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DOI
10.1007/s12134-020-00797-8

Publication date
2021

Document Version
Final published version

Published in
Journal of International Migration and Integration

Citation (APA)
Puur, A., Rahnu, L., & Tammaru, T. (2021). Neighbourhoods and Workplaces: Are They Related to the Fertility of Immigrants and Their Descendants? A Register-Based Study of Finland, 1999–2014. *Journal of International Migration and Integration*, *24*, 209-231. https://doi.org/10.1007/s12134-020-00797-8

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https://doi.org/10.1007/s12134-020-00797-8

Neighbourhoods and Workplaces: Are They Related to the Fertility of Immigrants and Their Descendants? A Register-Based Study of Finland, 1999–2014

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Accepted: 9 December 2020/Published online: 02 February 2021

Abstract

An increasing number of studies point to the existence of fertility differences between immigrants and those who are native to the receiving countries. However, despite a large body of literature covering a wide range of settings, there is a lack of research into the factors that may underlie the observed differentials. In this article, we focus on the role of population composition in residential neighbourhoods and workplaces, which are assumed to influence the convergence of the fertility patterns of immigrants with those of the host country. The study is based on individual-based register data for the residential population of Finland from 1999 to 2014. We use discrete-time event history models to analyse transitions to first, second, and third births among immigrant women and their descendants of African and Middle Eastern origin whose fertility patterns are markedly different from those of the host society. We investigate whether the proportion of co-ethnic immigrants in residential neighbourhoods and workplaces is related with the fertility adaptation among that high-fertility group. Our results suggest that among them, a higher concentration of co-ethnic immigrants in the neighbourhood is associated with an elevated propensity of having a second and third child. The association persists among child migrants and the second generation. However, a similar association is not observed between fertility and the workplace context.

Keywords Fertility · Immigrants · Residential segregation · Workplace segregation · Finland

Introduction

Scholarly interest in migrant fertility has grown in recent decades for several reasons. Owing to their large numbers, migrants and their descendants contribute to an

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increasing degree to the aggregate national fertility levels in receiving countries (Sobotka 2008; Lanzieri 2011). Furthermore, changes in the childbearing patterns of migrants are seen as an important aspect of their integration into the host society, particularly for groups of immigrants that originate from high-fertility settings (Coleman 1994; Algan et al. 2012). And from a broader perspective, research on migrants has the potential to provide valuable insights into the role of various structural and cultural factors that are assumed to shape childbearing decisions in contemporary societies.

Previous research indicates that over time, migrant fertility levels tend to converge with those of the host population, although for some immigrant groups the process may take several generations (Garssen and Nicolaas 2008; Milewski 2010; Scott and Stanfors 2011; Dubuc 2012; Krapf and Wolf 2015; Kulu et al. 2017). However, despite a large body of literature on the fertility dynamics of immigrants, there is a relatively little research into the spatial factors which may slow down or accelerate the shifts towards convergence. Evidence from the USA (Lopez and Sabagh 1978; Fischer and Marcum 1984; Brewster et al. 1993; Brewster 1994; Hill and Johnson 2004) and from a few European studies (Puur et al. 2017; Puur et al. 2018; Wilson and Kuha 2018) suggest that a relationship may exist between immigrant fertility and opportunities for daily contacts in residential neighbourhoods with the host population.

In the present study, we expand the previous research on migrant fertility by considering the ethnic contexts in two major domains of daily life—residential neighbourhoods and workplaces—as potential correlates of childbearing behaviour. We focus on immigrant women from high-fertility settings in Finland during the period 1999–2014. Our interest in this sub-group arises from the fact that immigrants from countries where the transition to low fertility is yet under way experience a marked contrast between childbearing norms and behaviours at their origin and destination. This contrast offers an excellent opportunity to analyse fertility adaptation, compared to immigrant groups that have arrived from other low-fertility settings. We seek answers to the following research questions. First, what are the effects associated with the ethnic composition of residential neighbourhoods on transitions to first, second and third births? Second, what are the effects related with the ethnic composition of workplaces on these fertility transitions? Third, how do the effects associated with the ethnic composition in these two contexts vary by immigrant generations?

The main contribution of this study is an improved understanding of the association between the ethnic composition of neighbourhoods and workplaces, and fertility among immigrants. The abovementioned studies have investigated the fertility of immigrants or ethnic minorities in relation to neighbourhoods. For those who are employed, however, workplaces provide important opportunities for daily interaction and encounters (Lichter et al. 1991; Bratter and Zuberi 2001; Niedomysl et al. 2010). To the best of our knowledge, our study is the first to analyse the association between the ethnic composition of workplaces and fertility outcomes among immigrants.

While previous empirical studies of the effects of residential neighbourhoods on migrant fertility have drawn on surveys or samples of longitudinal data, this study relies on data from administrative registers. The individual-level register data is longitudinal and spatially detailed, which allows us to track immigrants and their descendants on an annual basis and link them with their neighbours and co-workers, i.e., to consider the population composition of the key contexts in which individuals' daily interactions take

place. Compared with the major immigration countries of Europe, Finland's experience as a destination for large-scale international migration is relatively recent but growth and diversification of migration flows has been rapid. Nearly half of recent immigration to Finland originate from outside Europe, including high-fertility settings. However, unlike for other Nordic countries, there is relatively little research on fertility of immigrants and their descendants in Finland. This study contributes to filling this void in the literature.

Theoretical Perspectives and Previous Findings

A variety of theoretical perspectives have been developed to explain fertility patterns among migrants and their descendants (Kulu and González-Ferrer 2014; Adserà and Ferrer 2015; Kulu et al. 2019). The analytical focus of theoretical perspectives varies with timeframes of the studies (short-, medium- or long-run periods), and reference groups to which childbearing of migrants is compared (origin or host country population).

In this article, we draw mainly on the adaptation perspective employed to explain fertility change among migrants in the medium- or long-term relative to the host population. The adaptation perspective posits that with time since arrival the fertility behaviour of migrants gradually comes to resemble that of the host population (Goldstein and Goldstein 1981; Stephen and Bean 1992; Kulu 2005; Milewski 2010). For migrants moving from a high to low-fertility context, the adaptation refers to a reduction in fertility levels, which eventually leads to convergence with the natives of the host country. The speed of convergence depends on the degree of difference between the respective countries of origin and destination (Coleman 1994). Slower convergence is usually characteristic of migrant groups from high-fertility contexts settled in low-fertility settings, particularly for higher parities, in which contrasts between origin and destination countries are more pronounced (e.g. Andersson and Scott 2007; Milewski 2011; Kulu et al. 2017).

The adaptation perspective links convergence to immigrants' current experiences in the host country. Compared to other approaches that are used for explaining fertility patterns of migrants over the medium or long run, the adaptation perspective is at odds with the socialisation perspective. The latter emphasises the importance of the social environment during migrants' childhoods, and assumes that the latter has a lasting impact on fertility patterns over their life course (Hervitz 1985; Andersson 2004; Kulu and Milewski 2007). Despite these differences, however, the adaptation and socialisation perspectives are not mutually exclusive. While the adaptation perspective helps us to understand why fertility patterns converge, socialisation arguments explain why complete convergence can take considerable time, extending beyond the first generation. Recent studies that explore the adaptation perspective have involved the 1.5 generation, i.e. individuals who migrated as children (Bleakley and Chin 2010; Adserà et al. 2012), and second-generation immigrants (Parrado and Morgan 2008; Kulu and Hannemann 2016; Kulu et al. 2017; Pailhé 2017; Guarin Rojas et al. 2018; Carlsson 2019).

The literature distinguishes two groups of factors or channels—socio-economic conditions and cultural factors—which moderate the fertility adaptation of immigrants

(Milewski 2010; Kulu and González-Ferrer 2014). Studies that investigate the role of socio-economic conditions mostly refer to New Home Economics (Becker 1981; Hotz et al. 1997). For immigrants from less developed countries, moving to a country with better employment perspectives for women and higher costs of living increases direct and opportunity costs of childbearing, levelling out differences between migrants and natives of the host country (Friedlander and Goldscheider 1978; Andersson and Scott 2005, 2007; Krapf and Wolf 2015). In contrast, poor employment prospects and inferior education are seen as factors that promote early onset of childbearing and high completed fertility (Kulu et al. 2017). On the other hand, fertility adaptation is related to changes in cultural norms concerning the family, gender roles, and value of children (Singley and Landale 1998; Nauck 2007; Nauck and Klaus 2007; Holland and de Valk 2013; Lillehagen and Lyngstad 2018). As immigrants from high-fertility countries settle in the new environment where small families have become a norm, their fertility preferences gradually begin to resemble those of the host population (Goldstein and Goldstein 1981; Stephen and Bean 1992).

Previous research has identified several individual-level factors that may accelerate or slow down the convergence of fertility patterns of immigrant or ethnic minority groups to those of the native majority population, producing larger or smaller differences between the former and the latter. For instance, fluency in the host country language is found to be conducive to reducing fertility among migrants who move from high- to low-fertility countries (Kahn 1988; Swicegood et al. 1988; Kulu and Hannemann 2016). For the descendants of immigrants, research has demonstrated the salience of the main language spoken in the parental home (Pailhé 2017). Furthermore, partnering with host country natives appears to play an important role in facilitating the faster adaptation of migrants' and their descendants' childbearing behaviour (Saenz et al. 1994; Andersson and Scott 2007; Scott and Stanfors 2011; Stichnoth and Yeter 2013; van Landschoot et al. 2017).

Previous research suggests that adaptation is an inherently spatial process that is moderated by migrants' exposure to norms of the mainstream society and socio-economic opportunities (Findley 1980; Coleman 1994; Forste and Tienda 1996; Bernhardt et al. 2007). In this context, place of residence deserves attention since immigrants usually enter host country networks by living in certain areas, while contacts with natives in other domains of life (work, leisure activities, etc.) evolve over time (van Ham and Tammaru 2016). People who live in a neighbourhood create a milieu that shapes social interaction, and therefore the neighbourhood composition may be an important source of influence with regard to fertility preferences, gender roles and alike, due to exposure to immigrant or native cultural norms and role models. As a result, otherwise similar individuals may exhibit different fertility behaviour depending on the characteristics of neighbourhoods surrounding them.

Despite the fact that the role of neighbourhood context in fertility adaptation is generally accepted in the literature (Kulu and González-Ferrer 2014; Kulu et al. 2017), there is relatively little empirical evidence to support it. In an overview of earlier U.S. research Forste and Tienda (1996) noted that only a few studies have included measures of the ethnic and racial composition of the community in which the respondents reside, in order to describe environments that may encourage early and non-marital childbearing among minority groups. Hogan and Kitagawa (1985), Brewster et al. (1993), and Brewster (1994) show how the ethnic community environment in

American cities, both of which are related to the composition of the neighbourhood population, shape the sexual and fertility behaviour of ethnic minority and majority adolescents. In a study of Mexican-American couples in Los Angeles, Lopez and Sabagh (1978) found that context ethnicity, measured as the ethnic homogeneity of the residential neighbourhood and the husband's co-workers, is significantly associated with higher fertility in most age and origin groups included in the analysis. These findings were corroborated by a later study on the same minority group in Austin, Texas (Fischer and Marcum 1984). Based on nationally representative sample, Gurak (1980) found a positive association between fertility and the proportion of Mexican-Americans living in the neighbourhood. Abma and Krivo (1991) demonstrated a significantly elevated likelihood that Mexican-Americans who reside in areas with a higher proportion of the ethnic minority population would have had a birth within the last 3 years. Finally, in a more recent study of Mexicans and Central Americans in the USA, Hill and Johnson (2004) found that the most consistent predictor of fertility at the level of the neighbourhood was the proportion of Hispanic adults.

Our search of the literature revealed that there is very little research on the association between residential segregation and migrant fertility outside of the USA. Recently, Wilson and Kuha (2018) used longitudinal data from England and Wales to investigate the relationship between completed fertility and the composition of the community. They found that the fertility of immigrants originating from high-fertility settings is closer to native fertility if they grew up in less ethnically segregated areas. In a survey-based study that focussed on first- and second-generation Russians in Estonia, Puur et al. (2017) showed that residence amongst the host population outside of areas with a high concentration of immigrants was associated with convergence of the Russians' third-birth risks with those of the host population. A related study found a similar association for the intentions of Russian women in Estonia to have another child (Puur et al. 2018).

However, besides illuminating the association between neighbourhood context and fertility, previous research exhibits various limitations. Several studies (Fischer and Marcum 1984; Hill and Johnson 2004) have used the number of children ever born (CEB) as outcome variable. In such circumstances, CEB may include births that occurred before a women entered her current neighbourhood, or even the host country. Research that considers community for immigrants frequently use either relatively small sample sizes (Lopez and Sabagh 1978; Brewster 1994), or large metropolitan areas as a measure of neighbourhood (Abma and Krivo 1991). These limitations may have influenced the results pertaining to the relationship between neighbourhood composition and fertility.

In this article, we expand on previous research by taking advantage of longitudinal register data from Finland. This allows us to employ the life course approach, which has evolved into the main analytical paradigm for research on migrant fertility over the recent decade (Kulu et al. 2019). Our study contributes to the literature by examining the association between immigrants' neighbourhood and workplace composition, and fertility adaptation. Although not all immigrants are employed, social interactions between workmates are often considered more intense and meaningful compared to interactions between neighbours (Baron and Bielby 1980; Stainback and Tomaskovic-Devey 2012; van Ham and Tammaru 2016). Unlike for residential neighbourhood, the associations between workplace composition and fertility are virtually unexplored. We

also contribute to the literature by investigating the effects associated with residential neighbourhoods in different immigrant generations. Previous research on this issue is scant, and suggests an ambiguous picture (Hill and Johnson 2004).

Focussing on migrant groups originating from high-fertility regions, we formulate four hypotheses to be tested empirically. First, we expect that the proportion of immigrants of the same origin in residential neighbourhoods would be positively associated with the propensity to have a(nother) child (Hypothesis 1). Second, we assume that a similar association would also exist for the proportion of immigrants in the workplace, largely independent of the relationship with neighbourhood (Hypothesis 2). Third, we expect that the effects of the residential and workplace contexts would be more pronounced for higher parities in which the contrast between the fertility quantum of the origin and host countries appears larger (Hypothesis 3). Fourth, considering that for immigrants from high-fertility settings the adaptation will hardly be completed in the first generation, we assume that the effects associated with residential neighbourhood persist among child migrants and the second generation (Hypothesis 4).

The Finnish Context

Compared with the major immigration countries of Europe, Finland's experience as a destination for large-scale international migration is relatively recent. Immigration flows only started increasing in the 1990s but their growth has been quite rapid. Since 1990 annual net migration has tripled in Finland, paralleled with diversification of the geography migration flows. There has been a gradual decrease in the share of arrivals from European countries and an increase in the share of more distant regions, particularly Asia and Africa.

Positive net migration has resulted in a marked expansion of the immigrant-origin population. In relative terms, it constitutes 7.7% of the country's total population (31.12.2019). Slightly more than half (53%) of the population of immigrant background originates from Europe (Statistics Finland 2019). Among this group, the share of immigrants and descendants from EU countries and non-EU countries of Europe is largely similar, 25% and 28% respectively. Twenty-nine percent of the population of immigrant background are from Asia, 13% from Africa, and 5% from other continents. With regard to individual countries, the largest groups of immigrant-origin population are from the neighbouring Russian Federation and Estonia, followed by Iraq, Somalia, the former Yugoslavia, China, and Vietnam.[1]

The above ranking of origin countries differs noticeably from those of major immigration destinations in Europe. In Finland, the admission of refugees has played a salient role in the formation of immigrant population of more distant origins. The first refugee wave to Finland after World War II occurred in the early 1970s after the Chilean coup d'état, followed by much larger waves of Vietnamese boat people and refugees from the former Yugoslavia. However, the most notable waves occurred in the 1990s and 2000s with tens of thousands asylum seekers arriving from Somalia, Iraq, and Afghanistan, and thousands from Syria, Iran, Turkey, Nigeria, and Russian Federation (Finnish Immigration Service 2020). In 2019, refugees who were accepted

[1] More than 100,000 first- and second-generation immigrants originate from these seven countries (2019).

for residence in Finland comprised 5% of the total arrivals, but among immigrants from African and Middle Eastern countries, the proportion is much higher. Studies in other Nordic countries have shown that refugees tend to have lower educational attainment, higher unemployment, and higher use of social benefits than other immigrants (Ruist 2015). The evidence from Finland is in accord with these findings. The African immigrants exhibit the highest unemployment rate of any population group in the country. In Finland, the unemployment rate of African immigrants exceeds that of the native population 3.4 times, noticeably more than in France (1.6 times), Italy (1.6), UK (1.7) and Spain (2.0) (Eurostat 2020).

Due to relatively late onset of large-scale immigration, the first generation comprises 84% of the population of immigrant origin, while 16% are the children of immigrants born in Finland. However, these proportions vary markedly across origins reflecting differences in migration history and fertility levels. In 2019, the share of the second generation appears highest (28%) among immigrants of African origin and lowest among those of American (7%) and Oceanian (5%) descent. At present, the majority of second-generation immigrants in Finland have not yet reached adulthood, and their contribution to migrant fertility is yet small. However, this situation is likely to change in the future.

Over the past few decades, Finland has featured relatively moderate fertility levels, similar to other Nordic countries (Jalovaara et al. 2019). At the beginning of the twenty-first century, the total fertility rate (TFR) stood at 1.73 children per woman. In the 2000s, the TFR gradually increased, reaching a peak of 1.87 in 2010. However, the trend subsequently reversed. According to the latest accounts, the total fertility rate for native Finnish women was 1.36, whereas the TFR for immigrant-origin women stood at 1.85. However, immigrant fertility rates vary considerably according to origin (Statistics Finland 2019). Women of African origin feature the highest TFR (3.17). Although significantly lower, immigrants of Asian and European origin also have fertility rates (1.87 and 1.60) that exceed the currently low TFR of the host population. The lowest fertility is characteristic of relatively small groups of women of American and Oceanian descent, with 1.07 and 1.16 children per woman respectively. However, these estimates should be interpreted with some caution as the period TFRs are known to be subject to tempo distortions, particularly for immigrants (Toulemon 2004; Wilson 2015).

Data and Methods

This study uses longitudinal register data compiled by Statistics Finland. In this article, we focus on women African and Middle Eastern origin born between 1955 and 1997, and who lived in Finland at any time from 1999 to 2014.[2] We defined as individuals of immigrant origin those who immigrated to Finland or were born in Finland to immigrant parents. We also distinguish Generation 1.5, which is comprised of immigrants

[2] As regards individual countries, the largest groups in our study population are from Somalia (24%), Iraq (16%), Iran (9%), Turkey (9%), Afghanistan (7%), Morocco (4%), Kenya (3%), Pakistan (3%), Ethiopia (3%), and Congo (3%).

who arrived between the ages of 0 and 15. Hence, those who immigrated at age 16 or older are included the first generation.

The childbearing transitions examined in the following sections include entry into motherhood, progression from first to second birth, and from second to third birth. In the register data, all births occurring in Finland have been linked to a mother. In addition, it has been possible to link children born abroad but living at some time in Finland to their mothers in Finland, which results in a more or less complete childbearing histories for immigrant women, allowing for a distinction between children born before and after arrival in the country. A small number of women who had borne children before the age of 16 were excluded from the analysis. The final dataset included 10,809 women for the analysis of first births, 5667 women for the analysis of second births, and 4299 women for the analysis of third births.

Table 1 presents the number of children born to women of African and Middle Eastern origin, and compares it to the number of children for other immigrant groups, as well as for native women. The comparison shows that starting from a relatively early age, African and Middle Eastern women have a noticeably larger number of offspring than any other population group in the country. Near to the end of their reproductive years African and Middle Eastern women have on average 2.9 children per woman. It is worth mentioning that this number is free from short-term migration-related distortions that often affect period fertility measures for immigrants.

We estimated discrete-time proportional hazards models separately for first, second and third births. The models are based on time (in years) to birth; in order to measure the effect of the covariates on births, and to reduce the risk of reverse causality, the values of the covariates are backdated by 1 year. This means that individual's status during a given calendar year is treated as a predictor of the conditional probability of having a(nother) child in the subsequent year. The onset and end of the exposure time varies between models for each parity transition. For first births, exposure time starts at age 16, in 2000, or upon arrival in the country, whichever occurred last. Childless women are tracked until first birth, censoring at age 45, emigration, death, or the end of 2014, whichever occurred first. For second and third births, exposure time starts at

Table 1 Age-cumulative number of children, Finland, immigrant-origin and native women born 1969–1994, 2014

Population groups by origin	By age 20	By age 25	By age 30	By age 35	By age 40
Africa and Middle East	0.20	0.78	1.53	2.40	2.88
Western	0.08	0.40	0.95	1.54	1.85
Eastern Europe	0.12	0.49	0.97	1.26	1.43
Asia	0.06	0.29	0.70	1.07	1.29
Latin America and Oceania	0.07	0.48	0.60	1.54	1.77
Native Finns	0.07	0.40	1.01	1.61	1.86
Birth cohorts	1969–1994	1969–1989	1969–1984	1969–1979	1969–1974
Number of women	859,165	691,859	526,360	354,123	186,823

Western origin refers to Western Europe and English-speaking countries (USA, Canada, Australia, and New Zealand)

Finnish register data, authors' calculations

previous birth, in 2000, or upon arrival in Finland, and women are tracked for a maximum of 15 years until the next birth or censoring.

In order to measure exposure to the co-ethnic immigrant population in residential neighbourhoods, we opted to use the time-varying proportion of immigrants and their descendants from Africa and the Middle East in the age group under 40, which focusses on individuals who are most active in family formation and childbearing, and their children.[3] This approach aligns with several US studies discussed earlier in the article (Lopez and Sabagh 1978; Fischer and Marcum 1984; Abma and Krivo 1991; Hill and Johnson 2004). Neighbourhoods were defined according to more than 1600 postal service codes (zip areas), with average size about 3000 inhabitants. The data used in the study provided workplace information on all currently employed individuals, including the encrypted identification numbers of the enterprise or establishment. This enabled us to calculate the time-varying share of employees of African and Middle Eastern origin in the workplace, defined as establishment (local activity unit).[4] Individuals who were currently non-employed were classified as students or included in the category 'other non-employed') of a control variable for activity status.

At the stage of preliminary analysis, we compared immigrants of African and Middle Eastern origin to other immigrant groups and native Finns with respect to neighbourhood and workplace context (Table 2). The comparison shows that immigrants of African and Middle Eastern countries are most concentrated in neighbourhoods in which a larger proportion of the residents are immigrants (all origins combined). Regarding the concentration of immigrants at workplaces, women of African and Middle Eastern origin rank second after Asians.

In order to account for the fact that neighbourhoods and workplaces vary markedly in size, we included respective controls for both domains. The size of the neighbourhood is a continuous variable indicating the number of residents in the area (in logarithmic scale); and the size of the workplace (establishment) is grouped into four categories. In addition, the region of residence (Helsinki, Turku and Tampere as the three largest cities of Finland, and the rest of the country) was added to the controls. The purpose of this variable is to remove the difference associated with a wider context of residence from our neighbourhood variable. Other controls include the 5-year calendar period (1999–2004; 2005–2009, 2010–2014), partnership status (partnered to another migrant, partnered to a native Finn, no partner), activity status (employed, studying, other), and level of education (basic, secondary, tertiary). In order to control for the short-term effects associated with international migration, the time elapsed since arrival in Finland (1 or 2 years, 3 or 4 years, 5 to 9 years, and 10 or more years) was added. Controls also include immigrant generation which differentiates African and Middle Eastern women who came to Finland as adults (the first generation), as children (1.5 generation), and descendants of migrants who were born in Finland to immigrant parents (the second generation). The woman's age at previous birth interval (less than 20, 20–24, 25–29, 30–34; 35–44) was included in the models for second and third births.

[3] In the exploratory stage of analysis, we experimented with different age bracket (e.g. excluding children) but this did not alter our substantive results.

[4] There was no substantial difference in the results depending on whether the workplace based on the concept of enterprise (legal business unit) or establishment (local activity unit).

Table 2 The proportion of immigrants (all origins) and their descendants in neighbourhood and workplace, Finland, immigrant-origin and native women aged 18–40, 2014

Population groups by origin	Proportion of immigrants (all origins) and their descendants, all origins%			Total
	0–4	5–9	10+	
Residential neighbourhood				
Africa and Middle East	7.0	18.3	74.7	100
Western	33.7	27.9	38.4	100
Eastern Europe	16.1	24.3	59.6	100
Asia	16.8	23.9	59.3	100
Latin America and Oceania	19.9	26.9	53.2	100
Native Finns	43.5	29.7	26.8	100
Workplace				
Africa and Middle East	13.9	15.0	71.1	100
Western	60.0	13.2	26.8	100
Eastern Europe	17.8	16.2	66.0	100
Asia	13.2	12.7	74.0	100
Latin America and Oceania	22.0	20.1	57.9	100
Native Finns	78.2	10.9	10.9	100

Finnish register data, authors' calculations

Our modelling strategy was as follows: for each parity transition, we estimated models with our main independent variables—the proportion of co-ethnic immigrants of African and Middle Eastern origin and their descendants in the neighbourhood and workplace—included, one at a time. At the next step, we added control variables to the models in a stepwise procedure, and monitored the change in the effects of independent variables. Finally, the variables for the other domain (neighbourhood or workplace) were added to the model. In order to provide insight into variations in the effects of the neighbourhood context, the neighbourhood variable was interacted with the immigrant generation. Table 3 presents the numbers of person-years of observation and events by parity, neighbourhood, workplace, and the main control variables.

Results

Main Effects Associated with the Neighbourhood and Workplace Context

Table 4 shows estimates from the first set of models indicating the first-, second- and third-birth risks for women of African and Middle Eastern origin in relation to varying proportions of co-ethnic immigrants in the neighbourhood.

For entry into parenthood, the initial model (M1.1), controlled only for the women's age and neighbourhood size, reveals a weak association between the proportion of co-ethnic residents in the neighbourhood and first-birth risks. Living in areas where immigrants of African and Middle Eastern origin comprise more than one tenth of the population relates to 12% increase in the risk of entry into parenthood, significant at

Table 3 Person-years of observation and the number of first, second, and third births, Finland, women of African and Middle Eastern origin, 1999–2014

Variables and categories	First births		Second births		Third births	
	Person-years	Events	Person-years	Events	Person-years	Events
Proportion of co-ethnic immigrants in neighbourhood, %						
0–4%	32,626	2771	10,675	2247	9954	1284
5–9%	13,700	1195	4729	1113	4451	654
+ 10%	3949	327	1418	360	1557	230
Proportion of co-ethnic immigrants at workplace, %						
0–4%	5450	435	1517	240	1479	117
5–9%	3240	250	815	157	670	61
+ 10%	5062	387	1297	195	1150	94
Calendar period						
1999–2004	8048	688	2857	681	3158	492
2005–2009	15,613	1391	4974	1067	4623	629
2010–2014	26,614	2214	8991	1972	8181	1047
Partnership status						
No partner	38,661	1324	5450	743	4471	469
Partnered with migrant, same origin	8663	2583	9669	2687	10,100	1601
Partnered with Finn	2373	317	1414	222	1162	69
Partnered with migrant, other origin	578	69	289	68	229	29
Age at previous birth						
Under 20			1875	403	392	84
20–24			6797	1631	4665	816
25–29			5792	1300	6426	854
30–34			1989	360	3720	369
35+			369	26	759	45
Activity status						
Employed	13,755	1072	3629	592	3299	272
Student	16,608	959	2895	565	2247	265
Other, not employed	19,912	2262	10,298	2563	10,416	1631
Level of education						
Basic	37,207	2940	10,757	2594	10,263	1626
Secondary	9412	878	4012	732	3053	378
Tertiary	3656	475	2053	394	1746	164
Time since arrival						
1–2 years	9671	1750	3467	879	1232	247
3–4 years	6981	660	3571	986	2216	420
5–9 years	12,318	901	4803	992	5832	866
10+ years	18,906	823	4318	715	5824	547
Not known	2099	159	663	148	748	88
Immigrant generation						
1	27,459	3345	14,435	3184	14,514	1950
1.5 and 2	22,816	948	2387	536	1448	218

Finnish register data, authors' calculations

the 90% level, compared to the reference category. After adding controls to the model, however, the difference from the reference category ceases to be statistically significant

Table 4 Hazard ratios for transition to first, second, and third births by proportion of co-ethnic immigrants and their descendants in the neighbourhood (discrete-time proportional hazards models), Finland, women of African and Middle Eastern origin, 1999–2014

Proportion of co-ethnic immigrants in neighbourhood, %	First birth			Second birth			Third birth		
	M1.1	M1.2	M1.3	M2.1	M2.2	M2.3	M3.1	M3.2	M3.3
0–4 (ref)	1	1	1	1	1	1	1	1	1
5–9	1.06	1.04	1.04	1.10***	1.10**	1.10**	1.09*	1.12**	1.12**
10+	1.12*	1.09	1.09	1.18***	1.17**	1.16**	1.10	1.22**	1.22**

***$p < 0.01$; **$p < 0.05$; *$p < 0.1$

Specification of the neighbourhood, and start and end of exposure time are explained in the Data and Methods section

Model M1.1: controlled for age and size of neighbourhood

Model M1.2: M1.1, additionally controlled for calendar period, partnership status, educational attainment, economic activity, region of residence, time since arrival in Finland, and immigrant generation

Model M1.3: M1.2, additionally controlled for the proportion of co-ethnic immigrants at workplace and size of workplace

Model M2.1: controlled for time since first birth and size of neighbourhood

Model M2.2: M2.1, additionally controlled for age at first birth, calendar period, partnership status, educational attainment, economic activity, region of residence, time since arrival in Finland, and immigrant generation

Model M2.3: M2.2, additionally controlled for the proportion of co-ethnic immigrants at workplace and size of workplace

Model M3.1: controlled for time since second birth and size of neighbourhood

Model M3.2: M3.1, additionally controlled for age at second birth, calendar period, partnership status, educational attainment, economic activity, region of residence, time since arrival in Finland, and immigrant generation

Model M3.3: M3.2, additionally controlled for the proportion of co-ethnic immigrants at workplace and size of workplace

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(M1.2). A stepwise inclusion of controls in the model (not shown in Table 4) reveals that the decrease in the effect occurs when the partnership status and partner's origin are included in the model.[5] The inclusion of the proportion of co-ethnic employees at the individual's workplace does not entail any additional change in the results (M1.3).

For second births, the association between neighbourhood composition and fertility transition is more pronounced. In areas with a proportion of co-ethnic immigrants at 10% or higher, the initial model shows that the hazard of having a second child increases 18% relative to the reference category (M2.1). For the intermediate category, the hazard ratio is smaller (10%), but statistically significant. The inclusion of control variables in the model entails only a marginal change in the effect of the neighbourhood context (M2.2). Similarly, adding the control for workplace context does not produce

[5] For first births we estimated an additional set of models for only currently partnered women. In this set of models, the impact of neighbourhood composition was somewhat more pronounced and reached the level of statistical significance.

[0] Note that the final models of the first set (M1.3, M2.3 and M3.3) and the second set (M4.3, M5.3 and M6.3) are identical in terms of variables included.

any substantial change in the association between neighbourhood composition and second-birth risks. In the final model M2.3, the proportion of immigrants of African and Middle Eastern origin in the residential neighbourhood between 5 to 9%, and 10% and above, is associated with 10% and 16% increase in the hazard of a second birth, respectively.

For third births, the relationship appears relatively weak in the initial model (M3.1). The effect neighbourhood composition is marginally significant for the intermediate category, but not for areas with higher concentrations of co-ethnic immigrants. However, adding controls to the models produces a noticeable increase in the effect. A stepwise inclusion of controls (not reported in Table 4) indicates that the increase occurs when the control for calendar period is included in the model. In the adjusted model M3.2, living in areas where immigrants of African and Middle Eastern origin comprise more than one tenth of the population is associated with 22% increase in the risk of third birth relative to the reference category. Living in neighbourhoods in the intermediate category is also associated with an elevated third-birth risk, but the difference from reference category is smaller (12%).

In the second set of models, the main independent variable is the proportion of immigrant co-workers of African and Middle Eastern origin in the individual's workplace, based on the establishment (local activity unit) concept.[6]

As evident from the estimates presented in Table 5, the proportion of immigrant co-workers of African and Middle Eastern origin does not make a significant difference to entry into parenthood, neither before (model M4.1) nor after adjustment for the influence of the control variables (M4.2) and the neighbourhood composition (M4.3).

For second births, the results are somewhat closer to the pattern reported for neighbourhood. Being employed in an establishment in which the proportion of co-ethnic immigrants ranges from 5 to 9% increases the hazard of having a second child by 21% relative to the reference category in the initial model (M5.1). In the adjusted models (M5.2 and M5.3), the hazard ratio slightly decreases (19%), but remains marginally significant. However, for workplaces with higher proportion of co-ethnic immigrants, the hazard ratio is very small in all models.

Among mothers of two children, the proportion of immigrant co-workers of the same origin does not make any significant difference to third-birth risks, neither in the initial model (M6.1) nor after adjustment for the influence of the control variables (M6.2) and the neighbourhood composition (M6.3). To check the robustness of the estimates presented in this section, we estimated the same models with the study population limited to employed women. The results pertaining to workplace were not substantially altered.

Interactions with Immigrant Generations

In order to investigate whether the association with ethnic context persists beyond the first generation, three interaction models focussing on residential neighbourhood were estimated (Table 6). In these models, we focus our attention mainly on the 1.5 and second-generation immigrants. The decision to merge child migrants with the second

[6] Note that the final models of the first set (M1.3, M2.3 and M3.3) and the second set (M4.3, M5.3 and M6.3) are identical in terms of variables included.

Table 5 Hazard ratios for transition to first, second, and third births by proportion of co-ethnic immigrants and their descendants at workplace (discrete-time proportional hazards models), Finland, women of African and Middle Eastern origin, 1999–2014

Proportion of co-ethnic immigrants at workplace, %	First birth			Second birth			Third birth		
	M4.1	M4.2	M4.3	M5.1	M5.2	M5.3	M6.1	M6.2	M6.3
0–4 (ref)	1	1	1	1	1	1	1	1	1
5–9	1.00	0.99	0.99	1.21*	1.19*	1.19*	1.12	1.12	1.11
10+	0.99	0.93	0.93	1.06	1.04	1.04	1.06	0.97	0.97

***$p < 0.01$; **$p < 0.05$; *$p < 0.1$

Specification of the workplace, and start and end of exposure time are explained in the Data and Methods section

Model M4.1: controlled for age, activity status, and size of workplace

Model M4.2: M4.1, additionally controlled for calendar period, partnership status, educational attainment, economic activity, region of residence, time since arrival in Finland, and immigrant generation

Model M4.3: M4.2, additionally controlled for the proportion of co-ethnic immigrants in neighbourhood and size of neighbourhood

Model M5.1: controlled for time since first birth, activity status, and size of workplace

Model M5.2: M5.1, additionally controlled for age at first birth, calendar period, partnership status, educational attainment, economic activity, region of residence, time since arrival in Finland, and immigrant generation

Model M5.3: M5.2, additionally controlled for the proportion of co-ethnic immigrants in neighbourhood and size of neighbourhood

Model M6.1: controlled for time since second birth, activity status, and size of workplace

Model M6.2: M6.1, additionally controlled for age at second birth, calendar period, partnership status, educational attainment, economic activity, region of residence, time since arrival in Finland, and immigrant generation

Model M6.3: M6.2, additionally controlled for the proportion of co-ethnic immigrants in neighbourhood and size of neighbourhood

Finnish register data, authors' calculations

generation was motivated by the fact that the number of second-generation immigrants of African and Middle Eastern origin in childbearing age groups appeared too small for separate analysis. We choose not to estimate interaction models for workplace composition, as the main effects models exhibited weak and non-systematic association between the proportion of co-ethnic employees at workplace and the hazard of having a(nother) child.

For first births, the proportion of African and Middle Eastern immigrants from 5 to 9% in the neighbourhood relates to a 14% increase in the hazard of entry into parenthood among the 1.5 and second-generation immigrants; the effect is significant at the 90% level (M7). For residential neighbourhoods with the proportion of co-ethnic immigrants at 10% and higher, the effect is very small (6%).

For second births, the size of the neighbourhood effect is larger. Among the 1.5 and second-generation immigrants, the intermediate proportion of African and Middle Eastern immigrants in the neighbourhood is associated with 33% increase in the risk of second birth, compared to the reference category (M8). For neighbourhoods with

Table 6 Interaction of immigrant generation and proportion of co-ethnic immigrants and their descendants in neighbourhood for the transition to first, second, and third birth (discrete-time proportional hazards models), Finland, women of African and Middle Eastern origin, 1999–2014

Proportion of co-ethnic immigrants in neighbourhood, %	First birth M7		Second birth M8		Third birth M9	
	1G	1.5 and 2G	1G	1.5 and 2G	1G	1.5 and 2G
0–4 (ref)	1	1	1	1	1	1
5–9	1.01	1.14*	1.06	1.33***	1.14**	0.99
10+	1.12	1.06	1.16**	1.23*	1.18*	1.43*

***$p < 0.01$; **$p < 0.05$; *$p < 0.1$

Model M7: controls included in the model are as indicated for M1.2 in Table 4

Model M8: controls included in the model are as indicated for M2.2 in Table 4

Model M9: controls included in the model are as indicated for M3.2 in Table 4

Finnish register data, authors' calculations

higher proportions of co-ethnic immigrants, the increase in the hazard of having a second child is 23%, but fails to attain statistical significance.

For third births, the intermediate category (the proportion of co-ethnic immigrants from five to 9%) shows virtually no effect among the 1.5 and second generation immigrants (M9). However, women of African and Middle Eastern origin living neighbourhoods with the proportion of co-ethnic immigrants at 10% or above exhibit 43% increase in the risk of having a third child.

The results suggest that the association between childbearing behaviour and population composition in neighbourhoods does not fade away in the 1.5 and second generation, although the effect varies across parity and categories of the independent variable. The variation in the results may be partly due to the fact that the register data we use contains a relatively small number of African and Middle Eastern immigrants who are at the risk of having second or third child. For that reason, it is not possible to tell whether the size of the neighbourhood effect has changed compared to the first generation.

Effects Associated with the Control Variables

Table 7 presents two sets of estimates for the control variables. The first set of estimates pertains to women of African and Middle Eastern origin; the estimates come from the final models that were presented in Tables 4 and 5. The second set of estimates is obtained from a similar models run for native Finns. The purpose of the second set is to allow a systematic comparison of the fertility patterns of African and Middle Eastern origin and that of the host population.

The results reveal several interesting differences between the two sets of estimates. Although our analysis covers a relatively short period of time, fertility trends for immigrants of Africa and Middle Eastern origin diverge from those of the host population. For native Finns, first-birth risks decreased, but the hazard ratios for second

and third births slightly increased during the period of study. In contrast, African and Middle Eastern immigrants exhibited an upward shift in the hazard ratio for first births, while second- and third-birth risks lessened. The decrease in second and third births can be seen as a sign of fertility adaptation; however, the upward shift in the hazard ratio for the first parity is more difficult to explain.

Unsurprisingly, the modelling results show that independent of origin, the risks of having a(nother) child are higher among women who are currently partnered. However, among African and Middle Eastern women, the origin of the partner makes a large difference in fertility outcomes: having a native Finnish partner is associated with a 47% decrease in the first-birth risks, a 28% decrease in the second-birth risks and a 45% decrease in third-births risks, compared to their counterparts who are partnered with immigrants, typically of the same origin. This lends support to the notion that partnering with natives can be seen as an important factor of adaptation.

In modelling the transition to higher order births, another important demographic control relates to the woman's age at the time of the previous birth. As anticipated, the hazard of having another child is inversely associated with the age at which a previous child was born, both for our study population and the natives of the host country. In accord with their higher fertility, however, the decrease in hazard ratios for second and in particular for third births appears less steep at higher ages among African and Middle Eastern immigrants.

Differences between the two sets of estimates can be also observed for the socio-economic controls. Women of African and Middle Eastern origin exhibit no statistically significant difference in first-birth risks in relation to educational attainment, while there is a moderately negative gradient for second and third births: women with low education have the highest risk of an additional birth. Among native women, the relationship to education follows a *U*-shaped pattern for first births. For second and third births, the gradient is opposite to that characteristic of African and Middle Eastern immigrants: among native Finns, the highly educated women have the highest risk of another birth. As regards activity status, women of African and Middle Eastern origin who are neither employed nor enrolled in school exhibit somewhat larger contrasts with the reference category (employed) than native women.

The effects associated with duration of residence in the host country (this control is not applicable to the host population) are in line with the interrelation of life events argument, according to which elevated birth risks shortly after arrival result from an interrelationship between migration, union formation, and childbearing (Singley and Landale 1998; Andersson 2004; Lindstrom and Saucedo 2007; Milewski 2007). Transition to second birth seems to be an exception to this pattern, as the risks are not significantly elevated at short durations (from 1 to 2 years). However, an additional model with a finer disaggregation of duration categories (not shown in Table 7) revealed a significantly elevated risk of childbirth during the first year after arrival in Finland also for second births as well.

The effects associated with time since arrival also show that after the initial peak, the risks of having a(nother) child gradually decrease. This can be observed for childless women, one-child mothers and two-child mothers alike. This pattern of prolonged decrease is in accord with the adaptation perspective, which posits that with time since arrival, fertility behaviour of immigrants gradually comes to resemble that of the host population. For immigrants from high-fertility countries,

Table 7 Hazard ratios of control variables for the transition to first, second and third birth by (discrete-time proportional hazards models), Finland, women of African and Middle Eastern origin and native women, 1999–2014

Control variable	Women of African and Middle Eastern origin			Native women		
	1st birth M1.3	2nd birth M2.3	3rd birth M3.3	1st birth M10	2nd birth M11	3rd birth M12
Calendar period						
1999–2004 (ref)	1	1	1	1	1	1
2005–2009	1.15***	0.91*	0.91	1.01	1.05***	1.08***
2010–2014	1.13***	0.93	0.83***	0.94***	1.08***	1.09***
Partnership status						
No partner (ref)	1	1	1	1	1	1
Partnered with migrant	5.93***	1.82***	1.40***	6.33***	2.87***	1.92***
Partnered with native Finn	3.11***	1.31***	0.77**	5.96***	2.92***	1.68***
Age at previous birth						
Under 20		1.04	1.34**		1.16***	1.34**
20–24 (ref)		1	1		1	1
25–29		0.92**	0.81***		0.82***	0.58***
30–34		0.84***	0.66***		0.61***	0.32***
35+		0.34***	0.44***		0.31***	0.17***
Activity status						
Employed	1	1	1	1	1	1
Student	0.96	1.30	0.93	0.68***	0.87***	1.00
Other, not employed	1.34**	1.65**	1.22*	1.09***	1.17***	1.32***
Level of education						
Basic	0.98	1.14***	1.24***	1.45***	0.83***	0.99
Secondary (ref)	1	1	1	1	1	1
Tertiary	1.08	1.09	1.03	1.36***	1.30***	1.12***
Time since arrival						
1–2 years	1.65***	1.09	1.39***			
3–4 years	1.33***	1.18**	1.31***			
5–9 years	1.30***	1.03	1.12			
10+ years	1	1	1			
Immigrant generation						
1 (ref)	1	1	1			
1.5 and 2	0.99	1.11	1.11			

***$p < 0.01$; **$p < 0.05$; *$p < 0.1$

The estimates for women of African and Middle Eastern origin are from models M1.3, M2.3 and M3.3. The estimates for native women are from additional models which included variables shown in Table 7. For women of African and Middle Eastern origin, the estimates for women's age, years since previous birth, region, size of neighbourhood and size of workplace are not shown. For native women, the estimates for time since arrival and immigrant generation were not estimated

Finnish register data, authors' calculations

such as African and Middle Eastern immigrants in Finland, this suggests a shift towards lower fertility.

Interestingly, the estimates for control variables do not show a significant difference for immigrant generations. This may be due to our duration variable, as child migrants and second-generation migrants have usually long durations of residence.

Summary and Discussion

In this article, we investigated the fertility of immigrants in Finland from 1999 to 2014, with a focus on the role of two domains of daily living—the residential neighbourhood and the workplace—in the adaptation of childbearing behaviour among immigrants from high-fertility settings to the host country patterns. In order to investigate the association between the ethnic composition of the neighbourhood and workplace contexts, and childbearing behaviour, we estimated a series of proportional hazard models for women of African and Middle Eastern origin for the transition to first, second, and third births.

The results confirmed our *first hypothesis*, according to which the proportion of co-ethnic immigrants and their descendants in the residential neighbourhood would be positively associated with the propensity of having a(nother) child. Our findings suggest that for high-fertility groups a larger proportion of co-ethnic immigrants in the neighbourhood relates to slower convergence of childbearing behaviour with the host country's fertility pattern. It is noteworthy that significant difference in fertility can already be observed at relatively small concentrations of co-ethnic immigrants in the neighbourhood. The similarity of the results, obtained from the initial and final models, lends support to the notion that fertility differences associated with the proportion of co-ethnic immigrants in neighbourhood would be largely independent of common demographic and socio-economic correlates of childbearing.

Our *second hypothesis* anticipated that a positive association would also exist between the proportion of co-ethnic immigrants among one's co-workers and the risk of having a(nother) child. However, the modelling results offered only marginal support to this hypothesis. A plausible reason for the absence of systematic positive association between workplace context and fertility behaviour may stem from the fact that only a relatively small proportion of women of African and Middle Eastern origin in Finland is economically active. This means that employed women in our study population are plausibly already selected for characteristics unobservable in the register data, which make them less oriented to family growth. Our modelling results on control variables support this assertion, as being employed was found to be associated with a significantly reduced risk of having a(nother) child relative to being not employed or enrolled in education.

In accord with our *third hypothesis*, a comparison of the model estimates for childless women with those of their counterparts with one or two children showed that the effects of the residential neighbourhood tend to increase towards higher parities. This pattern relates to the fact that the contrast between high-fertility countries of origin and low-fertility host countries in the propensity to have a(nother) child tends to be more pronounced for higher order births. Among immigrants of African and Middle

Eastern origin, the transition to motherhood seems to be quite universal.[7] Evidently, this does not leave room for much variation at the transition to first birth.

We also examined whether the association between fertility and the neighbourhood context persists beyond the first generation of immigrants. The results are in accord with our *fourth hypothesis*, which posited that the effects associated with the proportion of co-ethnic immigrants in the residential neighbourhood would also be discernible among child migrants and the second generation. This finding is in line with the notion that among immigrants from high-fertility settings, the adaptation of childbearing behaviour to host country patterns tends to be a long-term process which often does not come to a close in the first generation (Coleman 1994; Kulu et al. 2017).

The results for the control variables also exhibited patterns that can be linked to fertility adaptation. First of all, the gradual decrease in the risk of childbearing over time which follows the initial short-term peak after arrival in the country is evidence of fertility adaptation documented in previous research (e.g. Ford 1990; Andersson 2004). Secondly, significantly reduced hazard ratios for women of African and Middle Eastern origin who have partnered with native Finns corroborates earlier studies concerning the role of the partner in the adaptive process (Andersson and Scott 2007; Scott and Stanfors 2011; van Landschoot et al. 2017). On the other hand, however, differences of the patterns from those of the host population for characteristics such as educational attainment shows that fertility adaptation is still far from complete in our study population.

Backdating the independent variables has allowed us to reduce the risk for reverse causality between the neighbourhood and childbearing in our study. The inclusion of the partners' origin in our models is assumed to control for the moderating influence of in-group partnerships on fertility outcomes. However, there are two important methodological limitations that need to be considered when interpreting the results of our study.

First and foremost is the extent to which the associations between the neighbourhood context and fertility can be driven by mechanisms other than adaptation. A complementary mechanism that may also contribute to these associations is the selection of immigrants into particular neighbourhoods. It can be assumed, for instance, that immigrants who have adapted more fully to the host society would tend to be less segregated and would therefore have childbearing patterns more similar to the host population. As a result, the effects of neighbourhoods may reflect not only adaptation but also the self-selection of immigrants into different neighbourhoods. This means that the effects associated with adaptation may be somewhat less pronounced than our modelling results suggest. Nevertheless, it seems quite unlikely that the results obtained in the analysis could be produced solely by the selection mechanism. In order for this to be true, the sorting of individuals into neighbourhoods with varying proportions of co-ethnic immigrants would be wholly driven by unobserved characteristics that are closely related to fertility behaviour. This view does not seem realistic, as there are strong exogenous factors that shape the ethnic context of neighbourhoods. For instance, there has been a marked increase in the proportion of African and Middle Eastern immigrants in Finland over the period of our study that is beyond the control of individuals.

Another limitation of the study relates to channels through which the influence of neighbourhood contexts may operate. The register data do not provide evidence of the

[7] According to Kaplan-Meier estimates the proportion of childless women is around 10% in the study population.

actual nature of the contacts that occur in neighbourhood. Our analysis was based on the conjecture that neighbourhood composition is a suitable proxy for the latter. Despite this caveat, however, community composition and exposure to cultural norms are considered to be strongly associated (Wilson and Kuha 2018), and this assumption is embedded within fundamental theories that have been developed by previous research on assimilation and ethnicity (Gordon 1964; Alba and Nee 2003). Overcoming these limitations will be a task for future research. It would be also important to examine whether a relationship between neighbourhood context and fertility behaviour of immigrants can be observed in other countries in Europe where the origin and profile of high-fertility groups differs from those in Finland.

Notwithstanding the methodological challenges, we trust that some important conclusions may be drawn from this article. Most importantly, it demonstrates that alongside other factors such as age at migration, education or cultural proximity to the host country, the ethnic composition of neighbourhoods may have tangible implications for the tempo of fertility adaptation among immigrants who originate from high-fertility settings. Furthermore, our results suggest that the neighbourhood composition's association with fertility adaptation persists among child migrants, and possibly among the second generation. This finding resonates with studies which have provided evidence that among immigrants from high-fertility settings, the convergence of fertility behaviour can take at least two generations (Milewski 2010; Scott and Stanfors 2011; Kulu et al. 2017; Pailhé 2017; Carlsson 2019). Finally, these implications also seem to be associated with the contexts in which the proportion of co-ethnic immigrants is relatively moderate, at least when considered at the country level. From the policy perspective, the study underscores the need for measures that would help to moderate residential and workplace segregation of immigrants. Such measures are even more essential when the structural and cultural contrasts between immigrant groups and the mainstream society are more vivid.

Acknowledgements We are grateful to the editors of this special issue and to anonymous reviewers for their thorough comments that helped to improve the paper.

Funding The study was funded by the Academy of Finland decisions number 303665 (Urbanisation, Mobilities and Immigration) and 321264 (Falling Fertility and the Inequalities Involved) and by the Estonian Research Council Grants PRG-71 and PRG306.

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