47–1.56)	1.51***	(1.47–1.56)
Missing	1.26***	(1.19–1.34)	1.26***	(1.19–1.34)
Parity and age of youngest child				
Childless	1.00		1.00	
1 child, < 1 year	0.39***	(0.37–0.42)	0.39***	(0.37–0.42)
1 child, older	0.84***	(0.81–0.87)	0.84***	(0.81–0.87)
2 + children,< 1 year	0.40***	(0.38–0.42)	0.40***	(0.38–0.42)
2 + children, older	0.78***	(0.75–0.80)	0.78***	(0.75–0.80)
Missing	1.02	(0.96–1.08)	1.02	(0.96–1.08)
Region and urbanization				
Brussels-Capital	1.20***	(1.09–1.32)	1.21***	(1.10–1.33)

Table 6 continued

	Model 1b		Model 2b	
	HR	95% CI	HR	95% CI
Flanders, urban	1.00		1.00	
Flanders, suburban	0.89***	(0.84–0.94)	0.89***	(0.84–0.94)
Flanders, rural	0.82***	(0.77–0.88)	0.82***	(0.77–0.88)
Wallonia, urban	1.33***	(1.23–1.44)	1.33***	(1.23–1.43)
Wallonia, suburban	1.17***	(1.10–1.24)	1.17***	(1.09–1.24)
Wallonia, rural	0.90**	(0.84–0.96)	0.90**	(0.84–0.96)
Variance θ	0.02***	(0.01–0.02)	0.02***	(0.02–0.02)
LR χ^2 (*df*)	9887.99 (36)		9922.42 (52)	

* $p < .05$; ** $p < .01$; *** $p < .001$

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