



Population Studies

A Journal of Demography

ISSN: 0032-4728 (Print) 1477-4747 (Online) Journal homepage: <http://www.tandfonline.com/loi/rpst20>

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To cite this article: Hill Kulu & Tina Hannemann (2018): Mixed marriage among immigrants and their descendants in the United Kingdom: Analysis of longitudinal data with missing information, Population Studies, DOI: [10.1080/00324728.2018.1493136](https://doi.org/10.1080/00324728.2018.1493136)

To link to this article: <https://doi.org/10.1080/00324728.2018.1493136>



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Published online: 25 Oct 2018.



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Mixed marriage among immigrants and their descendants in the United Kingdom: Analysis of longitudinal data with missing information

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This study investigates the formation of endogamous and exogamous marriages among immigrants and their descendants in the United Kingdom. We apply event history analysis to data from the Understanding Society study and use multiple imputation to determine the type of marriage for individuals with missing information on the origin of their spouse. The analysis shows, first, significant differences among immigrants and their descendants in the likelihood of marrying within and outside their ethnic groups. While immigrants from European countries have relatively high exogamous marriage rates, South Asians exhibit a high likelihood of marrying a partner from their own ethnic group; Caribbean people hold an intermediate position. Second, the descendants of immigrants have lower endogamous and higher exogamous marriage rates than their parents; however, for some ethnic groups, particularly South Asians, the differences across generations are small, suggesting that changes in marriage patterns have been slower than expected.

Supplementary material for this article is available at: <http://dx.doi.org/10.1080/00324728.2018.1493136>

Keywords: marriage; immigrants; the second generation; event history analysis; multiple imputation; United Kingdom

[Submitted April 2017; Final version accepted January 2018]

Introduction

European countries are characterized by the growing ethnic and cultural heterogeneity of their populations. Western and northern European countries witnessed significant labour migration streams as early as the 1950s and 1960s, whereas southern European countries became immigration destinations in the late 1990s (Castles and Miller 2009; Rees et al. 2012). Although many post-war labour migrants later returned to their home countries, a significant number stayed and established their family lives in the destination societies, hence the share of descendants of immigrants has increased over time. Recent studies have shown that immigrants and their descendants form one-fifth to one-quarter of the population in many western and northern European countries (Zimmermann 2005; Andersson et al. 2015).

There is a large body of research investigating various aspects of the lives of immigrants and

ethnic minorities in European countries; these include their legal status and citizenship, employment and education, and residential and housing patterns (Seifert 1997; Bauböck 2003; Musterd 2005; Adsera and Chiswick 2007; Arbaci 2008; Rendall et al. 2010). Recent research has also demonstrated an increased interest in family and fertility dynamics among immigrants and their descendants. One stream of research has investigated fertility patterns among immigrants and ethnic minorities with the aim of determining whether the fertility behaviour of immigrants and their descendants resembles that of the dominant behaviour in the origin or the destination society (Andersson 2004; Toulemon 2004; Kulu and Milewski 2007; Milewski 2007; Coleman and Dubuc 2010; Kulu et al. 2017). Another stream of research has examined partnership patterns among immigrants and ethnic minorities in various European countries, with a focus on factors that influence the spread and stability of interethnic

marriages (Coleman 1994; González-Ferrer 2006; Kalmijn and van Tubergen 2006; Goldscheider et al. 2011; Dribe and Lundh 2012; Milewski and Kulu 2014). Given the importance of interethnic unions both as a mechanism for and an indicator of integration, it is perhaps surprising that relatively little research has been conducted in Europe on this topic in comparison, for example, with research on other aspects of the lives of immigrants and ethnic minorities.

The aim of this study is to investigate the formation of exogamous (interethnic) and endogamous (intra-group) unions among immigrants and their descendants in the United Kingdom (UK), with a focus on the formation of first marriages. We extend previous research on immigrant intermarriage in the following ways. First, the analysis includes both immigrants and their descendants. Most research has examined either the marriages of immigrants or those of ethnic minorities (e.g., Coleman 1994); while the latter approach includes the descendants of immigrants in analysis, it typically analyses only those individuals who identify themselves with a specific ethnic group, leaving out those who do not (e.g., Berrington 1996; Mutarak and Heath 2010). This approach may underestimate the spread of mixed marriage among the descendants of immigrants. In our analysis we include all individuals with at least one parent born outside the UK, in other words, all individuals of the so-called ‘second generation’.

Second, we analyse the formation of endogamous and exogamous marriages from the life course perspective, using longitudinal data. While the use of longitudinal data has become a standard for research on the demographic behaviour of immigrants, many studies on intermarriage, especially in the UK have been conducted using cross-sectional data (Coleman 1994; Berrington 1996; Mutarak and Heath 2010). The analysis of longitudinal data allows us to examine the effect of various factors on union formation and control for the fact that some individuals may not marry and that the share not marrying may vary significantly across ethnic groups.

Third, we use the technique of multiple imputation to address the issue of missing information on the partner’s migration status. While longitudinal data normally contain all relevant information about partners, key information on partners is sometimes missing for part of the research population. This is particularly an issue with many recently launched panel studies, which collect some retrospective information on partnership histories at the first or second wave, but for which detailed information (including

country of origin or ethnic origin) is available only for the current partner (if any). We show how multiple imputation can be used to address the issues of missing data and compare the results with those obtained using the conventional approach of deleting cases with missing information. Finally, we analyse the formation of exogamous marriages among natives, as well as immigrants and their descendants. Most studies have focused only on factors influencing the spread of mixed marriage among immigrants or ethnic minorities; however, the study of mixed marriage among natives will improve our understanding of the mechanisms and determinants of integration processes.

Previous research on mixed marriage in Europe

Family research has shown that partner choice is shaped by both individual preferences and contextual factors (Kalmijn 1998). Preferences usually refer to the desired characteristics and resources attached to a potential partner. In addition to conventional physical attraction, these include socio-economic resources, particularly social status and education, and various cultural characteristics. Research has shown that individuals prefer to form a union with or marry someone who is similar in socio-economic and cultural characteristics. Marital endogamy is thus seen as an unintended consequence of individual preferences for resources and characteristics related to a partner (Kalmijn 1998). The marriage market and opportunity structures also influence partner choice. The choice of a partner depends on the availability of potential partners with similar socio-economic and cultural characteristics, measured by factors such as the group size (either age, socio-economic, or cultural), sex ratio, and residential proximity, among other factors.

Individual preferences and contextual factors are equally relevant in the study of immigrant partner choice (González-Ferrer 2006; Kulu and González-Ferrer 2014). Endogamy is thus a natural outcome for immigrants and ethnic minorities who differ from the native population in socio-economic status, educational level, and norms and values; the levels of exogamy, in contrast, are high when differences between groups are small or have diminished over time and across migrant generations. The share of mixed marriages is expected to increase with declining migrant group size, an imbalanced sex ratio, and decreasing residential segregation. Mixed marriages are thus an important indicator of

the cultural and structural integration of immigrants and ethnic minorities; they also contribute to minority integration. Further, it can even be argued that exogamous marriages are the ultimate litmus test of immigrant and ethnic minority integration (Song 2009; Kulu and González-Ferrer 2014).

Previous research in Europe has supported the importance of these factors and specified their impact in various contexts. The study by González-Ferrer (2006) on post-war immigrants and ethnic minorities in Germany showed that immigrants with a high educational level were more likely to marry a German-born individual than those with a low educational level. The levels of exogamy were higher among smaller immigrant groups and among those with an imbalanced sex ratio in the group. The analysis also supported the importance of the migrant generation; for both men and women, the descendants of immigrants were more likely than immigrants to marry a native-born individual. Kalmijn and van Tubergen (2006) and van Tubergen and Maas (2007) investigated the spread of exogamous marriage among immigrants in the Netherlands and showed that the likelihood of intermarriage increased with educational level; it was also higher among those who were born in the Netherlands or arrived at a younger age. Intermarriage also occurred more frequently when the group size was small and the group-specific sex ratio was uneven.

Studies by Safi and Rogers (2008), Safi (2010), and Hamel and Moisy (2013) on post-war immigrants and their descendants in France have largely supported previous findings; their analyses demonstrated higher exogamy rates among highly educated men and women, those with better French language skills, and the descendants of immigrants, and also in regions with an uneven sex ratio among immigrants and their descendants. Mutarak and Heath (2010) emphasized the importance of residential segregation. Their study of interethnic marriage in the UK showed a higher likelihood of ethnically mixed marriages in ethnically diverse areas. Dribe and Lundh (2008) reached similar conclusions in their study on Sweden; their analysis showed that exogamy was common outside the big cities, in places where the share of immigrants was small. Several other studies have supported the importance of these individual and contextual factors in the spread of exogamy in various European countries, including Lievens (1998) for Belgium, Rodríguez-García (2006) and Cortina Trilla et al. (2008) for Spain, Dribe and Lundh (2008, 2011) for Sweden, and Van Ham and Tammaru (2011) for Estonia.

Research on interethnic marriage has shown that once we control for socio-economic characteristics, individuals' education, and opportunity structures, significant differences across immigrant groups persist. This has led researchers to explicitly study the importance of cultural and normative factors and the role of religion in shaping patterns of interethnic marriage. Using register data from Sweden, Dribe and Lundh (2011) showed that immigrants from countries culturally similar to Sweden with regards to values, language, and religion were more likely to marry native Swedes than those from culturally more distant countries. Lucassen and Laarman (2009) investigated the role of religion in ethnic intermarriage among post-war immigrants to Europe and found that immigrants whose religion had no tradition in western Europe had lower intermarriage rates than those whose religious background was similar to that of the destination country. At the group level, Kalmijn and van Tubergen (2006) showed that intermarriage rates were much higher among Caribbean people in the Netherlands than among immigrants from North Africa and Turkey, a finding that they attributed to similarities and differences, respectively, in religion. In a study on attitudes towards ethnic intermarriage, Carol (2013) found that intermarriage was closely tied to the strength of religiosity; as expected, mixed marriages were more accepted among those immigrants who were less religious compared with those expressing strong religious beliefs.

With the increase in ethnic minority populations in European countries, recent research has reflected the larger interest in intermarriage among the descendants of immigrants. Most previous studies have reported that levels of exogamy are significantly higher among the descendants of immigrants than among immigrants themselves. González-Ferrer (2006) observed this pattern for ethnic minority populations in Germany, van Tubergen and Maas (2007) for the Netherlands, and Safi (2010) for France. In contrast, Timmerman et al. (2009) and Hartung et al. (2011), investigating marriage patterns of the descendants of Turkish and Moroccan immigrants in Belgium, found that many of them lived with a first-generation partner from the same ethnic group, suggesting that a pattern of bringing partners from the parents' country of origin may exist among some ethnic minority groups (González-Ferrer 2006; Milewski and Hamel 2010). Interestingly, the analysis also revealed that most Belgian-born partners were the descendants of immigrants from the same ethnic group. These results suggest that marriage patterns among the descendants of immigrants may be

more complex than previous studies have shown and be partially dependent on the size and composition of ethnic groups, although we may still expect intermarriage to be more common among the descendants of immigrants than among immigrants.

Research on intermarriage in Britain has focused on the spread of exogamy across ethnic groups. In two seminal papers, Berrington (1994, 1996) investigated interethnic unions using UK Labour Force Survey data and 1991 Census microdata. The analysis revealed significant ethnic differences in the prevalence of interethnic unions. While a significant portion of people of Caribbean, sub-Saharan African, and Chinese origin were married or cohabiting with a white British partner, few individuals of Indian, Pakistani, or Bangladeshi origin were in exogamous relationships. The analysis also showed that exogamy rates were higher among the descendants of immigrants and among those who cohabited, although among South Asians, the share of individuals in non-marital unions was negligible. Coleman (1994) reached very similar conclusions in his study on ethnic intermarriage in Britain and elsewhere in Europe; the study also showed that, in all ethnic groups, men were more likely than women to have an ethnically different partner. A recent study by Muttarak and Heath (2010) largely supported previous findings and reported that South Asians, both men and women, were more likely to form endogamous partnerships than other ethnic groups, particularly those of Caribbean, African, and Chinese origin. The authors concluded that groups such as South Asians, with a strong, cohesive community structure and norms supporting endogamy, would tend to follow a pluralistic rather than an assimilatory path.

This study investigates the determinants of exogamous marriage among immigrants and their descendants in the UK, using longitudinal data. In line with previous research from Britain (Berrington 1994, 1996; Coleman 1994; Muttarak and Heath 2010), we expect, first, to observe higher exogamy rates among immigrants from Caribbean and European countries and their descendants and lower intermarriage rates among individuals of Indian, Pakistani, and Bangladeshi origin. Second, we expect to find higher intermarriage rates among the descendants of immigrants than among immigrants. Third, we expect individual socio-economic and cultural characteristics (e.g., educational level, language skills, and religiosity) to shape patterns of exogamy significantly, among both ethnic minorities and the native British population; however, the interesting questions are whether and by how much these

characteristics will explain expected differences in intermarriage levels across ethnic minority groups. For example, individuals from large or religious families may be more conservative and thus less likely to form exogamous marriages. Finally, in line with findings of previous research, we also expect to observe some gender differences, with ethnic minority men being more likely to form interethnic marriages than women, particularly among the British South Asian populations (Berrington 1994).

Data

This study uses data from Understanding Society (USoc), a large longitudinal study in the UK that was launched in 2009. The main ethnic minority groups in Britain were oversampled in the study, thus providing a sufficient sample size to study ethnic differences in family behaviour. Retrospective partnership histories were collected at the first wave, which was conducted between January 2009 and December 2010. The data set also contains information on the ethnicity and birthplace of respondents and their household members. In the first wave, data were collected on 50,994 individuals, including 27,792 women. Full interviews were conducted with 47,732 individuals, whereas the remaining interviews were proxy interviews for non-present household members. For the current study, only full interviews are used; 309 cases are excluded from the analysis because information on the place or date of birth is missing for those individuals. An additional 284 individuals are removed from the sample because some information vital to the analysis showed inaccurate values, indicating recording or reporting errors (e.g., marriage dates that precede dates of birth). The analysis is limited to cohorts born between 1950 and 1994 (11,962 individuals in earlier and later cohorts are deleted from the sample). A further 50 cases are excluded from the sample because their records suggest that their first marriage occurred before age 15. The final sample consists of 35,127 individuals: 19,840 women and 15,287 men.

The research population is divided into British ‘natives’, ‘immigrants’ (the first generation), and ‘descendants of immigrants’ (the second generation). Natives are defined as individuals who were born in the UK to two UK-born parents; they form 70 per cent of the (unweighted) sample. Individuals who were born outside the UK are classified as immigrants, independent of the origin of their parents. Where their country of birth is ‘other country’ in

the data set, information on their parents is used to determine their migrant group. If a person was born in the UK but at least one of their parents was born outside the UK, the individual is classified as a descendant of immigrant(s). If a descendant of immigrants has parents of different foreign origins, priority is given to the father's country of birth. Where the country of birth is 'other country' for one parent, the country of birth for the other parent is used to determine the migrant status of the individual.

Due to the small sample sizes, the following aggregated regions of origin are used in the analysis: (1) Europe and other western/industrialized countries; (2) India; (3) Pakistan and Bangladesh; (4) Caribbean countries; and (5) all 'other' origins. The last group contains individuals from many different

countries, in all continents. Although this group is large relative to the other subgroups, no specific country of origin within it is of sufficient size to be analysed separately. The descendants of immigrants are grouped in the same way. Table 1 presents the distribution of the population by migrant status for the entire sample.

Mixed (exogamous) marriages are defined in this analysis as marriages between two individuals from different origins. For natives, that means a marriage with any partner who was not born in the UK or who had at least one parent not born in the UK. For immigrants and the descendants of immigrants, that means a marriage with either a native partner or a partner born in a different country. Marriages between individuals with the same country of origin but different immigration generations are considered

Table 1 Descriptive statistics on individuals by migrant status and first marriages by type for women and men in the UK

Women			Number of marriages by type			
			Endogamous	Exogamous	No information	Total
Migrant status and region of origin	Number of individuals	Person-months at risk				
Native	13,633	1,791,190	3,697	365	4,060	8,122
Immigrant						
<i>Europe</i>	705	101,310	78	179	150	407
<i>India</i>	457	49,415	233	47	105	385
<i>Pakistan/Bangladesh</i>	735	58,522	444	31	188	663
<i>Caribbean</i>	220	44,997	27	17	70	114
<i>Other</i>	1,793	249,671	224	218	693	1,135
Descendant of immigrant(s)						
<i>Europe</i>	720	108,862	16	189	248	453
<i>India</i>	349	42,993	78	49	78	205
<i>Pakistan/Bangladesh</i>	490	36,998	118	14	93	225
<i>Caribbean</i>	388	83,991	34	29	75	138
<i>Other</i>	350	45,907	18	48	55	121
Total	19,840	2,613,857	4,967	1,186	5,815	11,968
Men			Number of marriages by type			
			Endogamous	Exogamous	No information	Total
Migrant status and region of origin	Number of individuals	Person-months at risk				
Native	10,176	1,588,988	3,013	393	2,024	5,430
Immigrant						
<i>Europe</i>	497	78,275	62	94	98	254
<i>India</i>	508	69,728	227	28	86	341
<i>Pakistan/Bangladesh</i>	792	100,919	418	28	156	602
<i>Caribbean</i>	132	29,011	23	6	39	68
<i>Other</i>	1,433	230,955	198	153	445	796
Descendant of immigrant(s)						
<i>Europe</i>	552	95,310	17	188	115	320
<i>India</i>	287	38,841	54	43	31	128
<i>Pakistan/Bangladesh</i>	381	32,996	77	14	44	135
<i>Caribbean</i>	244	50,554	23	23	22	68
<i>Other</i>	285	39,059	16	36	18	70
Total	15,287	2,354,637	4,128	1,006	3,078	8,212

Note: 'Europe' includes other western industrialized nations.

Source: Authors' calculations from Understanding Society data.

to be endogamous marriages in this analysis. For example, a marriage of an immigrant from Pakistan with a descendant of Pakistani parents would be defined as an endogamous marriage, while a marriage between an immigrant from Pakistan and an immigrant from Bangladesh would be defined as an exogamous marriage. For the ‘other’ group, marriage type is based on detailed country of birth. Therefore, a marriage between a Chinese and a Kenyan person, for example, is classified as exogamous, although both belong to the same migrant group (‘other’). Where information on country of birth is missing for both partners, their marriage status is recoded as ‘missing’, because we cannot be sure whether their marriage is endogamous or not. Their marriage status is generated by multiple imputation, together with cases of missing marriage status that are due to the design of the longitudinal data set. For some individuals, information on their partner comes from a proxy interview; for such cases we know the partner’s place of birth but there is no information on the partner’s parents. In those cases, partners who were born in the UK are classified as natives.

Methods

Competing risks event history model

We use a competing risks event history model to study the formation of exogamous and endogamous marriages. The model is formalized as follows:

$$\begin{aligned} \ln \mu_i^{EN}(t) &= \ln \mu_0^{EN}(t) + \sum_j \beta_j^{EN} x_{ij}(t) \\ \ln \mu_i^{EX}(t) &= \ln \mu_0^{EX}(t) + \sum_j \beta_j^{EX} x_{ij}(t) \end{aligned} \quad (1)$$

where $\mu_i^{EN}(t)$ denotes the hazard of endogamous marriage for individual i at time (t) ; $\mu_i^{EX}(t)$ is the risk of exogamous marriage in the competing risks framework; and $\ln \mu_0(t)$ denotes the baseline log-hazard, which is an individual’s current age (in five-year age categories). In both equations, $x_{ij}(t)$ represents the values of a variable measuring an individual’s socio-demographic background including migrant status, while β_j is the parameter estimate for the j th covariate. Individuals are at risk of marriage from age 15 and are censored at age 45, the time of interview, or the time when they experience the competing event (EX or EN , accordingly), whichever comes first.

We first investigate marriage formation by *migrant status* (native, immigrant, or descendant of immigrant (s)), while controlling for *birth cohort* (1950–59,

1960–69, 1970–79, or 1980–94). We then include individuals’ socio-economic and cultural characteristics in the analysis to measure the effect of these characteristics on the formation of endogamous or exogamous marriages and to determine whether and by how much those factors explain initial variation across ethnic groups. The models include individuals’ *educational level* (tertiary degree, other higher education, A-level, GCSE, or no or lower qualifications); *English language skills* (speaks English as first language, speaks English without problems, or speaks English with problems); and the *importance of religion* in their lives (religion makes no difference, little difference, some difference, or a great difference). The values of all three variables were measured at the first wave of the study. The models also include the *number of siblings* (only child, one sibling, two or three siblings, and four or more siblings). For immigrants, we also include *migration history* (whether each month at risk is before or after migration to the UK). We thus study full marital histories for immigrants and distinguish between residential episodes before and after migration to the UK. The distributions of exposure time and occurrences by *migrant status* for endogamous and exogamous first marriages are provided in [Table 1](#).

Multiple imputation of missing values

[Table 1](#) shows that some individuals are missing information on the origin of their first spouse (so are missing the type of first marriage in terms of endogamous or exogamous). This is related to the design of the USoc study; while information was collected retrospectively for the start and end dates of all unions for each individual, information on characteristics was gathered only for their current partner (if any). Therefore, data on partners’ origins are available only for those first marriages that survived until the study date, that is, marriages that had not ended in separation or death of a partner, and where both spouses were interviewed (reasons for missing information are shown in [Table A1](#) in the supplementary material). There are three possible methods of analysing data with missing information on type of marriage (Andersen et al. 1996). First, we could delete individuals with missing first marriage type and then fit a competing risks hazard regression model. Second, we could recode all marriages with missing type as a separate category (besides endogamous and exogamous marriages) and conduct a competing risks analysis with missing cases as one of the

competing risks. Third, we could impute missing values using the technique of multiple imputation. In this study, we adopt this third approach; previous studies have shown that the first two approaches may be statistically less efficient (i.e., as they result in a smaller sample) and, more importantly, may produce biased estimates, as individuals with missing information may be a select group.

Multiple imputation consists of three steps (Bakoyannis et al. 2010). First, m data sets are generated using a chosen regression model. Next, analysis is conducted separately for each completed data set. Finally, the results obtained from m analyses are combined into a single result (e.g., the averages are calculated for coefficients). In this study, we follow the approach outlined by Bakoyannis et al. (2010): we apply a logistic regression model to the individuals with information on type of first marriage (i.e., the complete cases) and then use the estimated model to impute missing cases. The model is as follows:

$$\ln \frac{p_i}{1-p_i} = \alpha + \beta T_i + \sum_j \gamma_j x_{ij} \quad (2)$$

where p_i denotes the probability of an exogamous marriage for individual i ; T is an individual's age at first marriage (which we have information on); and x_{ij} represents the values of variable j measuring an individual's socio-demographic background. The predictor variables in the model are thus the age at marriage (or time to event) and all variables that are used in the competing risks event history analysis with completed cases. In preliminary analysis we experimented with the imputation model using different combinations of background variables; the results were robust to different specifications. We use ten imputations ($m = 10$) in the final analysis presented here.

Results

Unadjusted rates of endogamous and exogamous marriage

Table 2 presents marriage rates (as averages over ages 15–44) from the multiple imputation models for natives, immigrants, and their descendants, without adjusting for any covariates. The unadjusted rates provide an overview of marriage patterns among population subgroups and show how widespread exogamous marriage is. First, we see that immigrant women from India and Pakistan/

Bangladesh are significantly more likely to marry than most other groups, including natives, whereas marriage rates are low among Caribbean immigrants, reflecting their higher age at marriage and low overall marriage levels. Marriage rates are lower for most descendants of immigrant groups than for immigrant groups themselves, suggesting the postponement of marriage among younger generations. However, marriage rates are relatively high among the descendants of immigrants from Pakistan/Bangladesh and low among people of Caribbean origin. The patterns for men are very similar, except that the differences in marriage rates between South Asians and other groups are smaller.

We also present marriage rates calculated separately for endogamous and exogamous marriages and the ratio of endogamous marriage rates relative to those of exogamous marriages (or rate ratios). Native British women are ten times more likely to marry within their group than outside it, which is expected (Table 2). There are significant differences among immigrants and their descendants. Immigrants from Europe are 50 per cent less likely to form an endogamous than an exogamous marriage, showing a clear preference for interethnic marriages. In contrast, those from India and Pakistan/Bangladesh are 5.4 and 15.3 times, respectively, more likely to marry within their own group than outside it. The corresponding figures for Caribbean and 'other' immigrants are 2.8 and 1.4. The descendants of immigrants exhibit a higher prevalence of exogamous marriage than immigrants, as expected, although the rates vary significantly across groups. While the descendants of European immigrants are 90 per cent less likely to form an endogamous than an exogamous marriage, people of Pakistani/Bangladeshi origin are 7.9 times more likely to marry within their group than outside it. Individuals of Indian descent are 1.5 times and those of Caribbean origin 1.3 times more likely to form an endogamous than an exogamous marriage. Again, the patterns are very similar for men.

Relative risks of endogamous and exogamous marriage among immigrants and their descendants

Next, we analyse endogamous and exogamous marriages by calculating marriage rates adjusted for a number of individual characteristics, first for immigrants and their descendants (in this subsection) and then for the native British population (in the following subsection). The results for immigrants and their descendants are presented in Table 3. Model 1

Table 2 Unadjusted rates for endogamous and exogamous first marriages for women and men in the UK, by migrant status and region of origin (per 1,000 person-years)

Women				
Migrant status and region of origin	All marriages	Endogamous marriages	Exogamous marriages	Ratio of rates (endogamous/exogamous)
Native	4.7	4.2	0.4	9.9
Immigrant				
<i>Europe</i>	4.2	1.3	2.9	0.5
<i>India</i>	8.0	6.7	1.3	5.4
<i>Pakistan/Bangladesh</i>	11.4	10.7	0.7	15.3
<i>Caribbean</i>	2.7	2.0	0.7	2.8
<i>Other</i>	4.6	2.7	2.0	1.4
Descendant of immigrant(s)				
<i>Europe</i>	4.3	0.4	3.8	0.1
<i>India</i>	4.9	3.0	2.0	1.5
<i>Pakistan/Bangladesh</i>	6.2	5.5	0.7	7.9
<i>Caribbean</i>	1.7	1.0	0.7	1.3
<i>Other</i>	2.7	0.8	1.9	0.4
Men				
Migrant status and region of origin	All marriages	Endogamous marriages	Exogamous marriages	Ratio of rates (endogamous/exogamous)
Native	3.5	3.2	0.4	8.1
Immigrant				
<i>Europe</i>	3.4	1.3	2.1	0.6
<i>India</i>	5.0	4.4	0.6	7.2
<i>Pakistan/Bangladesh</i>	6.1	5.7	0.4	14.6
<i>Caribbean</i>	2.4	1.9	0.6	3.4
<i>Other</i>	3.6	2.0	1.5	1.3
Descendant of immigrant(s)				
<i>Europe</i>	3.5	0.3	3.2	0.1
<i>India</i>	3.4	2.0	1.5	1.3
<i>Pakistan/Bangladesh</i>	4.2	3.5	0.6	5.6
<i>Caribbean</i>	1.5	0.8	0.7	1.2
<i>Other</i>	1.9	0.6	1.3	0.4

Note: 'Europe' includes other western industrialized nations.

Source: As for Table 1.

Table 3 Relative risks of endogamous and of exogamous marriage for female and male immigrants and their descendants in the UK

	Women				Men			
	Model 1		Model 2		Model 1		Model 2	
	Endogamous	Exogamous	Endogamous	Exogamous	Endogamous	Exogamous	Endogamous	Exogamous
Age								
15–19 years	0.29***	0.16***	0.26***	0.18***	0.08***	0.05***	0.07***	0.06***
20–24 years	0.71***	0.56***	0.69***	0.60***	0.46***	0.47***	0.46***	0.51***
25–29 years	1	1	1	1	1	1	1	1
30–34 years	0.67***	0.86	0.67***	0.81**	1.17**	1.20**	1.15	1.12
35–39 years	0.31***	0.66***	0.31***	0.61***	0.63***	0.92	0.62***	0.83
40–44 years	0.34***	0.46***	0.35***	0.43***	0.72**	1.00	0.70**	0.89
Birth cohort								
1950–59	1.19**	1.45***	1.13	1.46***	1.07	1.38***	1.00	1.34***
1960–69	1	1	1	1	1	1	1	1
1970–79	1.00	0.90	1.07	0.88	1.05	0.92	1.08	0.91
1980–94	0.95	0.87	1.09	0.78**	0.67***	0.79	0.71***	0.73**
Immigrant								
Europe	1	1	1	1	1	1	1	1
India	5.56***	0.53***	4.16***	0.58***	4.09***	0.36***	3.31***	0.45***
Pakistan/Bangladesh	9.80***	0.34***	5.56***	0.35***	5.38***	0.23***	3.22***	0.27***
Caribbean	1.37	0.18***	1.18	0.17***	1.18	0.18***	1.02	0.16***
Other	2.02***	0.69***	1.46***	0.75***	1.52***	0.71***	1.20	0.81
Descendant of immigrant(s)								
Europe	0.30***	1.22**	0.34***	0.97	0.20***	1.28**	0.21***	0.98
India	2.39***	0.77	2.45***	0.58***	1.62***	0.78	1.55***	0.59***
Pakistan/Bangladesh	5.35***	0.38***	3.99***	0.30***	4.34***	0.51**	3.14***	0.38***
Caribbean	0.72	0.22***	0.69	0.18***	0.54***	0.26***	0.47***	0.20***
Other	0.62**	0.70***	0.69	0.56***	0.45***	0.66**	0.44***	0.50***
Education								
No or lower qualifications			1.03	1.04			1.04	1.01
GCSE			1	1			1	1
A-level/other higher degree			0.75***	1.04			0.81**	1.04
Tertiary degree			0.61***	0.99			0.73***	1.07
English skills								
English is first language			1	1			1	1
Speaks without problems			1.29***	1.14			1.40***	0.96
Speaks with problems			1.56***	0.84			1.58***	0.75
Religion makes a difference in life								
No difference			1	1			1	1
Little difference			1.26**	1.04			1.14	0.95

(Continued)

Table 3 Continued.

	Women				Men			
	Model 1		Model 2		Model 1		Model 2	
	Endogamous	Exogamous	Endogamous	Exogamous	Endogamous	Exogamous	Endogamous	Exogamous
<i>Some difference</i>								
<i>Great difference</i>			1.32***	1.09			1.31***	0.98
Number of siblings			1.69***	1.07			1.71***	0.98
<i>Only child</i>								
<i>1</i>			1	1			1	1
<i>2-3</i>			0.93	1.31**			0.94	0.99
<i>4+</i>			0.98	1.41***			1.08	1.00
Migration history (for immigrants)			1.13	1.25**			1.19**	1.02
<i>Time before arrival in UK</i>			1.08	0.51***			0.77***	0.40***
<i>Time after arrival in UK</i>			1	1			1	1
Constant	0.0023***	0.0057***	0.0019***	0.0067***	0.0038***	0.0034***	0.0024***	0.0054***

Notes: Significance levels: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. 'Europe' includes other western industrialized nations.

Source: As for Table 1.

controls for age and cohort; all risks are relative to those of immigrants from Europe. The results largely support what was previously observed. Looking first at endogamous marriage, women from non-European countries exhibit a higher risk of intra-group marriage than those from European countries. The risks are particularly high for female immigrants from India and Pakistan/Bangladesh, who are 5.6 and 9.8 times, respectively, more likely to form an endogamous marriage than immigrants from European countries. The patterns also vary among the descendants of immigrants. Women of Indian and Pakistani/Bangladeshi origin are 2.4 and 5.4 times, respectively, more likely to form an endogamous marriage than European immigrants, whereas those of European and Caribbean origin exhibit 70 and 28 per cent lower rates of endogamous marriage, respectively. Next, we also include in the analysis an individual's educational level, English language skills, importance of religion, and number of siblings (Model 2). The differences between the migrant groups decline, particularly between South Asians and others, but significant differences persist. This further analysis shows that language skills (for immigrants) and religiosity (for both immigrants and their descendants) explain part of the higher rates of endogamous marriage seen initially among South Asians. We also control for immigrants' migration history and find that the patterns persist. Again, for men, the results are similar, although differences across migrant groups are smaller than for women.

The patterns for exogamous marriage are the opposite, as expected. All groups exhibit lower rates of marrying outside their group than immigrants from European countries, except for descendants of European origin (Table 3). The reasons very likely vary between the migrant groups. While relatively low levels of exogamous marriage among Pakistani/Bangladeshi women show the higher prevalence of intra-group marriage over extra-group marriage among these populations, the relatively low levels among Caribbean women are explained by their low overall marriage rates. Previous research has shown that Caribbean people are more likely to form non-marital unions than marriages or not to form any unions at all (Hannemann and Kulu 2015).

The effects of other covariates are as follows. Endogamous marriage rates decline with increasing levels of education, indicating a later age at marriage among highly educated individuals. Better English language skills increase the propensity of forming an exogamous marriage and decrease the likelihood

of endogamous marriage, as expected. Religious people are more likely to marry within a group than non-religious individuals, which is also as expected. Individuals who come from large families are more likely to marry outside their ethnic group. Age-wise, endogamous marriages are more likely to be formed at younger ages and exogamous marriages at older ages. Finally, and interestingly, the relative risks of endogamous marriage have not changed across birth cohorts, whereas the risks of exogamous marriage have declined, which is perhaps surprising. We would expect some decline in both types of marriages due to the postponement of marriage to later ages; however, the finding may reflect the dynamics of group sizes and their effects. The populations of all non-native ethnic groups have increased over time and the chances of finding a spouse from one's own ethnic group have therefore increased as well. For immigrants, the likelihood of forming an exogamous marriage is significantly lower before moving to the UK, as expected (Model 2).

In the previous analysis, all exogamous marriages were considered as one group. To gain a better understanding of marriage patterns among immigrants and their descendants, we next distinguish between intermarriages of immigrants and their descendants with: (a) native British individuals; and (b) individuals from other ethnic minorities (Table 4). The analysis shows that female immigrants from non-European countries are 39–86 per cent less likely to marry a native British person than immigrants from European countries. Rates of intermarriage with native British people are relatively similar among the descendants of immigrants. Women of Indian descent are 56 per cent less likely, those of Pakistani/Bangladeshi origin 71 per cent less likely, and those of Caribbean descent 86 per cent less likely to marry a native British man. In contrast, the descendants of European immigrants exhibit a very similar likelihood to their parents' generation of marrying a native. The effects of other covariates show that the likelihood of marrying a native person is higher among individuals with better English language skills and those who are less religious.

There is some variation between ethnic groups in the likelihood of marrying an individual from a different ethnic minority group. Indian women exhibit a somewhat higher likelihood of marrying an individual from another country, whereas those of Caribbean origin again have low intermarriage rates, which are related to their low overall marriage rates. For women of Indian origin, it is possible that marriages between individuals from India and those

of Indian descent from East Africa account for the elevated intermarriage rates. The effects of covariates provide some indirect support for the conjecture that intermarriage with other ethnic minorities is high among religious people (i.e., with people of similar religious/ethnic backgrounds) and among those who come from larger families. This could be because exogamous marriages with native British people occur more often among less religious people because they are a select group (e.g., more liberal), whereas exogamous marriages with other ethnic minorities occur more often among more religious people because they tend to marry someone with a similar religious background. Again, the patterns of intermarriage are very similar among men, except that family of origin seems to play little role in exogamous marriages with other ethnic groups.

Relative risks of endogamous and exogamous marriage among the native British population

Finally, we investigate determinants of endogamous and exogamous marriages among the native British population, for both men and women. Table 5 shows that for women, both exogamous and endogamous marriage rates are lower among later cohorts and higher among more religious people. Exogamous marriages are formed at somewhat later ages. The patterns among men are similar, although with some interesting exceptions. First, the age differences between endogamous and exogamous marriages are more pronounced for men, with exogamous marriages formed at significantly later ages. Second, highly educated men, unlike highly educated women, have an elevated propensity to marry someone from an ethnic minority group. Third, it seems that men who come from large families are more likely to form endogamous marriages than those from smaller families, whereas this is not seen for women.

In the previous analysis, exogamous marriages included all marriages with immigrants or their descendants. Next, in Table 6, we distinguish between two types of exogamous marriage among native British people: (a) intermarriage with an immigrant or a descendant with no British parent; and (b) intermarriage with a descendant of one immigrant parent and one British parent (a 'half-British' person). The effects of covariates for women are relatively similar, that is, there are no major differences in the patterns of the two types of intermarriage (Table 6). For men, we detect an interesting and important difference. The effect of education is now even

Table 4 Relative risks of endogamous marriage and of exogamous marriage with a native British or other foreign partner, female and male immigrants and their descendants in the UK

	Women			Men		
	Endogamous	Exogamous with native British	Exogamous with foreign other	Endogamous	Exogamous with native British	Exogamous with foreign other
<i>Age</i>						
<i>15–19 years</i>	0.25***	0.20***	0.20***	0.07***	0.08***	0.06***
<i>20–24 years</i>	0.66***	0.64***	0.64**	0.45***	0.62***	0.43***
<i>25–29 years</i>	1	1	1	1	1	1
<i>30–34 years</i>	0.68***	0.88	0.70	1.17*	1.04	1.22
<i>35–39 years</i>	0.34***	0.65**	0.46**	0.64**	0.75	0.90
<i>40–44 years</i>	0.38***	0.43***	0.35**	0.77	0.69	1.11
<i>Birth cohort</i>						
<i>1950–59</i>	1.02	1.75***	1.31	0.95	1.46**	1.34
<i>1960–69</i>	1	1	1	1	1	1
<i>1970–79</i>	1.08	0.91	0.80	1.09	0.84	0.94
<i>1980–94</i>	1.13	0.78	0.65*	0.73**	0.68	0.75
<i>Immigrant</i>						
<i>Europe</i>	1	1	1	1	1	1
<i>India</i>	4.06***	0.16***	1.51	3.19***	0.10***	1.39
<i>Pakistan/ Bangladesh</i>	5.37***	0.31**	0.58*	3.07***	0.22***	0.55*
<i>Caribbean</i>	1.13	0.14***	0.37*	1.00	0.15***	0.19*
<i>Other</i>	1.43**	0.61***	1.17	1.16	0.55***	1.61*
<i>Descendant of immigrant(s)</i>						
<i>Europe</i>	0.30***	1.00	0.59*	0.20***	1.02	0.61*
<i>India</i>	2.50***	0.44***	0.90	1.51*	0.45***	1.02
<i>Pakistan/ Bangladesh</i>	3.98***	0.29**	0.34*	3.03***	0.32**	0.58
<i>Caribbean</i>	0.71	0.14***	0.29**	0.44***	0.18***	0.30**
<i>Other</i>	0.69	0.43***	0.93	0.42**	0.32***	1.05
<i>Education</i>						
<i>No or lower qualifications</i>	1.01	1.07	1.05	1.03	1.14	0.91
<i>GCSE</i>	1	1	1	1	1	1
<i>A-level/other higher degree</i>	0.75***	0.93	1.15	0.84*	0.96	1.04
<i>Tertiary degree</i>	0.64***	0.90	0.97	0.77**	1.08	0.90
<i>English skills</i>						
<i>English is first language</i>	1	1	1	1	1	1
<i>Speaks without problems</i>	1.34***	0.79*	1.69***	1.41***	0.69*	1.26
<i>Speaks with problems</i>	1.63***	0.44**	1.45	1.61***	0.52	1.00
<i>Religion makes a difference in life</i>						
<i>No difference</i>	1	1	1	1	1	1
<i>Little difference</i>	1.36*	0.89	1.40	1.16	0.80	1.51*
<i>Some difference</i>	1.53***	0.89	1.30	1.43**	0.72**	1.48*
<i>Great difference</i>	1.97***	0.76*	1.44	1.87***	0.63**	1.51*
<i>Number of siblings</i>						
<i>Only child</i>	1	1	1	1	1	1
<i>1</i>	0.88	1.56**	1.17	0.88	1.26	0.86
<i>2–3</i>	0.92	1.51**	1.56*	1.02	1.17	0.98
<i>4+</i>	1.10	1.21	1.34	1.16	1.03	1.03
<i>Migration history</i>						
<i>Time before arrival in UK</i>	1.13*	0.53***	0.42***	0.78***	0.44***	0.36***

(Continued)

Table 4 Continued.

	Women			Men		
	Endogamous	Exogamous with native British	Exogamous with foreign other	Endogamous	Exogamous with native British	Exogamous with foreign other
<i>Time after arrival in UK</i>	1	1	1	1	1	1
Constant	0.0018***	0.0044***	0.0011***	0.0023***	0.0044***	0.0011***

Notes: Significance levels: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. 'Europe' includes other western industrialized nations.

Source: As for Table 1.

Table 5 Relative risks of endogamous and of exogamous marriage, native British women and men in the UK

	Women		Men	
	Endogamous	Exogamous	Endogamous	Exogamous
Age				
15–19 years	0.27***	0.19***	0.08***	0.07***
20–24 years	0.94**	0.68***	0.70***	0.53***
25–29 years	1	1	1	1
30–34 years	0.67***	0.81	0.83***	1.26*
35–39 years	0.31***	0.35***	0.46***	0.93
40–44 years	0.31***	0.42***	0.47***	0.94
Birth cohort				
1950–59	1.73***	1.47***	1.56***	1.21
1960–69	1	1	1	1
1970–79	0.69***	0.64***	0.76***	1.03
1980–94	0.39***	0.47***	0.46***	0.60**
Education				
No or lower qualifications	0.97	0.86	0.87***	0.81
GCSE	1	1	1	1
A-level/other higher degree	0.99	1.16	1.09**	1.10
Tertiary degree	0.73***	1.09	0.87***	1.49***
Religion makes a difference in life				
No difference	1	1	1	1
Little difference	1.10***	1.08	1.02	1.03
Some difference	1.11***	1.26*	1.07	1.42***
Great difference	1.15***	1.22	1.06	1.39**
Number of siblings				
Only child	1	1	1	1
1	1.02	1.07	1.09*	1.04
2–3	1.02	0.97	1.21***	1.02
4+	0.98	0.95	1.21***	1.20
Constant	0.0076***	0.0008***	0.0053***	0.0005***

Note: Significance levels: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Source: As for Table 1.

more pronounced: in comparison with less educated men, highly educated men are significantly more likely to marry an immigrant or their descendant with no British mother or father; such marriages are also formed at later ages.

Summary and discussion

This is the first study to analyse the formation of interethnic marriages in the UK from a longitudinal

perspective. The study also demonstrated a novel way of determining the type of marriage for individuals with missing information on the origin of their spouse. Applying event history analysis to life-history data from the USoc study showed the following results. First, we observed significant differences between immigrant groups in the likelihood of marrying within and outside their own ethnic groups. While immigrants from European countries had relatively low endogamous and high exogamous marriage rates, the patterns were the opposite for those

Table 6 Relative risks of endogamous marriage and of exogamous marriage with an immigrant¹ or 'half-British' immigrant,² native British women and men in the UK

	Women			Men		
	Endogamous	Exogamous with immigrant ¹	Exogamous with 'half-British' person ²	Endogamous	Exogamous with immigrant ¹	Exogamous with 'half-British' person ²
Age						
15–19 years	0.27***	0.16***	0.22***	0.08***	0.06***	0.09***
20–24 years	0.94**	0.63***	0.78	0.70***	0.49***	0.62**
25–29 years	1	1	1	1	1	1
30–34 years	0.67***	0.87	0.66	0.83***	1.45**	0.98
35–39 years	0.31***	0.38***	0.26***	0.46***	1.10	0.63
40–44 years	0.31***	0.47**	0.32**	0.47***	1.15	0.75
Birth cohort						
1950–59	1.73***	1.48**	1.34	1.56***	1.18	1.31
1960–69	1	1	1	1	1	1
1970–79	0.69***	0.68**	0.51***	0.76***	1.12	0.90
1980–94	0.40***	0.56**	0.25***	0.46***	0.70	0.41**
Education						
No or lower qualifications	0.96	0.87	1.00	0.87***	0.80	0.91
GCSE	1	1	1	1	1	1
A-level/other higher degree	0.99	1.10	1.27	1.08**	1.13	1.16
Tertiary degree	0.73***	1.14	1.02	0.87***	1.85***	1.03
Religion makes a difference in life						
No difference	1	1	1	1	1	1
Little difference	1.10***	1.08	1.10	1.03	1.10	0.86
Some difference	1.11***	1.14	1.58***	1.07*	1.42**	1.35
Great difference	1.15***	1.19	1.43	1.06	1.63***	1.17
Number of siblings						
Only child	1	1	1	1	1	1
1	1.01	0.95	1.55*	1.08	1.19	1.04
2–3	1.02	0.85	1.32	1.20***	1.23	0.94
4+	0.98	0.82	1.04	1.21***	1.30	1.16
Constant	0.0076***	0.0005***	0.0003***	0.0054***	0.0002***	0.0002***

¹Immigrant here refers to an immigrant or a descendant with no British parent.

²'Half-British' person refers to a second-generation person with one British parent and one immigrant parent.

Note: Significance levels: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Source: As for Table 1.

from India and Pakistan/Bangladesh; all South Asians exhibited a high propensity towards marrying a partner from their own ethnic group. Second, the descendants of immigrants exhibited lower endogamous and higher exogamous marriage rates than their parents; however, for some ethnic groups, particularly Pakistanis/Bangladeshis, the differences across generations were small. Further, among the second generation, the levels of endogamy were high and those of intermarriage low. Third, once we controlled for the socio-demographic and cultural characteristics of individuals, the differences between various groups of immigrants and their descendants decreased but persisted. Endogamy rates were low and exogamy rates (for marriages with a native British person) high among both women and

men with better English skills, individuals who were less religious, and those who were older. Fourth, among the native British population, highly educated men and women exhibited lower endogamous marriage rates, indicating later and lower marriage within their own group; however, highly educated men had an elevated likelihood of forming an inter-ethnic marriage. Exogamous marriages were also formed at later ages, particularly for men.

The analysis thus supported the findings of previous studies in Europe and the UK. However, it specified the effect of various individual characteristics in the British context and revealed some important differences across population subgroups. While high levels of intra-group marriage among immigrants from non-European countries, particularly

South Asia, were not surprising, persistently high endogamy and low exogamy rates among the descendants of South Asian immigrants require research attention. Our further analysis revealed that those who married outside the group often formed a union with someone from a different ethnic minority background rather than with a native British person. Our analysis also demonstrated that the main results persisted once we adjusted for individual socio-demographic and cultural characteristics to control for the differences in population composition between the groups. Clearly, the observed marital patterns seem to support the idea that South Asian communities in Britain, particularly Pakistanis/Bangladeshis, are relatively closed groups with few signs of marital assimilation or integration. Muttarak and Heath (2010) have called this a pluralistic path, whereas Peach (2009) has argued that South Asians in the UK, particularly Indians, follow the Jewish model of integration, maintaining their cultural distinctiveness despite more or less successful economic integration among Indians and Pakistanis/Bangladeshis, respectively. While previous studies have reported a gradual increase in exogamy among South Asians (Berrington 1994, 1996; Coleman 1994), our study showed that changes across generations among Pakistanis/Bangladeshis have been slower than expected.

In contrast, immigrants from Europe and their descendants have experienced rapid marital assimilation in the UK. European immigrants had a relatively low propensity of forming endogamous marriages and a high likelihood of marrying someone outside the group, especially a native British person, which suggest that marriage migration may have played an important role. The descendants of European immigrants were very likely to form exogamous marriages. Previous research has suggested that the Caribbean population has followed the Irish model of economic and social integration (Peach 2009). Our analysis of marriage patterns showed some increase in exogamy rates among the descendants of Caribbean immigrants, compared with the first generation, although this increase was not large because the share of mixed marriages was relatively high among Caribbean immigrants. Interestingly, however, further analysis revealed that those of Caribbean origin had high propensities to marry both natives and individuals of other ethnic minority groups. Another interesting finding was that Caribbean immigrants and their descendants exhibited low rates of both endogamous and exogamous marriages, which suggests that the descendants of Caribbean immigrants, in particular, typically marry later or

not at all. Considering these findings together with previous findings of high repartnering levels among Caribbean people (Hannemann and Kulu 2015), we clearly see the diversity of marriage patterns among the Caribbean population. Their pluralistic model thus includes individuals who marry natives, those who marry other Caribbean people, those who marry individuals from other ethnic groups, and those who do not marry (or form a union) at all.

The analysis showed that some exogamous marriages among the native British population were those in which the spouse had one immigrant and one native parent; the analysis of 'truly' exogamous marriages (where the spouse was an immigrant or descended from two immigrant parents) showed that these were formed at later ages, particularly for men. This may be interpreted in at least two different ways. First, those individuals who do not find a suitable partner from their own ethnic group may search for a partner from other groups; second, this is a select group of people in terms of their values, life experience, and potentially also resources. The latter interpretation is indirectly supported by the finding that highly educated British natives had an elevated likelihood of marrying an immigrant or a descendant of two immigrants, although this pattern was observed only for men. Interestingly, the propensity for intermarriage was also relatively high among more (rather than less) religious people, which seems to suggest the spread among natives of marriages in which spouses have the same religion but different ethnic backgrounds. This corresponds to the findings of a study on inter-ethnic friendships by Muttarak (2014), which showed that when people do have friends from a different ethnic group, those friends tend to have relatively similar religious backgrounds.

We conducted a series of further analyses to determine how sensitive the results were to different model specifications. In our main analysis, we used the educational level measured at the time of the study, assuming that most individuals had completed their education before they married. We also fitted models in which we included education as a time-varying variable and imputed the age of completion of various educational levels, following the general structure of the British educational system (e.g., GCSE at age 16; A-level at age 18; tertiary degree at age 21). The comparison showed that the effects of other variables changed little, no matter which specification of education was used; however, the impact of education itself varied slightly across the two specifications (see Tables A2 and A3 in the supplementary material).

We also compared the results of our multiple imputation models with those obtained using conventional methods for analysing data with missing information (deleting missing cases or recoding them as a separate category). The comparison revealed some differences in the results, supporting the argument that conventional methods may introduce a bias. Interestingly, however, the main conclusions—significant differences in marriage rates across immigrants and their descendants—were similar across the three different strategies, despite the different magnitudes of the coefficients (see Tables A4 and A5 in the supplementary material).

This study analysed determinants of mixed marriage. Previous studies have suggested that interethnic unions are more likely to be non-marital cohabitations than marital relationships and this means that our study of marriage would underestimate the spread of interethnic unions (Muttarak and Heath 2010). However, the issue is not as serious as it looks at first glance in the case of the UK. First, recent longitudinal research has shown that cohabitation is rare among Indians, Pakistanis, and Bangladeshi in the UK, both among immigrants and their descendants; also, there is little (if any) change across birth cohorts (Hannemann et al. 2014). Those South Asians who are in interethnic non-marital unions are likely to be a select group. Although the group is theoretically interesting, its size is still too small for further analysis. In contrast, cohabitation is common among Europeans and those of Caribbean descent. The share of mixed unions among these populations would thus likely be slightly higher than the share of mixed marriages (Muttarak and Heath 2010), which is already relatively high. This all supports our results on significant differences in the spread of mixed marriage across ethnic groups.

In summary, using life-history data from the USoc study, this study has shown significant differences among immigrants and their descendants in the likelihood of marrying within and outside their ethnic groups. While immigrants from European countries and their descendants had relatively high exogamous marriage rates, South Asians exhibited a high likelihood of marrying a partner from their own ethnic group. Future research should also examine non-marital unions and investigate second and subsequent unions. This would allow us to gain further insights into partnership patterns among the Caribbean population, which has high cohabitation and repartnering levels. It would also be possible to model the transitions to endogamous and exogamous unions jointly to

allow an even better comparison of patterns across migrant groups.

Notes and acknowledgements

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- 2 The research leading to these results has received funding from the European Union's Seventh Framework Programme (FP7/2007–2013) under grant agreement no. 320116 for the research project FamiliesAndSocieties; European Commission.
- 3 The authors are also grateful to three anonymous referees and the editor for valuable comments and suggestions on a previous version of this paper.
- 4 The data used in this study are from Understanding Society: The UK Household Longitudinal Study, which is conducted by the Institute for Social and Economic Research at the University of Essex and funded by the Economic and Social Research Council. The data were collected by NatCen and the genome-wide scan data were analysed by the Wellcome Trust Sanger Institute. Information on how to access the data can be found on the Understanding Society website (<https://www.understanding-society.ac.uk/>).

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