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Kinship, heritage, and ethnic choice: ethnolinguistic registration across four generations in contemporary Finland

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We studied how individuals' ethnolinguistic affiliation relates to the ethnolinguistic structure of kinship in contemporary Finland, a society in which Finnish-speaking and Swedish-speaking ethnolinguistic groups have coexisted for centuries and mixed marital unions are common. Using multigenerational data from the population register, we determined how the ethnolinguistic registration of children born in 1990–2015 relates to three generations of ancestors. We created a family tree that links children to their parents, four grandparents and eight great grandparents. Our intention was to both map the ethnolinguistic background of young people and predict a child's affiliation based on their ancestry. The data revealed that ethnolinguistic affiliation is a more fluid and complex feature than expected when assessed only through child and parental characteristics. We found substantial diversity in ethnolinguistic background within the Swedish-speaking minority group, while most individuals in the Finnish-speaking majority group had a uniform background. We identified three types of bias in the ethnolinguistic affiliation of mixed-origin children: a matrilineal bias, a kinship majority bias and a Swedish ethnic minority bias. The analyses advanced our understanding of how the size of minority groups can shrink even when most couples in mixed unions favour minority group affiliation for their children.

Introduction

With increasing globalization, many traditionally homogeneous Western societies have also seen an increasing diversity of ethnic, racial, and religious groups over recent decades. However, this trend runs parallel to the shrinkage or even disappearance of some long-established minority linguistic or ethnic groups (Maffi, 2005; Harrison, 2008). The latter process began with the emergence of modern nation states, but it continues today, aided by the influence of educational systems, mass media, and other societal changes. Intermarriage is one of the most important demographic factors that shapes the patterns of ethnic diversity because it sometimes creates sizeable numbers of individuals of mixed origin whose ethnic identity is not self-evident (Waters, 2000; Rockquemore and Arend, 2002). In most European countries, intermarriage has been more prevalent over time because of increasing migration flows (Lucassen and Laarman, 2009; Wiik and Holland, 2018). Studying mixed-origin families is thus essential to understanding the processes associated with the intergenerational transmission of ethnic identity. Questions of assimilation, integration, and maintenance of ethnic identity across increasing shares of individuals with mixed ethnic background will define European societies in the current century. It will be a central aspect of the tensions between the historical patterns of state formation, where many European nation states had centred around a single ethnolinguistic group, and other ideologies of state identity that have focused on citizenship and residence, which deemphasize ancestry (Castles, 1995).

Ethnic background and ethnic mixedness are concepts that traditionally have been analysed from the

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perspective of offspring and their parents, in spite of the fact that they involve more than two generations by definition. A multigenerational approach that incorporates grandparents and even great grandparents would thereby allow for more analytic depth and higher complexity. However, due to the lack of suitable and reliable data, there has been no quantitative study on this topic of the design we present here.

Finland provides an unusual opportunity to address this topic. The longitudinal population registration system requires that each person's unique mother tongue be recorded. Thus, generations can be matched, making it possible to create a family tree that links children to their parents, grandparents, and great grandparents. In our study, we used the multigenerational kinship structure to map the ethnolinguistic background of children born in the period from 1990 to 2015, and to predict the affiliation of the child based on its ancestry. We focused on the native ethnolinguistic groups of Finnish speakers and Swedish speakers, who account for 88 per cent and 5 per cent, respectively, of the country's total population. In English-language literature, the two groups, which have co-existed in Finland for centuries, are often referred to as Finnish-speaking Finns and Swedish-speaking Finns. This choice of words may be somewhat misleading in the sense that it suggests that the two groups speak different languages but otherwise belong to the same ethnicity. However, the term 'Finns' in this context denotes an affiliation to the nation-state Finland, not to Finnish ethnicity. In contrast, the Swedish-speaking numerical minority refers to itself as 'finlandssvenskar', which can be translated as 'Finnish Swedes' or 'Finland's Swedes'.

This study was primarily descriptive in nature and examined how combinations of ethnolinguistic registration among parents, grandparents, and great grandparents affect and shape the ethnolinguistic registration of their descendants. To the best of our knowledge, it is the first study to examine in detail the ethnolinguistic composition of kinship and its importance for the ethnolinguistic identity of descendants. As a result, we were able to make robust and powerful quantifications of topics that have previously been examined primarily in immigration contexts or through qualitative analyses.

The study context was well suited to examine multigenerational aspects of ethnic identity. Finnish speakers and Swedish speakers have a largely equal status in Finnish society. There has not been any drastic assimilation of one group into the other and the population proportions and intermarriage rates have been relatively stable during recent decades. These underpinnings are believed to provide new insights for the literature on ethnic and cultural identity (De Vries, 1990). This would particularly be the case for societies where the government, as a result of a long coexistence of ethnic groups with deep historical roots, acknowledges more than one language at the national or regional level, such as in Switzerland, Belgium, Canada, Spain, and many countries outside the Western world. It is also informative for understanding ethnic choice of the increasing number of children of native-immigrant couples in Europe, given that many intra-European immigrant groups attain standards of living comparable to natives, and are exposed to little ethnic discrimination. Quantitative research has been conducted concerning such high-income contexts, but it has not used longitudinal data and has mostly been based on persons from monolingual families (Minett and Wang, 2008; Kandler, 2009; Kandler, Unger and Steele, 2010; Verdoodt, 2017). Studies on intermarriage and language use, on the other hand, have typically been concerned with immigrant assimilation into the majority culture, while those on sociolinguistic change generally miss the intergenerational component (Stevens, 1985, 1992). Thus, our article also makes a contribution to linguistic demography.

This study had two principal objectives. One was to compare the importance of the mother and father's kin to ethnolinguistic registration, relating to the question of how ethnic identity is driven on the female or male side of the family. The other objective was to explore whether the simple proportion of (extended) kin with a specific ethnolinguistic background helps to explain the ethnolinguistic registration of descendants or whether the dominant ethnolinguistic background matters more. This aspect relates to the question of how size differences between ethnolinguistic groups depend on ethnolinguistic registration across more than two generations. It is an essential issue from the minority group perspective because when groups are of different sizes, intermarriage will produce proportionally more lineages where a large number of kin belong to the majority group.

Context

Up until the past three decades, Finland had experienced very little immigration of people of foreign descent. The country is nevertheless not mono-ethnic, owing to the fact that it was part of Sweden from the 12th century until 1809 when it came under Russian rule and remained so until declaring its independence in 1917. In fact, Finnish and Swedish speakers have coexisted peacefully in Finland for almost a thousand years. However, Swedish speakers are heavily outnumbered by Finnish speakers at the national level. Nevertheless, the Swedish-speaking community has continuously had a strong presence in some principal cities, such as Helsinki, Vaasa, and Turku, and constitutes a sizeable

minority or even a majority in many rural or semi-rural areas along the western and southern coastline, including the Åland Islands.

Finnish and Swedish have been the two official languages of Finland since 1917, and were declared to have equal status in 1863. Currently, the two communities are commonly described as having equal status. This equality is also reflected in the fact that Finnish and Swedish are the two national languages of Finland. The two ethnolinguistic communities maintain coexisting identities and institutions. There are two parallel school systems, one in Finnish and the other in Swedish, from kindergarten to university (McRae, 1997). In today's Finland, the Swedish language is present in most social domains (Obućina and Saarela, 2020). It is used in public service and education, and even one brigade of the Finnish Army is Swedish-speaking. The Swedish-speaking mass media landscape is rich and diverse, which contributes to the vitality of the language. With the exception of those living in the autonomous region of the Åland Islands, most Swedish speakers born after the Second World War are able to speak Finnish as well. In contrast, a notably smaller proportion of Finnish speakers are able to communicate in Swedish; this is particularly the case for those who live outside of the Swedish speakers' main settlement areas.

The social distance between the two groups is low, and social discrimination of one or the other group is generally absent. Yet, a number of factors still suggest that affiliation with an ethnic group is a salient dimension of social status in Finland. Swedish speakers tend to have better health than Finnish speakers (Reini and Saarela, 2021) and notably lower divorce and separation rates (Saarela and Finnäs, 2014), and they are assumed to have higher levels of social capital (Finnäs, 1997). They are also somewhat better socioeconomically positioned (Härtull and Saarela, 2021), albeit, in most respects, variation across regions is more significant than differences across the two ethnolinguistic groups. Voting behaviour among Swedish speakers also corroborates the view of the salience of ethnolinguistic identity. Around two-thirds of Swedish speakers vote for the Swedish People's Party, whose primary aim is to maintain the importance of the Swedish language in the society and protect the Swedish-speaking community's interests (Westinen, 2015).

The population registration system in Finland requires that a person be registered as either a Finnish speaker or a Swedish speaker or as belonging to some other ethnolinguistic group. Multiple affiliations are not allowed. Consequently, we can assess each individual's ethnolinguistic background in terms of how previous generations are registered using multigenerational data. The registration of the 'mother tongue' of a child usually occurs at birth and is made by the parents. It is possible to switch the affiliation in the population register, but few persons do so, meaning that ethnolinguistic affiliation, as studied here, is typically a decision made by the parents. Registration is an unconstrained decision, with practically no legally binding consequences. However, the choice of ethnic affiliation is indicative of parents' desires regarding the dominant language during their child's upbringing (Saarela and Finnäs, 2016). As an example, an overwhelming majority of children attend school in the language in which they are registered (Saarela, 2021). So, although not binding, the parental decision on ethnic affiliation establishes with great precision the ethnolinguistic affiliation and self-identity later in life.

In spite of the long history of peaceful coexistence, intermarriage between Finnish and Swedish speakers was not so common before the second part of the 20th century. This was because in the early 20th century, people found their life partner mostly within a small geographical area, which thus hindered mixed marriages (Finnäs, 2015). Currently, around four out of ten Swedish speakers have Finnish-registered partners (Saarela, 2021). Intermarriage in Finland is to a certain degree gendered because across all child birth cohorts, the parental combination where the mother is Finnish-speaking and the father is Swedish-speaking is notably more common than the parental combination where the mother is Swedish-speaking and the father is Finnish-speaking (Figure 1). As a result of the increased prevalence of mixed marriages, the share of mixed births in relation to all births to Swedish-speaking parents increased from 25 per cent in the early 1950s to about 50 per cent in the early 1980s, after which it fluctuated modestly (Figure 1). However, a notable change in the ethnolinguistic affiliation of mixed-background children has taken place over the last couple of decades. Whereas around one-third of the children born to mixed families in the 1950s were registered as Swedish speakers, this was the case with more than 60 per cent of those born in the late 2010s (Finnäs, 2013; Saarela, 2021).

Formation and transmission of ethnic identity across generations

When heritage is homogeneous, descendants' ethnic identities rarely deviate from those of their ancestors, especially in non-migrant groups. Along with heritage, preferences are a major force that determine an individual's ethnic identity. At early ages, it is mainly parental preferences concerning ethnic identity that matter, whereas their children's preferences are formed later (Xie and Goyette, 1997). The importance of preferences is stronger for individuals of mixed ethnic heritage and for individuals who live in social contexts

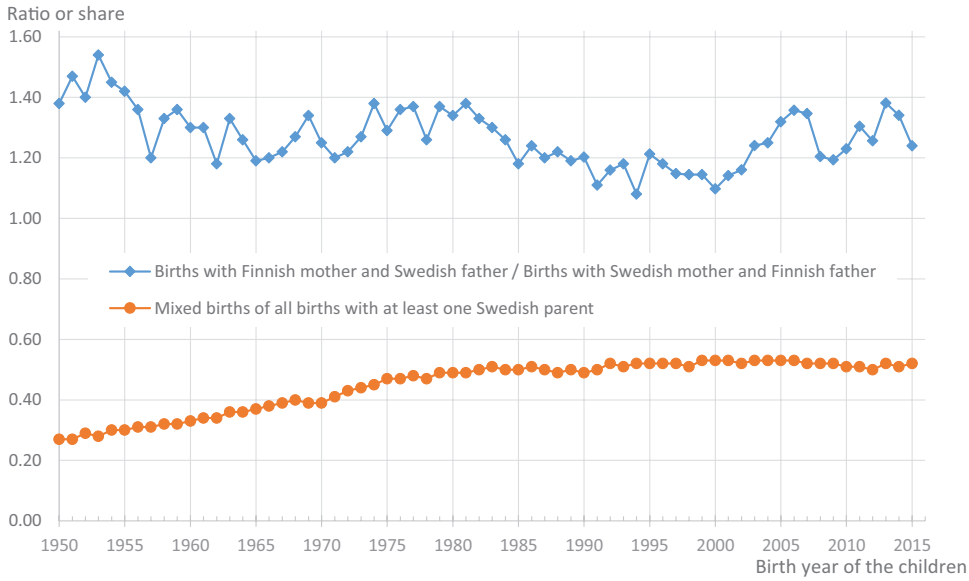

Figure 1 Prevalence of ethnolinguistically mixed births and their parental ethnolinguistic composition by birth year of the children

heavily dominated by other ethnic groups where implicit or explicit assimilation pressures are stronger. In mixed couples, each partner is assumed to prefer to transmit their own ethnicity, rather than the partner's, to the children, but the partners may not have equally pronounced preferences for transmission. Preferences are most often not observed in empirical studies, but their strength can be assumed to be associated with family and contextual characteristics and to interact with parental gender and the kinship structure.

Finnish, Swedish, and other Northwestern European kinship systems are bilateral in the sense that relationships with kin are traced through both women and men (Moring, 2003). Both female and male kinship play an important role in shaping an individual's identity (Parsons, 1943; Schneider, 1968; Murray, 1983). For instance, as in most other Western countries, inheriting the father's surname has been nearly universal in Finland. On the other hand, contrary to some other social contexts, such as that of the United States (Smith, 1984; Waters, 1990; Qian, 2004), intermarried mothers in Finland transmit their ethnicity more often than fathers (Finnäs and O'Leary, 2003; Obućina and Saarela, 2020). In respect to the transmission of ethnicity across two generations, about 55 per cent of children born in mixed families today are registered as Swedish speakers if the father is a Swedish speaker, but close to 85 per cent if the mother is a Swedish speaker (Saarela, 2021). When also considering the trends shown in the previous section, this implies that Swedish-speaking women are both less likely than Swedish-speaking men to form a mixed union and, once in a mixed union, less likely to have a child affiliated with the Finnish-speaking majority. It is possible that a comparably strong ethnolinguistic awareness among Swedish-speaking women may underlie these patterns. In line with the concept of mothers as carriers of minority culture (Phinney *et al.*, 2001), some previous research (Obućina and Saarela, 2020) has suggested that Swedish-speaking women care more about traditions and customs than Swedish-speaking men but also more than Finnish-speaking men and women.

While parents evidently influence their offspring's ethnic identity, the issue can be more complex (Duncan and Trejo, 2011). Looking beyond the parental generation may therefore provide additional insights into the understanding of the intergenerational transmission of ethnicity. Even though this study was concerned with ethnic identity, which is primarily a result of parental choice, the ethnic structure of extended kin may be important. This is because when parents choose the ethnolinguistic registration for children, those of mixed heritage themselves will most likely have weaker ethnic awareness than individuals affiliated with the same group, but who grew up in a mono-ethnic family setting. Furthermore, when deciding about the child's ethnolinguistic affiliation, parents may take into account the ethnic affiliation of the grandparents or some other kinship members who, they believe, will become important in the child's upbringing. It cannot be ruled out that some parents will be exposed to grandparental pressure when it comes to choosing the affiliation of the child and that such pressure will be stronger for parents of uniform origin than for those of

mixed origin. In spite of the sizeable amount of literature on the Swedish-speaking population in Finland, little is known about how group-specific traits are maintained over more than two generations, which is the issue in focus in this article. Only one previous study (in Swedish) assessed how ethnolinguistic identity relates to that of parents and grandparents (Finnäs, 2015). That previous research was limited by a smaller study population, and information about the ethnolinguistic backgrounds of both parents was not used. We have replicated those analyses for younger cohorts and reached similar overall conclusions (Table A1 in Supplementary Material). In our study, we examined this topic from additional perspectives, included another generation, regression models and data on the total population.

Research on Western populations has stressed that kinship networks are primarily maintained by women (Schneider and Smith, 1973). This is reflected in the strength of interpersonal relationships in terms of behaviours responsible for maintaining large kinship networks (Young and Willmott, 1957; Di Leonardo, 1987; Coall and Hertwig, 2010a) and in individuals' recollection of the total size of their kinship networks (Schneider and Cottrell, 1975; Boholm, 1983). The literature has also shown that children have a closer relationship with maternal grandparents than with paternal grandparents (Coall and Hertwig, 2010b). Previous research from Finland echoes these findings, suggesting that maternal grandmothers are especially important for the daughter–mother relationship and in the upbringing of grandchildren (Danielsbacka *et al.*, 2011; Mustonen *et al.*, 2011; Lehti, Erola and Tanskanen, 2019). Grandmothers tend to play a more important role than grandfathers in the transmission of cultural and identity markers, such as the transmission of minority languages and religion, especially to daughters (Ishizawa, 2004; Copen and Silverstein, 2008; Bengtson *et al.*, 2009). However, none of the studies have dealt specifically with families of mixed descent. In empirical research, the role of grandparents in the transmission of identity in mixed-origin families is in its infancy. An exception is a recent qualitative study, which found that grandmothers are more important than grandfathers for the ethnic identity development of mixed-origin children (Jackson *et al.*, 2020).

In spite of the scarcity of previous research, we believe that the body of previous work on related topics allows us to formulate some expectations regarding the results of our analysis. In particular, taking into account that mothers are the carriers of minority identity among Swedish-speaking Finns, and considering the importance of maternal grandmothers in Finnish society, one would expect stronger Swedish lineage persistence with respect to maternal grandmothers and great grandmothers as compared with paternal grandmothers and great grandmothers, that is, a matrilineal bias.

Data and methods

The data we used contained all individuals who lived in Finland from 1971 to 2015, which means that they were observed in the population register at the end of years 1970, 1975, 1980, 1985, and 1987–2015. Each person can be observed longitudinally, and there is information about all births and deaths from 1971 to 2015. All data access, data preparation and analyses were performed within Statistics Finland's remote access system FIONA. The contract number is TK-52-694-18.

Each person in the data can be linked to their mother or father, if the parent did not die before the end of 1970. For persons born before 1970, an additional requirement for linkage is that the child lived in the same household as the parent. For all cohorts born after 1952, that is, persons under 18 years of age in 1970, child–parent links can therefore be established with great precision, while there are missing links for older cohorts who had left the parental home before 1970. There are no restrictions on the number of generations that can be linked.

The structure of the data is illustrated in Figure 2. Our models predicted the ethnolinguistic affiliation of the child as a function of the ethnolinguistic affiliation of each parent and extended kin. Since there was a limit as to how far back historically we could trace parent–child linkages, there were then fewer individuals for each subsequent generation. When we established full kinship sets within each generation, our sample size dropped quickly. Four-generation analyses were nevertheless feasible, so even when we established full kinship sets, we got substantial numbers of linkages, though these kinship sets had shorter than average generational lengths. Figures A1–A3 in Supplementary Material give the number of persons, identifiable ancestors, and Swedish speakers.

'Swedish speaker' here refers to that a person had always been registered as a Swedish speaker. Altering the criterion to mean consistently registered as a Swedish speaker would not change the conclusions to any considerable extent. The group would then be reduced to less than 8.5 per cent. Since the data made it possible to link children and parents for persons alive from the end of 1970, the setup refers to the children and their year of birth, not to marriages or cohabiting unions of (prospective) parents. Nevertheless, these patterns mirror the development of the prevalence of mixed marriages (Finnäs, 2013).

In order to have a reasonable number of persons who could be linked across generations, and for whom we would have information about all their ancestors in two

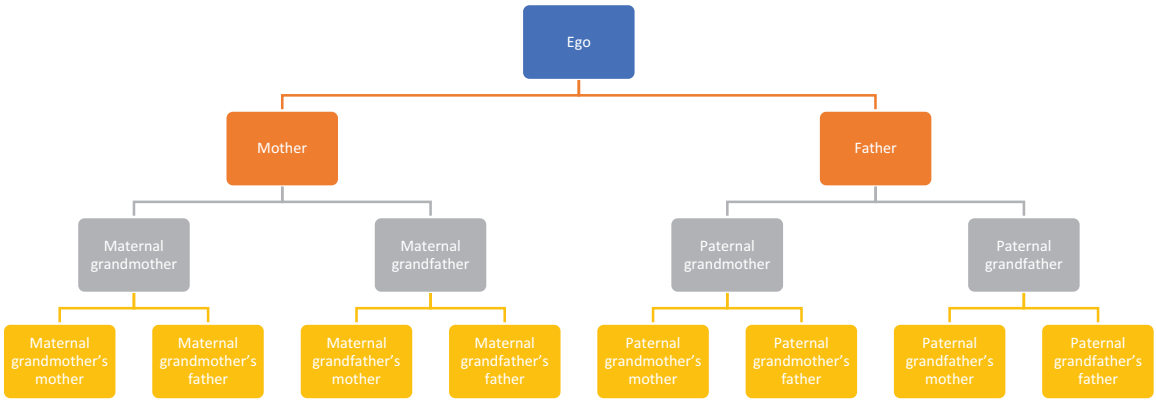

Figure 2 Structure of the data for four generations

previous generations (Generations 2–3) or three previous generations (Generations 2–4), we studied individuals born from 1990 to 2015 (Generation 1). Consequently, these were then the index persons (egos) of our analytical framework. Of all Finnish- or Swedish-registered index persons in these birth cohorts, both parents could be linked for 98.5 per cent, all four grandparents for 87.8 per cent, and all eight great grandparents for 12.2 per cent. All analyses were restricted to egos and ancestors who were either Swedish- or Finnish-registered. In the analyses of three generations, there were 1,220,914 Finnish-registered egos and 78,094 Swedish-registered egos who fulfilled the above criteria. In the analyses of the four generations, the corresponding numbers were 150,525 and 8,809.

In Section 5.1, we report the kinship structure and ethnolinguistic registration over three generations and over four generations in Section 5.2. The child was the unit of our analysis. In Section 5.3, we detail our use of regression models on the four-generation setup to estimate how the probability of being Swedish-registered, as compared with being Finnish-registered, related to the Swedish-registration of each ancestor. These models helped to confirm our descriptive analyses in a regression framework and provide estimates for associations related to extended kin that adjust for associations related to more proximate kin. For the sake of direct comparison across models and groups and because the regressions complement the descriptive analyses, we have estimated and report estimates from linear probability (Ordinary Least Squares) models. Overall, conclusions based on non-linear models were similar and are available upon request.

Results

Ethnolinguistic registration over three generations

Table 1 gives the 16 different grandparent combinations and their distribution for the three-generation setup, together with a coding scheme for ethnolinguistic heritage in terms of the ethnolinguistic balance, the lineage bias, the proportion Swedish-registered grandparents and the proportion Swedish-registered egos within each category. In the first column, the first letter refers to the maternal grandmother (S for Swedish-registered and F for Finnish-registered), the second letter to the maternal grandfather, the third letter to the paternal grandmother, and the fourth letter to the paternal grandfather. The second column indicates the share per thousand of each of the 16 grandparent combinations.

Almost 90 per cent of all index persons had an entirely Finnish background, meaning that all four grandparents were Finnish-registered. For the others, we found that persons with a dominant Finnish background were about four times as many as those with a dominant Swedish background (40.9 vs. 10.3 per thousand). Barely half of all persons without an entirely Finnish or dominant Finnish background had an entirely Swedish background (27.5 vs. 60.7 per thousand). Persons with the background split half at each maternal and paternal side were about twice as many as those with a dominant (not entirely) Swedish background (20.0 vs. 10.3 per thousand). Mixed backgrounds on both sides were rare (2.8 per thousand). Those with a mixed background with paternal Swedish side and maternal Finnish side were somewhat more common than those with a mixed background with paternal Finnish side and maternal Swedish side (26.7 vs. 24.5 per thousand).

Egos with an entirely uniform background almost never differed in registration from those of their grandparents. Hence, if all grandparents were Swedish-registered, the probability that the grandchild was Swedish-registered was 1.00, while it was 0.00 if all grandparents were Finnish-registered. As for individuals with a mixed background, the results were in line with our hypothesis because we found a matrilineal bias for both the Finnish and Swedish speakers. For example, if only the maternal grandmother

Table 1 Coding scheme for grandparent combinations, distribution, share of Swedish-registered egos, and approximated 'effect' of mixed unions on per cent Swedish- and Finnish-registered egos

Lineage type	Distribution, per mille	Ethnolinguistic balance	Lineage bias	Proportion Swedish-registered grandparents	Proportion Swedish-registered egos	'Effect' of mixed unions on per cent Swedish-registered egos	'Effect' of mixed union on per cent Finnish-registered egos
SSSS	27.5	Entirely Swedish-registered	None	1.00	1.00		
SSSF	2.0	Dominant Swedish-registered	Maternal side Swedish-registered	0.75	0.96	0.192	0.008
SSFS	2.7	Dominant Swedish-registered	Maternal side Swedish-registered	0.75	0.97	0.262	0.008
SFSS	2.6	Dominant Swedish-registered	Paternal side Swedish-registered	0.75	0.93	0.241	0.019
FSSS	3.0	Dominant Swedish-registered	Paternal side Swedish-registered	0.75	0.89	0.267	0.033
SFSF	0.6	Mixed at both sides	None	0.50	0.65	0.039	0.021
SFFS	0.7	Mixed at both sides	None	0.50	0.68	0.047	0.023
SSFF	8.5	Half at each side	Maternal side Swedish-registered	0.50	0.81	0.691	0.158
FFSS	11.5	Half at each side	Paternal side Swedish-registered	0.50	0.55	0.630	0.520
FSSF	0.7	Mixed at both sides	None	0.50	0.50	0.035	0.035
FSFS	0.8	Mixed at both sides	None	0.50	0.52	0.042	0.038
SFFF	8.7	Dominant Finnish-registered	Paternal side Finnish-registered	0.25	0.27	0.236	0.634
FSFF	11.1	Dominant Finnish-registered	Paternal side Finnish-registered	0.25	0.17	0.185	0.925
FFSF	9.3	Dominant Finnish-registered	Maternal side Finnish-registered	0.25	0.13	0.117	0.813
FFFS	11.8	Dominant Finnish-registered	Maternal side Finnish-registered	0.25	0.14	0.164	1.016
FFFF	898.4	Entirely Finnish-registered	None	0.00	0.00	*Σ = 3.148*	*Σ = 4.251*

In the first column, the first letter refer to the maternal grandmother (S for Swedish-registered and F for Finnish-registered), the second letter to the maternal grandfather, the third letter to the paternal grandmother, and the fourth letter to the paternal grandfather.
'Effect' of mixed unions on per cent Swedish-registered egos' is obtained by multiplying 'Distribution, per mille'/10 with 'Proportion Swedish-registered egos'.
'Effect' of mixed unions on per cent Finnish-registered egos' is obtained by multiplying 'Distribution, per mille'/10 with 1-'Proportion Swedish-registered egos'.

was Finnish-registered (FSSS), the child was Finnish-registered in 11 per cent of the cases, as compared with 4 per cent if only the paternal grandfather was Finnish-registered (SSSF). Similarly, if only the maternal grandmother was Swedish-registered (SFFF), the child was Swedish-registered in 27 per cent of the cases, as compared with 14 per cent if only the paternal grandfather was Swedish-registered (FFFS). The matrilineal bias was most apparent with respect to the maternal grandmother, and it was extremely strong for persons with a background split evenly between the maternal and paternal sides.

Whereas our hypothesis only concerned matrilineal bias, we identified another two types of bias when interpreting our results. First, there was a kinship majority bias, in the sense that three Swedish-registered grandparents give a higher than 0.75 probability that the index person is Swedish-registered. Similarly, three Finnish-registered grandparents indicated a less than 0.25 probability that the index person would be Swedish-registered. Second, there was an ethnolinguistic bias towards the Swedish minority in terms of an over registration of Swedish-speaking egos within ancestry groups. That is, for almost all mixed combinations, egos were more likely to be Swedish-registered than Finnish-registered, given the proportion of Swedish-registered grandparents.

Another related and important result of our analysis is that, despite the biases discussed above, at the aggregate level and observed across three generations, mixed unions had a negative impact on the size of the Swedish-speaking minority. In particular, as shown in Table 1, mixed unions produced a lower share of Swedish-registered egos than Finnish-registered egos, or 42.5 per cent vs. 57.5 per cent, respectively. These numbers were obtained by dividing the sum of the numbers for *'Effect' of mixed unions on per cent Swedish-registered egos* with the sum of the same numbers plus the sum of those for *'Effect' of mixed unions on per cent Finnish-registered egos*, that is, 3.148/(3.148 + 4.251) = 42.5 and 100 – 42.5 = 57.5.

Ethnolinguistic registration over four generations

In respect to the four-generation setup, Figure 3 shows the unconditional proportion of Swedish-registered index persons (G1) in each category of parents (G2), grandparents (G3), and great grandparents (G4). For each generation, Swedish background was more frequent on the paternal side than on the maternal side. This relates primarily to the fact that births with a Swedish-registered father and a Finnish-registered mother are more common than births with a Finnish-registered father and a Swedish-registered mother. The difference was consequently largest between the category for maternal grandmother's mother and the category for paternal grandfather's father (0.050 vs. 0.058).

The importance of matrilineal bias is illustrated in Figure 4, which gives the proportion of Swedish-registered ancestors of Swedish-registered index persons (upper part) and Finnish-registered index persons (lower part), respectively. The former were more likely to have a Swedish-registered mother than a Swedish-registered father (0.836 vs. 0.798), while the opposite was the case for the latter (0.003 vs. 0.009). The former were also more likely to have a Swedish-registered maternal grandmother (0.763) than a Swedish-registered paternal grandmother (0.733) or any other grandparent that was Swedish-registered. The matrilineal bias was more significant in immediate kinship terms, while it diminished with lineage distance and even became a slight patrilineal bias within the oldest generation (G4). Nevertheless, there was persistence of Swedish-registration across generations. Swedish-registered children were very likely to have remote kin who were Swedish-registered, and the proportion of Swedish-registered persons increased over generations on both the maternal and paternal sides.

The picture for Finnish-registered index persons was notably different. The proportion of Swedish-registered ancestors was consistently very low, indicating that almost all Finnish-registered individuals had a predominantly Finnish background. It was more likely that a Finnish-registered person had a Swedish father and some Swedish heritage on the paternal side than a Swedish mother and some Swedish heritage on the maternal side. This, again, could be related to maternal bias. Finnish speakers were more likely to have had Swedish kin in their remote kinship network than in their close kinship network because of the lower prevalence of Swedish-registration in mixed families in older generations as compared with younger ones. Finnish speakers were also more likely to have had paternal Swedish kin than maternal Swedish kin because unions of Swedish-registered men and Finnish-registered women were at the time more common than unions of Finnish-registered men and Swedish-registered women.

The proportion of Swedish speakers in Generations 1, 3, and 4 by the four different parental ethnolinguistic combinations (Generation 2) largely mirrored what had been found earlier (Finnäs, 2015). This is reported in Figure A4 in Supplementary Material. Perhaps most noteworthy here was that not only were mixed parental unions to a larger extent than non-mixed parental ones formed by individuals who had come from mixed families, but the background of these persons was also more diversified.

We extended the typology to different types of grandparents by also taking into account the

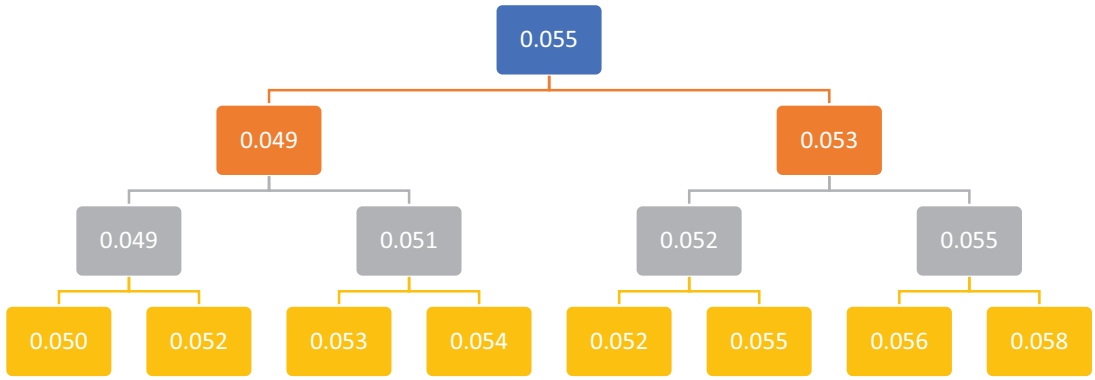

Figure 3 Proportion Swedish-registered index persons (G1) in each category of parents (G2), grandparents (G3), and great grandparents (G4)

proportion of great grandparents who were either Swedish- or Finnish-registered (Table 2). The homogeneity of the uniform background then turned out to be reflected in an even higher proportion of children following their dominant background as compared with the setting based on grandparents only (Table 1). If all four grandparents and fewer than six great grandparents were of the same registration, conformity with the dominant background was very high, and such conformity was notably higher for those with a Swedish-registered background than for those with a Finnish-registered background (90–96 per cent vs. 62–81 per cent). This means that individuals with an overwhelmingly Finnish background, but some extended family background that was Swedish, were more likely to be Swedish-registered than were individuals with overwhelmingly Swedish background, but some extended family background that was Finnish, to be Finnish-registered.

We also examined how ethnolinguistic registration varied by different combinations of grandparents and great grandparents who were Swedish-registered (Table A2 in Supplementary Material). For individuals with all four grandparents of the same registration, the registration of great grandparents was of practically no importance. For the others, there was some association, but the pattern was not completely uniform. Net of the proportion of Swedish-registered grandparents, the proportion of Swedish-registered great grandparents was positively associated with the proportion of Swedish-registered grandchildren. For instance, among individuals with one Swedish-registered grandparent, 13 per cent of those with one Swedish-registered great grandparent were Swedish-registered, while this share was 23 per cent, 27 per cent, and 28 per cent if the number of Swedish-registered great grandparents was two, three and four, respectively.

Results of regressions for two, three, and four generations

To conclude the analyses, we used regression models to estimate associations related to extended kin, net of the associations related to more proximate kin. As in the previous section, these data included index persons (G1) for whom all ancestors in the three previous generations could be identified. We applied linear probability (OLS) models to the binary outcome Swedish-registration (1) as opposed to Finnish-registration (0). We provided estimates for gross effects, that is, the unadjusted associations between kin and children's registration, and net effects, namely, associations related to grandparents and/or great grandparents' registration when controlling for parents' registration. The results presented are based on two classes of models. The first used variables that measured the number of parents, grandparents and great grandparents who were Swedish-registered. The other examined categories of kin separately using a dummy variable that captured whether each ancestor was Swedish-registered.

The estimated effects of different generations were highly correlated, and even though the sample size was large, coefficients of higher-order kin became unstable when the kin were jointly included. However, these models were informative from the perspective that they provided relative effect sizes within the same generation, net of the effects of younger generations.

In line with the descriptive results, the number of Swedish-registered kin predicted Swedish-registration of the children with high precision (Table 3). The gross effects of parents (Model 1) and grandparents (Model 2) were very strong and similar to what had been observed earlier. Having one Swedish-registered parent, that is, coming from a mixed family, was related to a 0.59 probability of being Swedish-registered. If two grandparents were Swedish-registered, the probability of Swedish-registration was 0.64, and if four

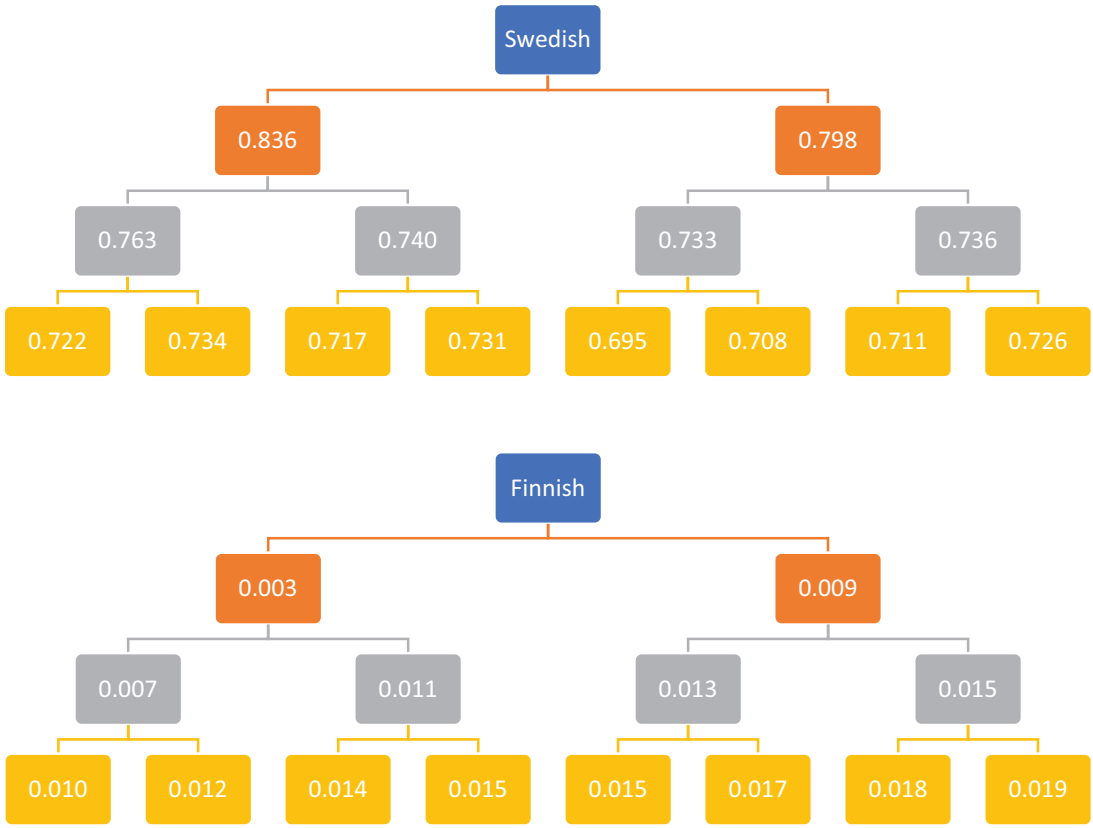

Figure 4 Proportion Swedish-registered ancestors of Swedish-registered and Finnish-registered index persons (G1), respectively

grandparents were Swedish-registered, it was almost 1. Gross effects of the number of great grandparents who were Swedish-registered were also considerable and displayed an almost uniform pattern (Model 3). Such gross effects of great grandparents reflect the overall majority bias documented earlier. Gross effects for parents and grandparents of equal numbers of Swedish-registered and Finnish-registered grandparents (two of each group) and great grandparents (four of each group) were above 0.5, indicating a bias towards Swedish-registration.

The net effect of grandparental registration was also considerable when adjusting for parental affiliation (Model 4). The probability difference was about 0.24 between one and three Swedish-registered grandparents, which suggests that it was essential to address ethnolinguistic background in this extended perspective. The associations related to parents were largely stable, although effect sizes generally became smaller when additional generations' registration was accounted for. Even the net effect size for great grandparents was far from trivial, or about 0.05, between two and six great grandparents (Model 5). However, adding great grandparents' registration changed little in the estimates for associations related to parents and grandparents. When older generations were added to our models, the adjusted *R*-squares changes little, as parents were the strongest predictor of ethnolinguistic affiliation and a large share of kin backgrounds was homogenous. Distinguishing egos by sex did not largely or systematically affect the results (see Tables A3 and A4 in Supplementary Material).

One plausible explanation for the patterns observed is that discordant backgrounds signal weaker and more fluid identities in intermediate generations, which is why they have less predictive power for the registration of children. With such an interpretation, there was not necessarily any direct causal influence from extended kin to the index child, but rather that ethnolinguistic identity was more fluid and open to renegotiation in mixed unions. Compared with recent research on the multigenerational stratification of social status (Anderson, Sheppard and Monden, 2018), our kin effects net of the parental effects were substantially stronger.

Table 2 Extended typology that accounts for great grandparents, with share of Swedish-registered egos in each category

Lineage type	Group explanation	Proportion Swedish-reg. egos
SSSS	4 Swedish-reg. GPs and ≥6 Swedish-reg. GGPs	1.00
3 or 4 S	4 Swedish-reg. GPs and <6 Swedish-reg. GGPs, or 3 Swedish-reg. GPs and ≥6 Swedish-reg. GGPs	0.96
3 S 1 F	3 Swedish-reg. GPs and <6 Swedish-reg. GGPs; maternal line more Swedish-reg.	0.95
3 S 1 F	3 Swedish-reg. GPs and <6 Swedish-reg. GGPs; paternal line more Swedish-reg.	0.90
SSFF or FFSS	All combinations where GPs are two endogamous sets	0.67
SFSF or FSFS	All combinations where GPs are two exogamous sets	0.63
3 F 1 S	3 Finnish-reg. GPs and <6 Finnish-reg. GGPs; paternal line more Finnish-reg.	0.38
3 F 1 S	3 Finnish-reg. GPs and <6 Finnish-reg. GGPs; maternal line more Finnish-reg.	0.19
3 or 4 F	4 Finnish-reg. GPs and <6 Finnish-reg. GGPs, or 3 Finnish-reg. GPs and ≥6 Finnish-reg. GGPs	0.19
FFFF	4 Finnish-reg. GPs and ≥6 Finnish-reg. GGPs	0.00

Letters referred to in the first column are the same as in Table 1.
In the second column, GP is for grandparent and GGP for great grandparent.

Table 3 Estimates for effects of the number of Swedish-registered parents, grandparents, and great grandparents on the probability of Swedish-registration of the egos

	Model 1	Model 2	Model 3	Model 4	Model 5
Number of Swedish-registered parents					
0	Ref.			Ref.	Ref.
1	0.591			0.470	0.466
2	0.996			0.730	0.724
Number of Swedish-registered grandparents		Ref.		Ref.	Ref.
0		0.201		0.041	0.033
1		0.640		0.178	0.124
2		0.946		0.280	0.208
3		0.998		0.268	0.202
4					
Number of Swedish-registered great grandparents					
0			Ref.		Ref.
1			0.032		(0.003)
2			0.219		0.013
3			0.395		(0.000)
4			0.677		0.076
5			0.874		0.089
6			0.957		0.078
7			0.983		0.067
8			0.999		0.074
Adjusted *R* squared	0.835	0.791	0.784	0.841	0.841

The results are from linear probability models.
All estimates except those within parentheses are statistically significant at the 0.01 per cent level.

Estimates for associations related to each specific kin (Table 4) confirmed our descriptive findings with regard to matrilineal bias. The association for the mother's Swedish-registration was stronger than that for the father's (0.65 vs. 0.38 in Model 1), the one for the maternal grandmother was stronger than that for the paternal grandmother (0.39 vs. 0.22 in Model 2), and for the great grandparents, the estimates on the maternal line were stronger than those on the paternal line (Model 3). For example, Swedish-registration of the maternal grandmothers' mother was associated with a 0.21 increase in the probability of Swedish-registration of the child, as compared with a 0.10 increase if the paternal grandfather's father was Swedish-registered (Model 3). The differences in the gross effects were less pronounced for the other gender combinations but still considerable.

When net associations were examined (Models 4 and 5), maternal bias became less pronounced. Maternal grandmothers were more important than other grandparents, while there were no clear patterns for great grandparents. When the full kinship background was controlled for, the mother effect, which pertained to mixed unions, was 0.55, and the father effect was 0.30, as compared with the neutral case effect of 0.50 per parent and 0.65 and 0.38, respectively, for the mother and the father effects in Model 1. Thus, when a great deal of adjustment for ethnolinguistic composition of kin was considered, the effect of parental registration became smaller.

Discussion and conclusion

Quantitative studies on the intergenerational transmission of ethnicity across three or more generations have been largely absent from the previous literature, even though they are necessary for our understanding of the mechanisms behind individuals' formation of ethnic identity. We have used population register data that are not usually included in international studies in that the information about each individual's unique mother tongue was recorded. Our focus was on Finnish- and Swedish-registered persons in four generations of native Finns. Our methodological approach has provided a fine-grained image of the link between complex kinship structures created by births in mixed unions and ethnolinguistic registration. We found that the ethnolinguistic registration of children is strongly dependent on each parent's ethnolinguistic affiliation but also on the grandparents' affiliation and, to a lesser extent, on the great grandparents' affiliation. Grandparents and other kin are consequently important bearers of cultural identity.

Table 4 Estimates for effects of each Swedish-registered parent, grandparent, and great grandparent on the probability of Swedish-registration of the egos

	Model 1	Model 2	Model 3	Model 4	Model 5
Swedish-registered parent					
Mother	0.653			0.551	0.549
Father	0.378			0.304	0.304
Swedish-registered grandparent					
Maternal grandmother		0.393		0.070	0.064
Maternal grandfather		0.257		0.050	0.031
Paternal grandmother		0.225		0.023	0.028
Paternal grandfather		0.192		0.056	0.042
Swedish-registered great grandparent					
Maternal grandmother's mother			0.208		0.009
Maternal grandmother's father			0.175		(–0.002)
Maternal grandfather's mother			0.133		(0.006)
Maternal grandfather's father			0.143		0.017
Paternal grandmother's mother			0.122		(0.002)
Paternal grandmother's father			0.106		–0.009
Paternal grandfather's mother			0.104		(0.004)
Paternal grandfather's father			0.099		0.012
Adjusted *R* squared	0.842	0.786	0.768	0.845	0.845

The results are from linear probability models.
All estimates except those within parentheses are statistically significant at the 0.01 per cent level.
The reference group for each kin is Finnish-registered.

We found that people with an entirely uniform background nearly never deviate from their heritage. Thus, if all grandparents are Swedish-registered, the probability that the grandchild is Swedish-registered is unity, while it is zero if all grandparents are Finnish-registered.

As for the individuals with more diverse kinship structures, we identified three main types of biases: a matrilineal bias, a kinship majority bias, and a Swedish minority bias. In line with our matrilineal bias hypothesis, the mother's ethnolinguistic affiliation was more important than the father's for the ethnolinguistic registration of the child. This finding supports the argument that kinship networks are primarily maintained by women. The matrilineal bias was most apparent with respect to the maternal grandmother, and it was particularly strong for persons with an ethnolinguistic background split evenly between the maternal and paternal sides. The maternal effect was more important in immediate kinship terms, while it disappeared with lineage distance. In the great-grandparent generation, there was basically no difference in the proportion of Swedish-registered persons between mothers and fathers.

Unlike the matrilineal bias, the other two biases were not subject to our hypotheses and were identified ex post. The kinship majority bias reflected that having any combination that involved three Swedish-registered grandparents indicated a higher than 0.75 probability that the grandchildren would be affiliated with the Swedish-speaking community. The corresponding conclusion also applied to individuals with three Finnish-speaking grandparents, with the exception of those with a Swedish-speaking maternal grandmother.

The Swedish minority bias refers to the finding that, for all combinations of two Swedish-speaking and two Finnish-speaking grandparents, the likelihood that the child would be affiliated with the Swedish-speaking community exceeded 50 per cent. However, looking at data from older birth cohorts, we found that Swedish minority bias is a fairly recent phenomenon, and its causes and timing should be explored in future research.

At the aggregate level, and observed across three generations, mixed unions have reduced the share of Swedish speakers because these unions have produced a lower share of Swedish-registered egos than Finnish-registered egos (see Table 1). This may seem paradoxical from a two-generation perspective, given that well over 50 per cent of all mixed couples register their child as a Swedish speaker. However, it is important to note that only one-third of all individuals with mixed background have registered their children as Swedish speakers (see Table A1 in Supplementary Material). This in turn relates to the fact that only a quarter of all persons with mixed background have a Swedish-registered partner, and there is a large discrepancy in Swedish-registration of the children between those who have a Finnish-registered partner and those who have a Swedish-registered partner. In other words, Swedish-registered individuals with mixed backgrounds are less likely to reproduce the minority affiliation than those with uniform Swedish background. There are good reasons to believe that this pattern is due to a more fluid ethnolinguistic identity of mixed-background individuals, as they may attach less importance to their ethnolinguistic identity in general. As a result, the preference for endogamy, even if present, may be less pronounced among Swedish-speaking individuals of mixed background, and is often outweighed by a much higher availability of Finnish-speaking potential partners on the marriage market. For the same reason, Swedish speakers of mixed background living in unions with Finnish-speaking partners will likely be less assertive when a decision is made about their children's registration.

If the slight downward trend of the share of Swedish speakers in Finland continues, it is possible that some segments of the Swedish-speaking community may respond with a higher degree of group closure, and this may also include a more negative attitude towards intermarriage among some individuals. However, given the moderate social distance between the two communities, and considering a substantial numerical superiority of Finnish speakers on the marriage market, it is not likely that we will observe a substantial decrease in the prevalence of intermarriage in the Swedish-speaking minority in the foreseeable future. Also, a considerable increase of mixed unions among Swedish-speaking Finns over recent decades implies that an ethnically diverse ancestry in this group is becoming more common than before, and presumably even at an increasingly higher pace. Since mixed couples contribute to more frequent social interaction between communities, and their children generally consider themselves at least to some degree attached to both communities (Kalmijn, 1998), a high prevalence of intermarriage among Swedish speakers may further reduce the social distance towards the Finnish-speaking community.

Nevertheless, any discussion on the future of the Swedish-speaking community and its relations with the majority group should consider that the Finnish society is undergoing an important transformation. Throughout history, the interaction between the two communities had been taking place in a mainly bi-ethnic setting, and the presence of other groups was rather symbolic or occasional. However, during the observation period of our study this has changed. Immigration to Finland has been increasing relatively slowly but steadily since the 1990s and in 2022 foreign-born individuals constituted around 8.5 percent

of the population (Statistics Finland, 2023). Because international migration often provides an impetus to redraw ethnic boundaries (Wimmer, 2008), it remains to be seen how these important changes will affect the strategies of cultural identity preservation in the Swedish-speaking community, and the relations with the Finnish-speaking community in the near future.

Although the share of Swedish speakers in Finland has diminished somewhat during the past decades and this trend can partly be explained by intermarriage, it should be emphasized that the Swedish-speaking minority group in Finland is not under any immediate threat through intermarriage as a phenomenon. We should also bear in mind that part of the results in this study were shaped by the period in which the Swedish-registration of the children of intermarriage was less common than is currently the case. Moreover, the vitality of the Swedish-speaking minority is reinforced by the slightly higher birth rates and somewhat higher life expectancy of the Swedish-registered than the Finnish-registered population (Reini and Saarela, 2021; Saarela, 2021) and also—very importantly—the existence of robust Swedish language institutions in Finland. The situation is in marked contrast to that of many other ethnic minority groups in other countries (Harrison, 2008; Amano *et al.*, 2014), where structural economic factors, status disparities, government promotion of the majority culture through education and mass media, or even direct repression may put additional pressure on minority ethnic cultures and languages.

The type of data used here cannot be obtained in many other countries, and several of the observed patterns are likely idiosyncratic to the unique ethnolinguistic landscape studied. On the other hand, we think that our approach and some findings can be generalized beyond Finland. The nuanced insights derived from scrutinizing trends across three and four generations, as opposed to a two-generation perspective, emphasize the utility of adopting a multigenerational lens in the studies on the transmission of ethnicity and other cultural markers. This is well illustrated by our finding of a structural effect of intermarriage that leads to a gradual reduction in the size of minority groups over time, especially in a setting where there is a clearly defined ethnic majority. Our results indicate that the structural effect of intermarriage may persist even when the majority-minority relationships are marked by moderate social distance, minimal ethnic hierarchy, absence of any sizeable ethnic discrimination, and even a high-level institutional protection of the minority culture and identity.

It can thus be argued that this article unveils what can be termed a 'diversity paradox of intermarriage' in majority-dominated contexts. In the short term, intermarriage enhances cultural diversity by integrating it into the private spheres of persons living within mixed families. In the long term, however, intermarriage can contribute to a reduction in cultural diversity in society due to its negative effect on the size of minority groups. This dual nature underscores the intricate dynamics of intermarriage in shaping cultural landscapes over time. Our results may therefore be helpful in understanding the rapid decline of some long-established ethnic minority groups in other parts of the world (De Vries, 1990; Kandler, 2009), irrespective of whether they are directly exposed to social or economic discrimination or not.

Moreover, in spite of substantial situational differences between the Swedish-speaking native minority in Finland and immigrants in Finland and elsewhere, our findings are relevant for understanding how intermarriage will affect the future composition of European countries. Increasing shares of children in Europe are born into unions where either their parents or grandparents have a mixed background. In the 21st century, a large share of all children born in Europe will have to negotiate ethnic identities, in contrast to a few decades ago when European countries were more homogenous. At the same time, our findings may shed light on the ethnic homogenization through nation building, which took place in many parts of Europe from the mid-19th to mid-20th centuries, but has remained poorly studied and understood at the individual level.

The significance of our study is also underscored by the notable disparity between the recognized need for multigenerational studies and their scarcity in existence. The methodology employed here is arguably useful also in other contexts. This study may therefore serve as a blueprint for future research efforts focused on unravelling the dynamics of cultural marker transmission in multicultural intergenerational settings characterized by substantial intermarriage.

The limitations of our research mainly relate to the source material, which consists of administrative data. The ethnolinguistic affiliation of the children of mixed heritage is a result of parental decision soon after birth, and we do not know to what extent this choice corresponds to a self-declared affiliation of the children at older ages. Whereas it is possible to have the affiliation changed at the age of 18, the incentives and practical consequences of such a move are practically non-existent, and few people decide to do so. Furthermore, given that our analysis was based on a single item and assigning individuals to a single group, we could not entirely capture the complexities associated with ethnic and language identities among persons of mixed heritage (see Burton, Nandi and Platt, 2010). This limitation of the registers will be even more pronounced in light of an increasing ethnic diversity in Finland that has emerged as a result of recent immigration flows of foreign-born persons with a mother tongue other than Finnish or Swedish.

Supplementary Data

Supplementary data are available at *ESR* online.

Author contributions

Jan Saarela (Conceptualization [equal], Data curation [lead], Formal analysis [lead], Funding acquisition [lead], Investigation [equal], Methodology [equal], Project administration [equal], Validation [equal], Visualization [equal], Writing—original draft [equal], Writing—review & editing [equal]), Martin Kolk (Conceptualization [equal], Data curation [supporting], Formal analysis [supporting], Funding acquisition [supporting], Investigation [equal], Methodology [equal], Project administration [equal], Validation [equal], Visualization [equal], Writing—original draft [equal], Writing—review & editing [equal]), and Ognjen Obućina (Conceptualization [equal], Data curation [supporting], Formal analysis [supporting], Funding acquisition [supporting], Investigation [equal], Methodology [equal], Project administration [equal], Validation [equal], Visualization [equal], Writing—original draft [equal], Writing—review & editing [equal])

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