Ethnic enclaves, early school leaving, and adolescent crime among immigrant youth

Are Skeie Hermansen[1,2,*,]

[1]Department of Sociology and Human Geography, University of Oslo, Oslo, Norway
[2]Swedish Institute for Social Research (SOFI), Stockholm University, Stockholm, Sweden
*Corresponding author. Email: a.s.hermansen@sosgeo.uio.no

Abstract

Spatial concentration of immigrant minorities raises concerns about the intergenerational consequences of place-based ethnic inequalities. This study asks how socioeconomic properties of the ethnic neighbourhood environment during adolescence predict future criminal behaviour and early school leaving among immigrant youth using administrative data from Norway. The results show that immigrant youth's adolescent exposure to better-educated immigrant neighbours from the same origin country is related to lower risks of criminal engagement and higher likelihoods of completing upper-secondary education, while growing up in areas with less-educated coethnics is associated with adverse outcomes. Although effect sizes are modest, these relationships are robust to adjustment for a broad set of background characteristics and fixed effects at the level of neighbourhoods and national-origin groups. Coethnic neighbours' educational resources are more strongly associated with adolescent crime and early school leaving among immigrant youth from disadvantaged family backgrounds. Overall, these findings support the predictions of influential theories of assimilation which emphasize that access to social capital and socioeconomic resources found within local ethnic enclaves shape the future life chances of immigrant youth.

Introduction

Newcomer immigrants often settle in close proximity to earlier arrivals from their own origin country, thus contributing to spatially concentrated coethnic immigrant communities—often referred to as 'ethnic enclaves' (Musterd, 2005; Aradhya et al., 2017). Research on neighbourhood effects shows that residential contexts shape adolescent development through processes such as interaction within friendship networks, the function of adult residents as role models and agents of social control, and the quality of schools or other local institutions (Jencks and Mayer, 1990; Kling et al., 2005; Harding et al., 2011; Sharkey and Faber, 2014). Since many immigrant minorities live in areas characterized by relative social deprivation, there is concern about the consequences of relative isolation from mainstream society and whether structural barriers related to spatial segregation contribute to the reproduction of place-based inequalities across immigrant generations (Alba and Foner, 2015; Kalter et al., 2018; Drouhot and Nee, 2019). This study asks whether and how characteristics of the ethnic neighbourhood environment in adolescence affect future life chances among immigrant youth. The focus is on adolescent crime and early school leaving, which constitute key risk factors for immigrant youth's 'downward assimilation' into bottom segments of the status hierarchy of the societies where their parents settled (Portes and Rumbaut, 2001).

Although cohesive immigrant communities may enable upward social mobility and protect against detrimental outcomes, a relative lack of local 'ethnic capital' and exposure to disadvantaged neighbours could heighten the risk of educational disadvantage and youth delinquency (Borjas, 1995; Portes and Rumbaut, 2001; Cutler et al., 2008). Recently, Sharkey and Faber (2014: 562) argued that "a single neighbourhood is experienced in different ways by groups […] who spend their time within the neighborhood in different ways and in their own spaces, carving out unique social worlds from the common environment that surrounds them." How immigrant youth from different minority groups living in the same area are embedded in different ethnic networks is one aspect of

such within-neighbourhood variation. Processes such as differential exposure to social control, transmission of norms and aspirations, or access to after-school tutoring may create local resources and risks specific to members of each minority group over and above broader neighbourhood effects.

While ethnographic research often stress how (lack of) resourceful immigrant communities shape the incorporation of immigrant youth (e.g., Zhou and Bankston, 1998; Kasinitz et al., 2008; Lee and Zhou, 2015; Friberg, 2019), a small literature has sought to quantify how ethnic enclaves affect educational outcomes. Typically, these studies find that immigrant youth who grow up alongside well-educated and resourceful co-ethnic immigrant neighbours fare better in school, while the opposite is true for those living in socioeconomically disadvantaged local communities (Kroneberg, 2008; Bygren and Szulkin, 2010; Åslund et al., 2011; Conger et al., 2011; Fleischmann et al., 2013; Lee, 2018). Bygren and Szulkin (2010), for example, find that either beneficial or harmful effects of ethnic enclaves on schooling reflect the educational skills of coethnics and are stronger in larger communities, while another study finds that the positive influence of resourceful neighbours "travel most easily within co-ethnic networks [while] resources held by neighbours of different ethnic groups are less effective for individual attainment" (Fleischman et al., 2013: 1248). Despite a few exceptions (Bygren and Szulkin, 2010, Åslund et al., 2011), prior studies do not adequately separate the group-specific effects of co-ethnic immigrant communities on educational outcomes from neighbourhood sorting and broader contextual effects shared by all immigrant youth living in the same area.

Prior research has not yet investigated how criminal behaviour among immigrant youth is shaped by the socioeconomic characteristics of their ethnic neighbourhood environment. However, earlier studies find less externalizing problem behaviours—e.g., not following rules, skipping school, coming late or arguing with teachers—in school contexts where immigrant youth are surrounded by many co-ethnics, but do not address crime nor the role of (parental) socioeconomic resources of coethnic schoolmates (Benner and Crosnoe, 2011; Georgiades et al., 2013; Geven et al., 2016). Furthermore, there is mixed evidence from Europe and United States on whether the overall spatial concentration of immigrants heightens or lowers overall crime rates at different geographic levels (for reviews, see Bell and Machin, 2013; Ousey and Kubrin, 2018), but this literature does not address the group-specific effects of ethnic enclaves on immigrant youth's criminal behaviour.

In this study, I develop hypotheses on how neighbourhood exposure to co-ethnic immigrant networks matter for criminal behaviour and educational outcomes among immigrant youth. To test these, I examine how features of the adolescent ethnic environment predict future outcomes among immigrant youth from a variety of national-origin minorities using administrative data from Norway (43,891 immigrant youth nested across 1,457 neighbourhoods and 155 national-origin groups). Spatially nested panel data on the whole population enables the measurement of how characteristics of local ethnic environments vary across national-origin minorities who live in the same area. Group-specific variation within neighbourhoods enables me to examine how immigrant youth's later-life outcomes varies as a function of the local educational resources in their coethnic neighbourhood community, as well as how this influence compares to that exerted by immigrant neighbours from other origin countries and local member of the native majority. Finally, I estimate fixed-effects regressions that control for unobserved factors at the level of both residential neighbourhoods and national-origin groups (cf. Bertrand et al., 2000).

Ethnic enclaves, neighbourhoods, and immigrant youth's life chances

Influential theories of immigrant assimilation emphasize how mobilization of social capital within local ethnic networks influence future life chances of immigrant youth (Borjas, 1992; Portes and Zhou, 1993; Borjas, 1995; Portes and Rumbaut, 2001). While collective efficacy in local communities is likely to be important for migrants and nonmigrants alike (Sampson et al., 1997, 1999), such networks are arguably often tighter within areas where immigrants who emigrated from the same country—often for similar reasons—continue to live close to each other. The spatial concentration of coethnic immigrant communities likely leads to high degrees of so-called 'intergenerational closure' (Coleman, 1988; Portes, 1998)—where neighbouring youth and adults know each other well and social network structures are dense and closed—which provides effective contexts for upholding mutual norms and controlling in-group behaviour. A key question is whether the direction of such ethnic enclave effects are conditioned by the local socioeconomic resources of fellow group members.

Borjas (1992, 1995) formalized such an argument with the theoretical concept of 'ethnic capital'—where intergenerational mobility across immigrant generations is modelled as a function of both parental socioeconomic resources and the group-level quality of the ethnic environment in which parents make their investments. Mobilization of local ethnic capital is perhaps most effective for immigrant groups that are socioeconomically diverse and where cross-class ties at the level of neighbourhoods are common, as less

resourceful members of the group can then benefit from proximity to more advantaged members of the group (Cutler, Glaeser and Vigdor, 2008). In contrast, reliance on in-group networks in disadvantaged immigrant minorities where group-level diversity is limited and resources are scarce may accentuate intergenerational disadvantage (Heath, 2007; Alba and Foner, 2015).

Segmented assimilation theory (Portes and Zhou, 1993; Portes and Rumbaut, 2001) also stresses how social, human, and economic resources—or lack thereof—found within ethnic enclaves are central to understand diverging assimilation trajectories among minority youth. The mobilization of ethnic social capital and 'selective acculturation' within cohesive communities may foster upward mobility and insulate immigrant youth against detrimental outcomes—such as early school leaving and delinquent behaviours—if strong extrafamilial supervision preserves cultural values and group solidarity (Zhou and Bankston, 1998). Local norms of high educational achievement may pressure immigrant youth to put more effort into schooling and raise their aspirations, while organized tutoring and supplementary after-school programs is also common within many immigrant minorities (Kasinitz et al., 2008; Lee and Zhou, 2015; Friberg, 2019). Although segmented assimilation theory primarily emphasizes the beneficial role of tight-knit immigrant communities, it seems likely—as argued by Borjas (1992)—that higher group-level human capital will strengthen any positive ethnic enclave effects on immigrant youth's schooling and adolescent development (Kroneberg, 2008; Xie and Greenman, 2011).

Furthermore, the segmented assimilation perspective also highlights how absence of community-level social control and lack of coethnic socioeconomic resources may push disadvantaged minority youth towards 'downward assimilation' (Portes and Rumbaut, 2001). The link between concentrated spatial disadvantage, lack of collective efficacy, and elevated crime rates is well-established in research on non-migrant populations (Sampson, Raudenbush and Earls, 1997; Haynie et al., 2006; Zimmerman and Messner, 2011; Vogel and South, 2016). If disadvantaged coethnic immigrants develop an adversarial stance towards mainstream society—perhaps due to experiences of (perceived) ethnic discrimination and a sense of blocked opportunities—normative pressure may lead immigrant youth to devalue schooling, engage in delinquent behaviour, and form oppositional ethnic identities (Bisin et al., 2011).[1] Lack of support from resourceful coethnics may also render immigrant youth especially vulnerable to exposure to high rates of adolescent crime often found in disadvantaged areas (DiPietro and McGloin, 2012). Strain theory sees crime and delinquency as an alternative way of gaining access to resources disadvantaged individuals are not able to gain through institutional means (Merton, 1938; Agnew, 1992), which suggests that adolescent crime may vary with unequal spatial distribution of socio-economic resources between immigrant minorities (Thomas, 2011). If immigrant youth observe that large shares of adult coethnic neighbours experience poverty and persistent disadvantage, they may seek to assert status and dominance through alternative means such as crime. In sum, our key prediction is that:

> Hypothesis 1 (enclave composition): Immigrant youth who grow up in neighbourhoods with higher shares of well-educated and resourceful co-ethnic immigrant neighbours (i.e., from the same country of origin) are less likely to engage in adolescent crime and more likely to have better educational outcomes.

Ethnic enclaves are likely to matter more in areas with many immigrants from the same origin group, as this may lead to increased group solidarity and contact among coethnics. A stylized fact from social network research is that people prefer to interact with and form friendships with individuals of the same ethnic background, as they are perceived to be more similar with respect to tastes, worldviews, and behaviours (McPherson et al., 2001; McFarland et al., 2014; Lewis, 2015). Furthermore, the number of coethnic neighbours is an important structural determinant for daily opportunities to meet members of the same ethnic group and maintain in-group contact (Blau, 1977; Feld, 1981).

Specifically, immigrant youth often report that their closest friends belong to their own ethnic group and, more broadly, that ethnoracial friendship homophily increases disproportionately with rising exposure to more same-ethnic peers in school and neighbourhood contexts (Moody, 2001; Mouw and Entwisle, 2006; Currarini et al., 2010; Smith et al., 2016; Kruse and Kroneberg, 2019). Social disorganization and control theories argue that crime and delinquency will be higher in areas with weak communities with less shared group identities and informal social control (Shaw and McKay, 1942; Hirschi, 1969). In contrast, close-knit social networks and intergenerational closure, which often characterizes large and well-established ethnic enclaves, may function both as a buffer against youth crime (Thomas, 2011) and facilitate school success (Portes and Rumbaut, 2001).

Overall, it is likely that the educational resources of coethnics will matter more if the number of local coethnics is higher, especially so when moving from few coethnics to a critical mass of neighbours from the same country of origin (Bygren and Szulkin, 2010; Åslund et al., 2011). Once enclaves are large and established, however, the interaction between coethnics'

educational resources and additional increases in their numbers may level off above a certain threshold of coethnics neighbours.

Furthermore, if ethnic affiliation structures the local pattern and intensity of social interactions, the daily experiences and group-level resources available in the same neighbourhood may be unique to each immigrant minority (McPherson, Smith-Lovin and Cook, 2001). Thus, we might expect a gradient of ethnic distance where spatial proximity to coethnic neighbours is more important than exposure to immigrants from other origin countries (Markussen and Røed, 2015).

Finally, socioeconomic resources found within the wider ethnic enclave may also compensate for lacking access to resources among immigrant youth in socioeconomically disadvantaged families with less parental socioeconomic resources (Cutler, Glaeser and Vigdor, 2008; Alba and Foner, 2015). Thus, immigrant youth from disadvantaged family backgrounds may be more influenced by exposure to co-ethnic neighbours than those of better-off parents. Based on the above conjectures, I outline three additional hypotheses.

Hypothesis 2 (ethnic affiliation): Educational resources of co-ethnic immigrant neighbours matter more for immigrant youth's outcomes than those of immigrant neighbours from other countries of origin.

Hypothesis 3 (group size): Educational resources of co-ethnic neighbours matter more for immigrant youth's outcomes in areas with more immigrants from the same origin country, especially when moving from few coethnics to larger and established enclaves.

Hypothesis 4 (effect heterogeneity): Educational resources of co-ethnic neighbours matter more for immigrant youth from disadvantaged family backgrounds.

From an empirical perspective, disentangling the hypothesized ethnic enclave effects from other sources of potential bias can be difficult. A key challenge is that all neighbouring youth are exposed to many shared contexts regardless of ethnic affiliation. This makes it difficult to isolate the influence of the co-ethnic immigrant community from broader neighbourhood effects, such as low-quality schools in immigrant-dense areas (Portes and MacLeod, 1996; Schwartz and Stiefel, 2011; Hermansen and Birkelund, 2015). Ethnic enclave effects may also be confounded by unobserved characteristics of immigrant youth in the same national-origin minority, such as cultural norms, aspirations or exposure to ethnic discrimination, and neighbourhood sorting related to family background (Hällsten et al., 2013).

To address potential confounding, prior research has exploited within-neighbourhood variation in group-specific ethnic neighbourhood environments using data with information on multiple national-origin groups distributed across a large number of neighbourhood contexts (Bertrand, Luttmer and Mullainathan, 2000; Bygren and Szulkin, 2010; Åslund et al., 2011; Markussen and Røed, 2015). Capitalizing on group-specific variation in the local composition of coethnic neighbours, progress has been made in two recent studies that compare immigrant youth from different national-origin groups who grew up in the same neighbourhood to isolate the influence of coethnics on educational outcomes from other confounding factors (Bygren and Szulkin, 2010; Åslund et al., 2011). In particular, Åslund et al. (2011) also exploit a placement policy for newly arrived refugee families as a source of quasi-experimental exogenous variation in immigrant youth's neighbourhood context. Focusing on Norway, this study uses the same approach as Bygren and Szulkin's (2010) to examine ethnic enclave effects on early school leaving and adolescent crime. More specifically, the key novel contribution is to extend the empirical focus to crime, often considered an early indicator of adult social exclusion and 'downward assimilation' among immigrant youth (Portes and Rumbaut, 2001).

The Norwegian setting

Norway's ethnically diverse immigrant population is comparable to that in other countries in Western Europe (OECD, 2020). From around 1970, Norway experienced labour migration—from countries such as Pakistan and Turkey—and, starting in the late 1970s, the main inflow constituted refugee populations arriving from recent conflict areas—such as Vietnam, Chile, Sri Lanka, and Iran (1980s), the Balkans (early 1990s), and Iraq and Somalia (late 1990s) (Brochmann and Kjeldstadli, 2008). By 2020, immigrants and their local-born descendants constituted 17.3% of the total Norwegian population (Statistics Norway, 2021). Immigrant minorities are widely dispersed across geographic regions in Norway, but many live in the capital of Oslo, where they currently make up one-third of the population, and non-European minorities make up the majority of residents in many less-advantaged residential areas (Kornstad et al., 2018).

Norwegian society is characterized by strong welfare-state institutions and low economic inequality (OECD, 2015), but immigrants of non-European origin often experience low employment rates and a high prevalence of (child) poverty (Bratsberg et al., 2014; Galloway et al., 2015). Nonetheless, immigrant youth often experience educational and labour market progress compared to their parents and native Norwegians

(Hermansen, 2016). Despite this, immigrant youth in several national-origin groups are overrepresented in official crime statistics (Andersen et al., 2017) and, as adults, often settle in disadvantaged and immigrant-dense neighborhoods resembling those where they grew up (Hermansen, Hundebo and Birkelund, 2022). Finally, immigrant concentration in schools seems to have limited negative consequences for both majority and minority students' education once sorting is adequately addressed (Hermansen and Birkelund, 2015) and spatial variation in children's life chances is comparatively low in Norway (Hermansen et al., 2020).

Data and methods

I use linked data on individuals and their neighbourhoods of residence from Norwegian administrative registries, which provide population-wide, spatially nested records for the years 1990–2014. A system of personal identifiers enables the linkage of annually updated information from different administrative registries, including criminal records and educational attainment, parental background, and neighbourhood environment. For the current purposes, I restrict the sample to all individuals with two foreign-born parents, who themselves were either born in Norway or immigrated up to age 12, in birth cohorts 1977–1993 and who were current residents at age 16. Individuals with mixed ancestry (i.e., one foreign-born and one native-born parent) are not included. Finally, a small number of individuals with no information on education and crime, neighbourhood location, or other background variables were also excluded (*n* = 430).

Overall, this yields an analytic sample of 43,891 immigrant youth from 155 countries of origin who are nested across 1,550 neighbourhoods. Table 1 provides descriptive statistics on variables used in the analysis, while Table 2 provides information on key characteristics for the largest national ancestry groups.

Variable measurement

To measure criminal behaviour, I use an indicator of whether the individual was ever charged for a felony between the ages of 16 and 21 (yes = 1, no = 0). Information on charges from official Norwegian crime statistics is obtained from police data, where a charge refers to investigated offenses where the person in question was the prime suspect for the recorded crime when the criminal investigation was considered solved and the case was closed by the formal report filed by the police (Lyngstad and Skardhamar, 2011). I focus on felonies, which are crimes considered serious offenses in the Norwegian penal code (i.e., often punishable acts that carry a sentence of at least three months of imprisonment) in contrast to misdemeanors, which are largely composed of shoplifting, less-serious assaults, and minor larceny.

Early school leaving is measured using an indicator of whether the child had completed upper-secondary education by age 21 (yes = 1, no = 0). The statutory duration of upper-secondary education in Norway is three to four years, depending on academic or vocational tracks, respectively, and individuals usually graduate from upper secondary at age 19 or 20 years. Upper-secondary education is a prerequisite for continuation into postsecondary education and upper-secondary diplomas have high labour-market returns among both children of immigrant and nonmigrant parents (Hermansen, 2013).

Ethnicity is defined on the basis of country of origin, which I rely on both to capture individual ethnic origin and to construct group-specific measures of ethnic neighbourhood environment. However, the term 'ethnic origin' is not entirely precise, since we only know the country of origin of the respondents' parents (and not their skin tone, religious affiliation, language, or the like). Nonetheless, in Norway, like in many other European countries, ethnicity is largely seen as a reflection of the country of origin of one's family (Verkuyten, 2004). Yet it should be noted that subnational (ethnic) affinities are likely to exist (e.g., Aradhya et al., 2017), although these are not captured in administrative data. Acknowledging these limitations, individuals' ethnic origin is measured using country of origin and refers to the country where their parents were born, regardless of whether they themselves were born in Norway or arrived during childhood.[2] Using this classification, there are 155 ancestral nationalities represented in the sample and the ten largest of these national minority groups are immigrant youth of Pakistani, Vietnamese, Turkish, Bosnia-Herzegovinian, Iraqi, Iranian, Kosovar, Somali, Chilean, and Sri Lankese national ancestry. Table 2 reveals considerable variation in educational outcomes, criminal charges, and local ethnic environments across different national-origin groups.

Local ethnic environment is measured during early adolescence (i.e., ages 13 through 16), which constitutes a developmental stage when peer relationships are particularly important and social networks are closely tied to school and neighbourhood contexts (Brown and Larson, 2009). Neighbourhood contexts are captured using information on the geographic area identifiers recorded per January 1 annually since 1990 (Statistics Norway, 1999), which corresponds to Statistics Norway's geographical unit 'statistical tracts' ('*delområder*' in Norwegian). These geographical units are designed to cover contiguous neighbourhoods whose residents would naturally interact through common services, such as local schools and shopping centre facilities. Norway is divided into about 1,457

Table 1. Descriptive statistics for variables used in analysis

	Mean	SD	Min	Max	N
	(1)	(2)	(3)	(4)	(5)
Adolescent outcome variables					
Adolescent crime	0.133		0	1	43,891
Completion of upper-secondary education	0.586		0	1	43,891
Measures of ethnic neighbourhood environment					
Coethnic neighbours from same origin country					
Share of coethnics with high education	0.398	0.216	0	1	43,891
Number of coethnic neighbours	138.7	293.0	0	2,061	43,891
Immigrant neighbours from other origin countries					
Share of other immigrants with high education	0.467	0.084	0	1	43,891
Native majority neighbours					
Share of natives with high education	0.559	0.101	0.203	0.937	43,891
Background covariates					
Born in Norway	0.423		0	1	43,891
Foreign-born, arrival ages 0–6 years	0.248		0	1	43,891
Foreign-born, arrival ages 7–12 years	0.329		0	1	43,891
Female	0.487		0	1	43,891
First-born child of mother	0.389		0	1	43,891
Number of siblings	2.38	1.69	0	14	43,891
Birth cohort	1986.82	4.65	1977	1993	43,891
Mother's age at birth	27.18	5.81	15	45	43,891
Intact or reconstituted family	0.783		0	1	43,891
Parents' years since migration	16.7	8.8	0	60	43,891
Parents' education					
Less than upper secondary	0.333		0	1	43,891
Completed upper secondary	0.201		0	1	43,891
Postsecondary degree, short	0.196		0	1	43,891
Postsecondary degree, long	0.083		0	1	43,891
No information registered	0.188		0	1	43,891
Parents' earnings (log)	11.20	3.98	0.00	15.54	43,891
Father employment	0.594		0	1	43,891
Mother employment	0.557		0	1	43,891
Parents' social welfare	0.222		0	1	43,891
Parents' unemployment	0.139		0	1	43,891

Source: Author's calculations of Norwegian administrative data provided by Statistics Norway.
Note: Standard deviations are not shown for discrete variables, as the full distribution of responses is shown. Sample includes children graduating from compulsory education at ages 15–17 between 1993 and 2009.

statistical tracts and these are, on average, made up of about 3,100 residents. Within each statistical tract, the mean number of lower-secondary schools attended by children within the same birth cohort is 1.8 (std. dev. = 1.9). The size of these neighbourhoods will vary between more or less urban areas, but are generally smaller, with considerably higher population density, in urban areas where most immigrants live. To capture the influence of all stable neighbourhood characteristics

that are shared by neighbouring youth, I include neighbourhood fixed effects referring the neighbourhood of residence during adolescence.[3]

Ethnic neighbourhood environment is measured using information on the educational composition of (1) co-ethnic immigrant neighbours from the same origin country, (2) immigrant neighbours from other origin countries, and (3) native majority neighbours. For each individual's neighbourhood, I measure the annual

Table 2. Summary of mean values for key variables for immigrant youth by country of origin

Country of origin	Adolescent crime	Upper secondary completed	Share high-educated neighbours			Number of observations
			Coethnic immigrants	Other immigrants	Natives	
	(1)	(2)	(3)	(4)	(5)	(5)
Pakistan	0.143	0.582	0.276	0.448	0.564	7,062
Vietnam	0.100	0.676	0.368	0.470	0.535	4,015
Turkey	0.141	0.468	0.225	0.447	0.548	2,567
Bosnia-Hercegovina	0.102	0.738	0.625	0.483	0.551	2,469
Iraq	0.188	0.453	0.361	0.479	0.579	2,309
Iran	0.189	0.578	0.547	0.474	0.551	2,187
Kosovo	0.192	0.460	0.414	0.478	0.550	2,025
Somalia	0.206	0.390	0.252	0.472	0.586	1,658
Chile	0.176	0.478	0.497	0.480	0.540	1,572
Sri Lanka	0.064	0.724	0.368	0.466	0.550	1,495
India	0.071	0.770	0.503	0.453	0.551	1,316
Morocco	0.234	0.494	0.262	0.426	0.602	1,163
Sweden	0.103	0.624	0.589	0.456	0.572	1,039
Poland	0.112	0.698	0.573	0.476	0.547	1,047
Denmark	0.079	0.650	0.555	0.487	0.537	876
Philippines	0.092	0.633	0.569	0.460	0.545	866
Russia	0.159	0.628	0.466	0.494	0.573	753
Thailand	0.126	0.383	0.217	0.496	0.543	665
Afghanistan	0.135	0.549	0.261	0.484	0.584	586
Iceland	0.105	0.564	0.504	0.500	0.558	535
China	0.040	0.818	0.480	0.473	0.590	505
Macedonia	0.198	0.526	0.321	0.441	0.568	489
Germany	0.074	0.720	0.625	0.495	0.563	471
Great Britain	0.087	0.677	0.603	0.488	0.561	415
Croatia	0.127	0.627	0.486	0.468	0.560	386
Other origin countries	0.139	0.588	0.387	0.473	0.569	5,420

Note: Except for the number of observations, all cells report the mean value for each variable conditioned within the given country of origin.

fraction of residents with completed upper-secondary education among all adult individuals (aged 18 through 67 years) from the same country of origin (0 = none, 1 = all), excluding information on each child's parents, and corresponding measures for the educational composition of all other adult immigrants from different countries of origin (0 = none, 1 = all) and nonmigrant native residents (0 = none, 1 = all). Then, I compute the mean of these measures across the age span 13 through 16 for each immigrant youth. To measure the size of the coethnic community, I create corresponding measures of the mean number of coethnics living in the

neighbourhood when the individual was between 13 and 16. These measures are then z-standardized in the empirical analysis (mean = 0, std. dev. = 1). To test the group size hypothesis (*H3*), I include both a linear and a squared term for the size of the coethnic community to test for nonlinearity.

A key feature of these variables is that they capture dimensions of the local ethnic environment that vary substantively between members of different national-origin minorities living in the same neighbourhood. Figure 1 also shows that the associations (Pearson's *r*) between the share of high-educated
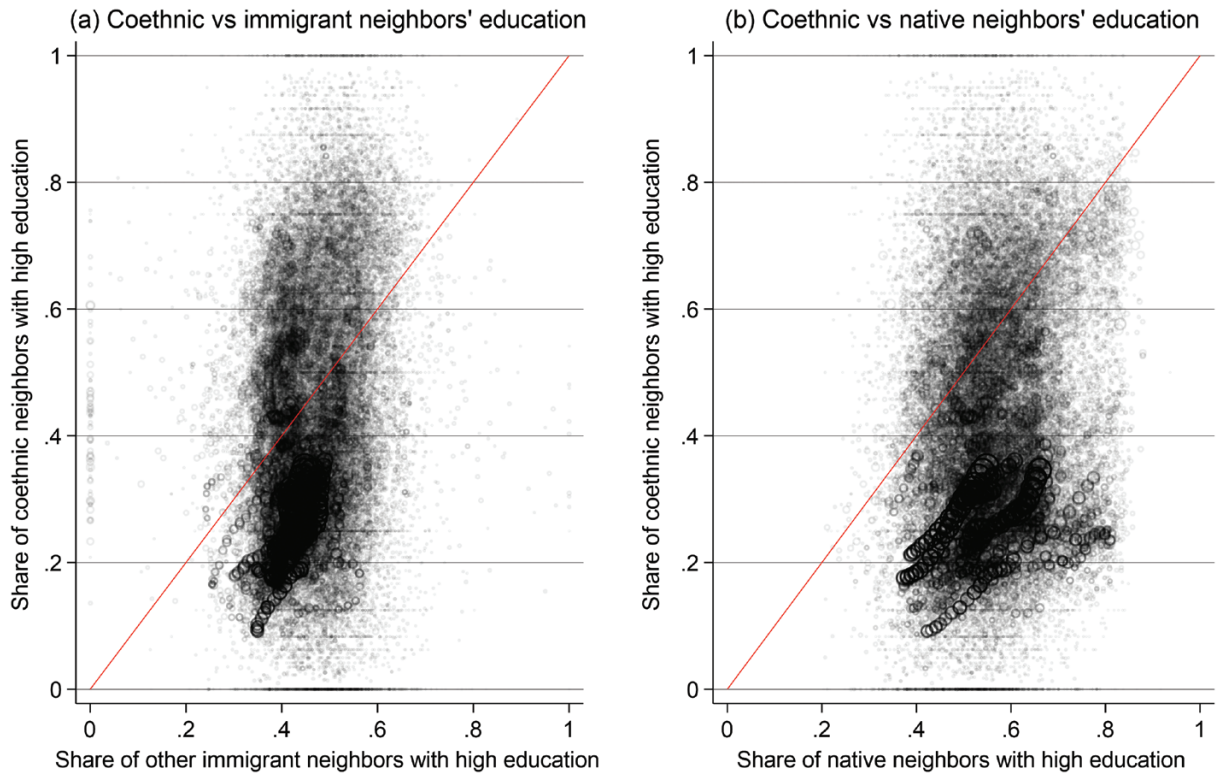
Figure 1. Relationship between the educational resources among coethnic neighbours versus other immigrant neighbours (panel A) and native neighbours (panel B). Bivariate correlations are $r = 0.157$ (panel A) and $r = 0.163$ (panel B). Each scatterplot circle plots the relevant characteristics of the ethnic neighbourhood environment for individual immigrant youth (N = 43,881), where the size of the circles are weighted by the number of coethnic neighbours for each individual observation. The diagonal red line refers to cases where the share of neighbours with high education along the two dimensions are identical.

coethnics relative to the corresponding share for immigrant neighbours from other origin countries (panel A) and native majority neighbours (panel B) is relatively modest. Moreover, Table 3 also shows that the correlation between the educational resources among coethnic neighbours is more strongly related to adolescent crime ($r = -0.06$) and upper-secondary completion ($r = 0.12$) compared to the corresponding correlations for immigrant neighbours from other origin countries and native neighbours. Table 3 also shows how these zero-order correlations compare with the correlation coefficients for various family background characteristics.

I use information on theoretically relevant and well-measured demographic and socioeconomic background characteristics to control for a broad set of factors that may confound the relationship between ethnic neighbourhood environment and later-life outcomes. All model specifications reported control for birth cohort, immigrant generation and age at arrival, child gender, birth order and number of siblings, mother's age at birth, family structure, parental education, parental annual earnings, parental receipt of social

welfare benefits, mother's and father's employment status, and years since arrival for the earliest arriving parent. The measurement of these variables is described in the Supplementary Appendix.

Empirical approach

The aim of the analysis is to assess how characteristics of the ethnic neighbourhood environments are related to immigrant youth's criminal behaviour and educational attainment. However, methodological difficulties relates to the problem of bias from endogenous neighbourhood choice and the nonrandom sorting of residents across residential areas, meaning that unobserved characteristics of immigrant youth and their families may influence both their later-life outcomes and their ethnic neighbourhood environment during adolescence. Moreover, it is important to disentangle the influence of the group-specific ethnic environment from broader neighbourhood effects shared by all neighbouring youth (cf. Manski's [1993] "correlated effects"). Immigrant-dense areas, for example, often have schools of low quality and access to fewer qualified teachers (Schwartz and Stiefel,

Table 3. Pearson's correlation matrix of ethnic neighbourhood characteristics, immigrant youth outcomes, and family background characteristics

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
(1) Co-ethnic neighbours' education	1.00													
(2) Immigrant neighbours' education	0.16	1.00												
(3) Native neighbours' education	0.16	0.38	1.00											
(4) Number of coethnic neighbours	-0.17	-0.18	-0.03	1.00										
(5) Adolescent crime	-0.06	-0.03	-0.02	-0.01	1.00									
(6) Upper secondary education completed	0.12	0.05	0.02	0.01	-0.28	1.00								
(7) Female	0.00	-0.01	0.00	0.00	-0.27	0.15	1.00							
(8) Intact or reconstituted family	-0.03	0.01	-0.06	0.09	-0.08	0.10	-0.01	1.00						
(9) Parents' upper secondary completed	0.24	0.10	0.05	-0.11	-0.07	0.17	0.00	0.12	1.00					
(10) Parents' earnings (log)	0.18	0.10	0.04	-0.08	-0.08	0.13	0.00	0.12	0.24	1.00				
(11) Father employment	0.13	0.06	0.02	0.01	-0.08	0.13	-0.01	0.26	0.32	0.56	1.00			
(12) Mother employment	0.24	0.11	0.07	-0.14	-0.08	0.15	0.01	0.04	0.21	0.51	0.23	1.00		
(13) Parents' social welfare	-0.12	-0.02	-0.02	-0.08	0.10	-0.17	0.00	-0.22	-0.11	-0.27	-0.26	-0.35	1.00	
(14) Parents' unemployment	0.00	-0.02	-0.12	-0.06	0.00	-0.01	-0.01	0.02	0.02	0.15	0.17	0.13	0.03	1.00

2011). Finally, members of different immigrant-origin ethnic minorities are also likely to differ along group-specific dimensions that may affect where they live and individual outcomes (Bertrand, Luttmer and Mullainathan, 2000).

The empirical approach exploits within-neighbourhood variation in the local composition of co-ethnic and other immigrant neighbours for members of different minority groups (Bertrand, Luttmer and Mullainathan, 2000; Cutler, Glaeser and Vigdor, 2008; Bygren and Szulkin, 2010). While the data allow me to control for a broad range of well-measured characteristics of the immigrant youth and their parents, their key advantage lies in the panel structure that identifies all residents from different national origins within the same area. This enables me to reduce bias from unobserved variables shared among members of the same immigrant minority and residents of the same neighbourhood using fixed-effects models. I specify these models as

$$Y_{ijk} = \alpha_j + \delta_k + \gamma \overline{C}_{ijk} + \vartheta \overline{I}_{ijk} + \mu \overline{N}_{ijk} + \theta\, X_{ijk} + \varepsilon_{ijk} \tag{1}$$

where Y_{ijk} is the relevant outcome and the indices i, j, and k refer to individuals, country of origin, and neighbourhoods, respectively. The model includes country-of-origin fixed effects, α_j, and neigbourhood fixed effects, δ_k, while $\overline{C}_{ijk}$ refers to the educational composition of coethnic neighbours and $\overline{I}_{ijk}$ and $\overline{N}_{ijk}$ refers to the educational composition among immigrant neighbours from other origin countries and native neighbours, respectively, X_{ijk} is the set of covariates of individual background characteristics, and ε_{ijk} is a individual-specific error term.

These neighbourhood fixed-effects models rely on group-specific variation within neighbourhoods to assess how composition of educational resources among coethnic neighbours is related to immigrant youth's outcomes, while the inclusion of country-of-origin fixed effects will absorb all factors shared among youth from the same country of origin. The coefficient of primary interest is the effect of coethnics' educational resources, which is compared to the coefficients capturing the corresponding effect of other immigrant and native neighbours' educational resources. To test the group size hypothesis, I next include measures of the (squared) number of coethnic neighbours and interact terms between these and the educational resources among coethnic neighbours. Thus, I estimate the joint effect of the educational resources and size of the local coethnic community. As outlined above, the assumption here is that the intensity of local interaction and the social influence exerted is amplified in larger coethnic communities.

Although these analytic steps are taken to enhance confidence in a causal interpretation of the results, they do not establish causality and should be interpreted with a given caveats. Specifically, the models do not capture the overall neighbourhood effect, as the neighbourhood fixed effect will absorb all stable characteristics shared between neighbours. Instead, the estimated coefficients capture the influence of differential exposure to local environment of neighbouring coethnics and immigrants from other origin countries. Yet, the fixed effects may also absorb factors related to the causal effects of interest that could yield overly conservative estimates of the true effect local ethnic environments. In contrast, there is a remaining risk of upward bias from unobserved neighbourhood sorting between immigrant families from the same national-origin group. If immigrant families sort into a given neighbourhood based on the specific profile of the local coethnic neighbourhood community, the fixed effects regressions may not fully capture endogenous sorting based on unobserved traits (e.g., parental aspirations for their children) that are uncorrelated with the observed background covariates.

Results

Figure 2 provides a description of how criminal behaviour and upper-secondary completion among immigrant youth are related to their coethnic neighbours' educational resources and whether this relationship varies with the number of coethnics present in the neighbourhood. Each scatterplot reports the mean outcomes among immigrant youth found in neighbourhood environments with varying shares of high-educated coethnics. First, the plots show that both outcomes are associated with the educational resources among their coethnics. Second, this link appears to be somewhat stronger among immigrant youth growing up in areas with more coethnic neighbours, but the pattern by group size is less clear.

Table 4 presents estimates from linear regression models predicting adolescent crime (panel A) and upper-secondary completion (panel B). In each panel, the first model shows the linear relationship between coethnics and other immigrant neighbours' educational resources while only controlling for birth cohort and municipality fixed effects. Next, the second model introduces controls for the full set of observed background characteristics, neighbourhood fixed effects, and country-of-origin fixed effects. These are the models of central theoretical interest, as they allow me to test the enclave composition and ethnic boundary hypotheses while strongly reducing the risk for bias caused by unobserved heterogeneity across neighbourhoods and differences between their
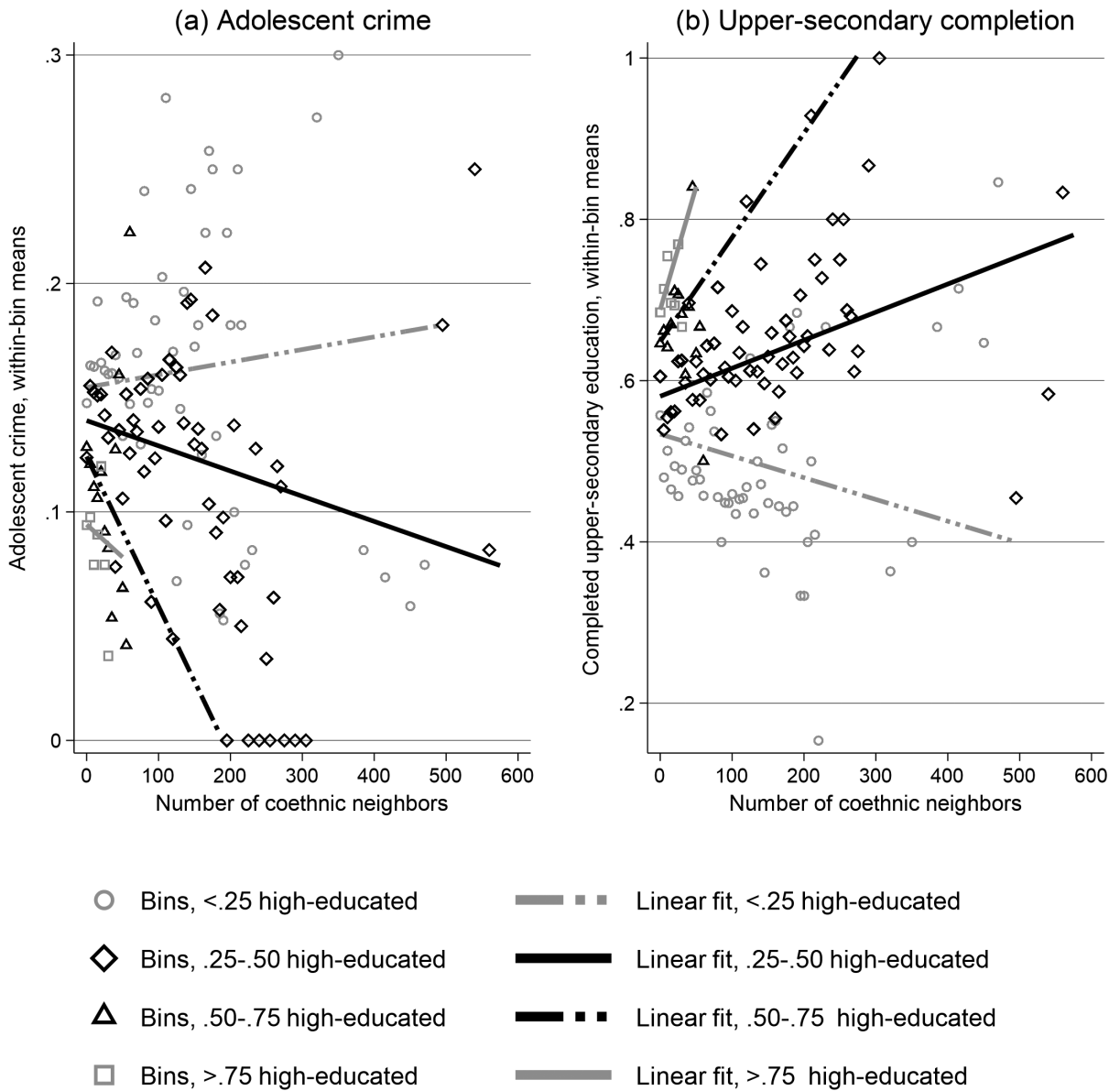
Figure 2. Relationship between the number of coethnic neighbours, the share of high-educated coethnics, and immigrant youth's adolescent crime (panel A) and upper-secondary completion (panel B). The scatter plots in each panel depicts the immigrant youth's mean for the relevant outcome within bins of the number coethnic neighbours in five-person intervals and four levels of the share with high education among these coethnic neighbours. Linear fit slopes are based on all bins within each level of coethnics' education, while only bins with at least five immigrant youth are shown.

residents. Finally, the third model tests the group size hypothesis by introducing the measure of local coethnic group size, its squared term, and interacts both with the average educational resources of coethnics. For both outcomes, I report marginal effects (probability changes) estimated using linear probability models where the probability of a given outcome (y

= 1) is assumed to be a linear function of the set of predictors (Wooldridge, 2010). The full set of estimated coefficients for the background covariates are reported in Appendix Table A1.

In the first model, the coefficient of the proportion high-educated coethnics indicates that a ten percentage-point increase in this share is related to a

Table 4. Estimated effect of ethnic neighbourhood environment on adolescent crime and upper-secondary completion (OLS regression)

	Panel A. Adolescent crime			Panel B. Upper secondary completion		
	(1)	(2)	(3)	(4)	(5)	(6)
Co-ethnic neighbours' education	−0.085***	−0.034**	−0.059**	0.273***	0.075***	0.165***
	(0.008)	(0.011)	(0.022)	(0.013)	(0.016)	(0.041)
Immigrant neighbours' education	−0.083**	−0.001	−0.002	0.215***	0.033	0.037
	(0.028)	(0.038)	(0.037)	(0.043)	(0.059)	(0.058)
Native neighbours' education	0.001	−0.003	−0.008	−0.074*	−0.011	0.006
	(0.022)	(0.053)	(0.053)	(0.035)	(0.092)	(0.085)
Number of coethnic neighbours			0.025†			−0.062*
			(0.015)			(0.029)
Coethnics' education × number			0.050			0.187*
			(0.044)			(0.075)
Number of coethnic neighbours (squared)			−0.011*			0.022*
			(0.005)			(0.009)
Coethnics' education × number (squared)			0.024†			−0.058*
			(0.014)			(0.024)
Mean of dependent variable	0.133	0.133	0.133	0.586	0.586	0.586
R^2	0.004	0.146	0.146	0.016	0.163	0.163
Number of observations	43,871	43,871	43,871	43,871	43,871	43,871
Neighbourhoood fixed effects	No	Yes	Yes	No	Yes	Yes
Country-of-origin fixed effects	No	Yes	Yes	No	Yes	Yes
Background covariates	No	Yes	Yes	No	Yes	Yes

Note: Linear probability models from OLS regressions for binary outcomes. All models control for birth cohort dummies and model 1 (columns 1 and 4) control for municipality fixed effects. Background covariates include immigrant generation and age at arrival, gender, whether the individual was the first-born child of mother, number of siblings, mother's age at birth, family structure, residential stayer, parents' years since migration, parents' education, parents' log earnings, father's and mother's employment, parents' social welfare, and parents' unemployment. Huber–White standard errors in parentheses are robust to within-neighborhood clustering and heteroskedasticity.
*** $P < 0.001$.
** $P < 0.01$.
* $P < 0.05$.
† $P < 0.1$ (two-tailed tests).

0.85 percentage-point decline in the risk of committing a felony (panel A), a 2.73 percentage-point higher likelihood of completing upper secondary education (panel B). The corresponding estimates for the proportion of high-educated other immigrants show that a ten percentage-point increase in this share is related to a 0.83 percentage-point reduction in the likelihood of adolescent crime and a 2.15 percentage-point increase in upper-secondary completion. For native neighbours, there is no association for adolescent crime, while a ten percent increase in the share of high-educated natives is related to a 0.74 reduction in the likelihood of completing upper-secondary education. To address neighbourhood sorting and unobserved heterogeneity across immigrant minorities, the second model adjusts for observed background covariates and the country-of-origin fixed effects. The coefficients for coethnics' education indicate that a ten percentage-point increase in the high-educated share is related to a 0.34 percentage-point lower risk of engaging in adolescent

crime (panel A) and a 0.75 percentage-point higher likelihood of completing upper-secondary education (panel B). Thus, the effect sizes are modest. To put this into context, immigrant youth with parents on social welfare are 4.1 percentage points more likely to engage in crime and 8.5 percentage points less likely to complete upper-secondary education net of all regression controls (Table A1).

All of the estimated coefficients for other immigrant and native neighbours' education are considerably smaller in magnitude and fails to reach statistical significance at conventional levels. This suggests that coethnic neighbours' educational resources are more strongly associated with immigrant youth's outcomes compared to the average education among other immigrant neighbours, but we cannot establish that the coefficients for coethnics versus other immigrant and native neighbours differ from each other. This is because the low precision and the large standard errors of the coefficients implies that they are not significantly
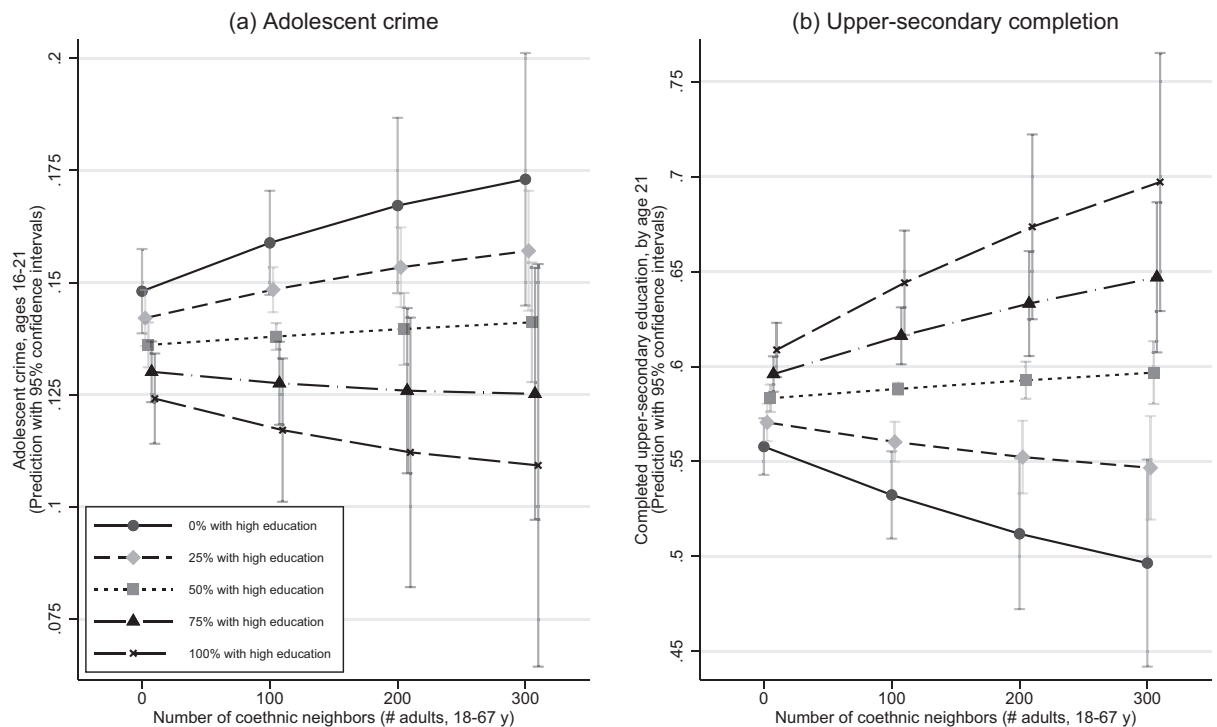
Figure 3. Estimated relationship between the number of coethnic neighbours, their educational resources, and immigrant youth's adolescent crime (panel A) and upper-secondary completion (panel B) from OLS regressions. Estimates based on coefficients from the models in column 3 and 6 in Table 4, net of neighbourhood fixed effects, country-of-origin fixed effects, and background covariates. Error bars indicate 95% confidence intervals.

different each other based on formal (z-score) tests of statistical difference. Overall, these results provide support for the enclave composition hypothesis (*H1*), but they are less conclusive for the ethnic boundary hypothesis (*H2*).

Turning to the group size hypothesis (*H3*), the third model tests whether the influence of coethnics' education matters more among immigrant youth surrounded by larger coethnic communities. For education, the estimated coefficients for (squared) number of coethnics and the interaction terms with coethnic educational resources all reach statistical significance. For crime, there is weaker support for the group size hypothesis and only the squared term for number for coethnics reaches statistical significance at the $p < 0.05$ level. However, the coefficients for both the number of coethnics and the interaction term between coethnic education and the squared term for number of coethnics are significant at the $p < 0.10$ level. To ease interpretation, I present the predicted relationships based on these coefficients graphically in Figure 3. For both outcomes, the predicted pattern indicates that coethnic neighbours' educational resources matter slightly more in larger communities. The group size hypothesis (*H3*)

is supported for education, but estimated patterns are not statistically significant for crime.

The influence of ethnic enclaves may be stronger among immigrant youth from disadvantaged family backgrounds, as coethnic neighbours' educational resources may compensate for lacking parental resources. Table 5 shows results from subgroup analyses where the effect of coethnics' educational resources is estimated separately for groups defined by father's employment status and parental receipt of social welfare transfers. The results provide support for the hypothesis that coethnics' educational resources matter more for youth from disadvantaged immigrant families where the father was not employed for both crime and upper-secondary completion (*H4*). For parental receipt of social welfare, the point estimates of the coefficients are in line with *H4*, but a formal test of differences using an interaction term are not statistically significant. Although the pattern for the point estimates is similar for both parental characteristics, *H4* is therefore only supported with respect to father's employment.

The Supplementary Appendix provides supplementary analyses. Appendix Table A2 shows that the

Table 5. Subgroup analyses of heterogeneous effects of coethnic neighbours' education by family background (OLS regression)

	Total sample	By father's employment		By parental social welfare	
		Father employed	Father not employed	No welfare benefits	Receives welfare benefits
	(1)	(2)	(3)	(4)	(5)
Panel A. Adolescent crime					
Co-ethnic neighbours' education	–0.034**	–0.016	–0.062***	–0.025*	–0.081**
	(0.011)	(0.013)	(0.018)	(0.011)	(0.031)
Mean of dependent variable	0.138	0.115	0.171	0.118	0.205
R^2	0.146	0.144	0.203	0.135	0.254
Number of observations	43,891	26,082	17,809	34,165	9,726
Panel B. Upper-secondary completion					
Co-ethnic neighbours' education	0.075***	0.055**	0.095***	0.069***	0.115**
	(0.016)	(0.021)	(0.028)	(0.018)	(0.041)
Mean of dependent variable	0.586	0.641	0.506	0.631	0.429
R^2	0.163	0.177	0.186	0.154	0.202
Number of observations	43,891	26,082	17,809	34,165	9,726
Immigrant neighbours' education	Yes	Yes	Yes	Yes	Yes
Native neighbours' education	Yes	Yes	Yes	Yes	Yes
Neighbourhoood fixed effects	Yes	Yes	Yes	Yes	Yes
Country-of-origin fixed effects	Yes	Yes	Yes	Yes	Yes
Background covariates	Yes	Yes	Yes	Yes	Yes

Note: Linear probability models from OLS regressions. Huber–White standard errors in parentheses are robust to within-neighbourhood clustering and heteroskedasticity. In a pooled model for father's employment, an interaction between father's employment and co-ethnic neighbours' education yields statistically significant coefficients for adolescent crime ($t = 2.08$, $P = 0.038$) and upper-secondary completion ($t = -2.26$, $P = 0.024$). In a pooled model for parental social welfare, an interaction between parental social welfare and co-ethnic neighbours' education does not yield statistically significant coefficient for adolescent crime ($t = -0.11$, $P = 0.913$) and upper-secondary completion ($t = 0.31$, $P = 0.754$).All models control for birth cohort dummies and background covariates are the same as in Table 4.
*** $P < 0.001$.
** $P < 0.01$.
* $P < 0.05$.
† $P < 0.1$ (two-tailed tests).

results are robust when examining the relationships separately for individuals who either remained in the same neighbourhood or moved to a different neighbourhood during adolescence and when conditioning on different minimum numbers of coethnic immigrants in the neighbourhood.

Discussion and conclusions

Using rich Norwegian administrative data, this study has addressed the relationships between ethnic neighbourhood environment and immigrant youth's adolescent criminal behaviour and early school leaving. By creating detailed measures of the educational resources among adult coethnic, other immigrant, and native neighbours during adolescence, I linked this information to individual data on immigrant youth's later outcomes. To address confounding from shared contextual factors and neighbourhood sorting, I estimate fixed-effects regressions that exploit within-neighbourhood variation in local ethnic environment among immigrant youth from different national origins while adjusting for a

broad range of family background characteristics and unobserved heterogeneities across immigrant groups.

The findings show that neighbourhood-level exposure to better-educated coethnics during adolescence is related to lower risks of engaging in criminal behaviour and higher likelihoods of completing upper-secondary education (*H1*). While extending the current literature by including a focus on adolescent crime, the findings also align well with prior studies showing that growing up alongside resourceful coethnic neighbours fosters educational success among immigrant youth (Kroneberg, 2008; Bygren and Szulkin, 2010; Åslund et al., 2011; Fleischmann et al., 2013). Spatial proximity to better-educated neighbouring immigrants from other origin countries and members of the native majority seems to be less consequential for both crime and education, but low statistical precision in the estimates for other immigrant and native neighbours does not allow any clear conclusion on this point (*H2*). This suggests that social interaction in the local area is confined by ethnic boundaries within different immigrant minorities, which is also in line with gradients of ethnic relatedness found in earlier research (Åslund et al., 2011; Fleischmann et al., 2013; Markussen and Røed, 2015). In line with Bygren and Szulkin (2010), I find that coethnic neighbours' educational resources matter more for early school leaving in areas with higher concentrations of immigrants from the same origin country (*H3*). For crime, the estimated pattern was similar but the interaction terms did not reach statistical significance at conventional levels (i.e., $p < 0.05$) and, thus, the group size hypothesis is not supported for crime. Finally, coethnic neighbours seem to matter more for immigrant youth from economically disadvantaged family backgrounds, where the father is not in employment (*H4*). Overall, these findings provide support for influential theories of immigrant assimilation which claim that the social networks within local ethnic enclaves shape immigrant youth's future life chances (Portes and Zhou, 1993; Borjas, 1995).

Although these findings are of theoretical interest, the effect sizes are quite modest. A ten percent increase in the share of high-educated coethnic neighbours—which is about half a standard deviation in this variable—is related to a 0.34 percentage-point reduction in the probability of engaging in adolescent crime while the same increase is related to a 0.75 percentage-point increase in the likelihood of upper-secondary completion. This implies a 2.6% decrease in the likelihood of engaging in adolescent crime compared to the sample mean (i.e., 13.3% of all immigrant youth in the study sample had committed a felony) and 1.3% increase in the likelihood of upper-secondary completion (i.e., 58.6% of all immigrant youth in the sample completed upper-secondary education).[4] In contrast, immigrant

youth with parents on social welfare had a 30.8% heightened likelihood of committing a crime and a 14.5% lower likelihood of completing upper-secondary education relative to the overall sample mean using the same calculations.[5]

Although it is difficult to identify the precise mechanisms through which the influence of coethnic neighbours arise, the inability of pinpointing underlying mechanisms is a limitation shared with prior work where conclusions on social influence in local immigrant communities are drawn from administrative data (Åslund et al., 2011; Bygren and Szulkin, 2010; Markussen and Røed, 2015). With improved access to sociometric data (Smith et al., 2016; Kruse and Kroneberg, 2019; Leszczensky and Pink, 2019), future research should exploit more direct measures of social networks to unpack the links between ethnic neighbourhood environments and immigrant youth behaviours.

A key contribution of this study is assessing ethnic enclave effects among immigrant youth using group-specific neighbourhood variation between members of different national-origin groups who grew up in the same area. As neighbouring immigrant youth of diverse ethnic origins may be embedded in and influenced by different social networks, this relates to a recent move away from the dichotomous question of whether or not neighbourhoods matter towards more nuanced questions relating to for whom and under what conditions they are consequential (Sharkey and Faber, 2014). While disentangling the group-specific social interaction effects in local immigrant communities from broader neighbourhood effects is a strength for the current purposes, it should be noted that the reported estimates do not reflect the overall 'neighbourhood effect' which also involves neighbourhood factors shared by all neighbouring youth such as school quality or other local institutions.

However, one should always be cautious regarding causal interpretations of results from nonexperimental data, and this study is no exception. Although I control for unobserved heterogeneity at the level of neighbourhoods and immigrant minorities, as well as a broad set of observed family background characteristics, a caveat related to group-specific neighbourhood sorting should be noted. If immigrant families sort into a given neighbourhood based on the profile of local residents from the same ethnic minority group, self-selection may introduce bias from unobserved traits that is specific to members of the given minority group in that area. When using police-reported crime data, within-neighbourhood differences in ethnic profiling by the police between immigrant minorities that are more or less socioeconomically successful might also confound the link between educational composition of coethnic neighbours and adolescent crime (Leerkes,

Martinez and Groeneveld, 2018). To further rule out remaining endogeneity, we would need a source of plausibly exogenous variation in the ethnic neighbourhood environment. For instance, Åslund et al. (2011) found similar ethnic enclave effects on immigrant youth's academic achievement when exploiting quasi-random settlement patterns resulting from a placement policy for newly arrived refugee families. Thus, a fruitful avenue for future work would be to use similar approaches to study ethnic enclave effects on immigrant youth's adolescent crime and later life outcomes.

To what extent do ethnic enclaves promote or hinder the life chances of immigrant youth? Growing up alongside many less-educated coethnics heightens the risk of delinquent behaviour and poor educational outcomes, while exposure to better-educated coethnic neighbours during adolescence has beneficial effects on immigrant youth's later-life outcomes. Moreover, the educational resources of coethnic neighbours seem to be more consequential for immigrant youth's future criminal behaviour and educational careers than the local presence of immigrants from other origin countries and members of the native majority population. From a policy perspective, measures counteracting high neighbourhood concentrations of disadvantaged immigrants from the same ethnic minority may improve intergenerational progress among immigrant youth. However, as shown here, the consequences of high spatial concentration of (coethnic) immigrant communities on minority youth outcomes are conditional on the community-level socioeconomic resources, and need not be negative. If growing up alongside compatriots with many educational resources, ethnic enclaves can be conducive to upward social mobility in the second generation. While low spatial inequality in Norway likely provides lower-bound estimates on the role of adolescent neighbourhood environments (Hermansen, Borgen and Mastekaasa, 2020), the general character of the underlying social mechanisms—such as (a lack of) social control and normative pressure, transmission of aspirations, and help with school work—suggests that these findings should be of relevance to other immigrant-receiving societies.

Endnotes

1. It should be noted that empirical studies have found that native-born youth of immigrant background are often more involved in crime than immigrants who themselves arrived in late adolescence or as adults. (Morenoff and Astor, 2006; Berardi and Bucerius, 2014; Leerkes et al., 2018).
2. If the parents country of birth differ, I use the mother's country of birth.
3. For individuals who move between different neighbourhoods during the measurement period, the fixed effect will refer to the first observed neighbourhood location (i.e., at

age 13). Appendix Table A2 reports a robustness check where movers and stayers are analyzed separately.
4. For adolescent crime, the reduction in percent is calculated as: $1 - ((13.3 - 0.34)/13.3) = 0.0256 \approx 2.6\%$. For upper-secondary completion, the increase in percent is calculated as: $(58.6 + 0.75)/58.6 = 1.0128 \approx 1.3\%$. Please see Table 4 for estimated coefficients and sample means.
5. For adolescent crime, the increase in percent is calculated as: $(13.3 + 4.1)/13.3 = 1.3082 \approx 30.8\%$. For upper-secondary completion, the increase in percent is calculated as: $1 - (58.6 - 8.5)/58.6) = 0.1451 \approx 14.5\%$. Please see Table A1 for estimated coefficients and Table 4 for sample means.

Supplementary data

Supplementary data are available at *ESR* online.

Acknowledgements

References

Agnew, R. (1992). Foundation for a general strain theory of crime and delinquency. *Criminology*, **30**, 47–88.

Alba, R. and Foner, N. (2015). *Strangers No More: Immigration and the Challenges of Integration in North America and Western Europe*. Princeton: Princeton University Press.

Andersen, S. N., Holtsmark, B. and Mohn, S. B. (2017). *Kriminalitet blant innvandrere og norskfødte med innvandrerforeldre. En analyse av registerdata for perioden 1992-2015*. Oslo/Kongsvinger: Statistics Norway.

Aradhya, S. *et al.* (2017). Region of Origin: Settlement Decisions of Turkish and Iranian Immigrants in Sweden, 1968–2001. *Population, Space and Place*, **23**, e2031.

Åslund, O. *et al.* (2011). Peers, Neighborhoods, and Immigrant Student Achievement: Evidence from a Placement Policy. *American Economic Journal: Applied Economics*, **3**, 67–95.

Bell, B. and Machin, S. (2013) Immigration and crime. *In* Constant, A. F. and Zimmermann, K. F. (Eds.), *International Handbook on the Economics of Migration*. Edward Elgar: Cheltenham, UK.

Benner, A. D. and Crosnoe, R. (2011). The racial/ethnic composition of elementary schools and young children's academic and socioemotional functioning. *American Educational Research Journal*, **48**, 621–646.

Berardi, L. and Bucerius, S. (2014) Immigrants and their children: evidence on generational differences in crime. *In* Bucerius, S. M. and Tonry, M. *(Eds.), The Oxford Handbook of Ethnicity, Crime, and Immigration*. Oxford: Oxford University Press.

Bertrand, M., Luttmer, E. F. P. and Mullainathan, S. (2000). Network Effects and Welfare Cultures. *Quarterly Journal of Economics*, **115**, 1019–1055.

Bisin, A. *et al*. (2011). Formation and persistence of oppositional identities. *European Economic Review*, **55**, 1046–1071.

Blau, P. M. (1977). A macrosociological theory of social structure. *American Journal of Sociology*, **83**, 26–54.

Borjas, G. J. (1992). Ethnic capital and intergenerational mobility. *Quarterly Journal of Economics*, **107**, 123–150.

Borjas, G. J. (1995). Ethnicity, neighborhoods, and human-capital externalities. *American Economic Review*, **85**, 365–390.

Bratsberg, B., Raaum, O. and Røed, K. (2014). Immigrants, labour market performance and social insurance. *Economic Journal*, **124**, F644–F683.

Brochmann, G. and Kjeldstadli, K. (2008). *A History of Immigration: The Case of Norway, 900-2000*. Oslo: Universitetsforlaget.

Brown, B. B. and Larson, J. (2009) Peer relationships in adolescence. *In* Lerner, R. M. and Steinberg, L. *(Eds.), Handbook of Adolescent Psychology*. Hoboken, NJ: John Wiley & Sons, Inc.

Bygren, M. and Szulkin, R. (2010). Ethnic environment during childhood and the educational attainment of immigrant children in Sweden. *Social Forces*, **88**, 1305–1329.

Coleman, J. S. (1988). Social capital in the creation of human capital. *American Journal of Sociology*, **94**, S95–S120.

Conger, D., Schwartz, A. E. and Stiefel, L. (2011). The effect of immigrant communities on foreign-born student achievement. *International Migration Review*, **45**, 675–701.

Currarini, S., Jackson, M. O. and Pin, P. (2010). Identifying the roles of race-based choice and chance in high school friendship network formation. *Proceedings of the National Academy of Sciences*, **107**, 4857–4861.

Cutler, D. M., Glaeser, E. L. and Vigdor, J. L. (2008). When are ghettos bad? Lessons from immigrant segregation in the United States. *Journal of Urban Economics*, **63**, 759–774.

DiPietro, S. M. and McGloin, J. M. (2012). Differential susceptibility? Immigrant youth and peer influence. *Criminology*, **50**, 711–742.

Drouhot, L. G. and Nee, V. (2019). Assimilation and the second generation in Europe and America: blending and segregating social dynamics between immigrants and natives. *Annual Review of Sociology*, **45**, 177–199.

Feld, S. L. (1981). The focused organization of social ties. *American Journal of Sociology*, **86**, 1015–1035.

Fleischmann, F. *et al*. (2013). From ethnic capital to ethnic educational inequality: how family and co-ethnic neighbourhood resources affect second-generation attainment in Belgium. *European Sociological Review*, **29**, 1239–1250.

Friberg, J. H. (2019). *Konflikt, fellesskap og forandring: Foreldreskap og sosial kontroll i innvandrede familier fra Pakistan, Somalia og Sri Lanka*. Oslo: Cappelen Damm Akademisk.

Galloway, T. A., Gustafsson, B., Pedersen, P. J. and Österberg, T. (2015) Immigrant Child Poverty: The Achilles Heel of the Scandinavian Welfare State. *In* Garner, T. I. and Short, K. S. (Eds.), *Measurement of Poverty, Deprivation, and Economic Mobility*. Emerald Group Publishing Limited: Bingley.

Georgiades, K., Boyle, M. H. and Fife, K. A. (2013). Emotional and behavioral problems among adolescent students: the role of immigrant, racial/ethnic congruence and belonging ness in schools. *Journal of Youth and Adolescence*, **42**, 1473–1492.

Geven, S., Kalmijn, M. and van Tubergen, F. (2016). The ethnic composition of schools and students' problem behaviour in four European countries: the role of friends. *Journal of Ethnic and Migration Studies*, **42**, 1473–1495.

Harding, D. J., Gennetian, L., Winship, C., Sanbonmatsu, L. and Kling, J. R. (2011) Unpacking neighborhood influences on education outcomes: setting the stage for future research. *In* Duncan, G. J. and Murnane, R. J. (Eds.), *Whither Opportunity? Rising Inequality, Schools, and Children's Life Chances*. Russell Sage Foundation: New York.

Haynie, D. L., Silver, E. and Teasdale, B. (2006). Neighborhood characteristics, peer networks, and adolescent violence. *Journal of Quantitative Criminology*, **22**, 147–169.

Heath, A. F. (2007) Crossnational patterns and processes of ethnic disadvantage. *In* Heath, A. F. and Cheung, S. Y. (Eds.), *Unequal Chances: Ethnic Minorities in Western Labour Markets*. Oxford University Press/The British Academy: Oxford.

Hermansen, A. S. (2013). Occupational attainment among children of immigrants in Norway: bottlenecks into employment—equal access to advantaged positions? *European Sociological Review*, **29**, 517–534.

Hermansen, A. S. (2016). Moving up or falling behind? Intergenerational socioeconomic transmission among children of immigrants in Norway. *European Sociological Review*, **32**, 675–689.

Hermansen, A. S. and Birkelund, G. E. (2015). The impact of immigrant classmates on educational outcomes. *Social Forces*, **94**, 615–646.

Hermansen, A. S., Borgen, N. T. and Mastekaasa, A. (2020). Long-term trends in adult socioeconomic resemblance between former schoolmates and neighbouring children. *European Sociological Review*, **36**, 366–380.

Hermansen, A. S., Hundebo, P. O. and Birkelund, G. E. (2022). Spatial assimilation at a halt? Intergenerational persistence in neighborhood contexts among immigrant minorities in Norway. *International Migration Review*, 1–38. doi: 10.1177/01979183211067771

Hirschi, T. (1969). *Causes of Delinquency*. Berkeley, CA: University of California Press.

Hällsten, M., Szulkin, R. and Sarnecki, J. (2013). Crime as a price of inequality? The gap in registered crime between childhood immigrants, children of immigrants and children of native Swedes. *British Journal of Criminology*, **53**, 456–481.

Jencks, C. and Mayer, S. E. (1990) The social consequences of growing up in a poor neighborhood. *In* Lynn, L. and McGreary, M. (Eds.), *Inner-City Poverty in the United States*. National Academic Press: Washington, DC.

Kalter, F., Jonsson, J. O., Tubergen, F. V. and Heath, A. (2018). *Growing up in Diverse Societies: the Integration of Children of Immigrants in England, Germany, the Netherlands and Sweden*. Oxford: Oxford University Press.

Kasinitz, P., Mollenkopf, J., Waters, M. and Holdaway, J. (2008). *Inheriting the City: The Children of Immigrants Come of Age*. New York: Russell Sage Foundation.

Kling, J. R., Ludwig, J. and Katz, L. F. (2005). Neighborhood effects on crime for female and male youth: evidence from

a randomized housing voucher experiment. *Quarterly Journal of Economics*, **120**, 87–130.

Kornstad, T., Skjerpen, T. and Stambøl, L. S. (2018). *Utviklingen i bostedssegregering i utvalgte store og sentrale kommuner etter 2005*. Oslo/Kongsvinger: Statistics Norway.

Kroneberg, C. (2008). Ethnic communities and school performance among the new second generation in the United States: testing the theory of segmented assimilation. *Annals of the American Academy of Political and Social Science*, **620**, 138–160.

Kruse, H. and Kroneberg, C. (2019). More than a sorting machine: ethnic boundary making in a stratified school system. *American Journal of Sociology*, **125**, 431–484.

Lee, R. (2018). How do coethnic communities matter for educational attainment? A comparative analysis of the United States and Canada. *International Journal of Comparative Sociology*, **59**, 139–164.

Lee, J. and Zhou, M. (2015). *The Asian American Achievement Paradox*. New York: Russell Sage Foundation.

Leerkes, A., Martinez, R. and Groeneveld, P. (2018). Minority paradoxes: ethnic differences in self-reported offending and official crime statistics. *The British Journal of Criminology*, **59**, 166–187.

Leszczensky, L. and Pink, S. (2019). What drives ethnic homophily? A relational approach on how ethnic identification moderates preferences for same-ethnic friends. *American Sociological Review*, **84**, 394–419.

Lewis, K. (2015) How networks form: homophily, opportunity, and balance. *In* Scott, R. A. and Kosslyn, S. M. (Eds.), *Emerging Trends in the Social and Behavioral Sciences*. John Wiley & Sons: Hoboken, NJ.

Lyngstad, T. H. and Skardhamar, T. (2011). Nordic register data and their untapped potential for criminological knowledge. *Crime and Justice*, **40**, 613–645.

Manski, C. F. (1993). Identification of endogenous social effects: the reflection problem. *The Review of Economic Studies*, **60**, 531–542.

Markussen, S. and Røed, K. (2015). Social insurance networks. *Journal of Human Resources*, **50**, 1081–1113.

McFarland, D. A. *et al.* (2014). Network ecology and adolescent social structure. *American Sociological Review*, **79**, 1088–1121.

McPherson, M., Smith-Lovin, L. and Cook, J. M. (2001). Birds of a feather: homophily in social networks. *Annual Review of Sociology*, **27**, 415–444.

Merton, R. K. (1938). Social structure and anomie. *American Sociological Review*, **3**, 672–682.

Moody, J. (2001). Race, school integration, and friendship segregation in America. *American Journal of Sociology*, **107**, 679–716.

Morenoff, J. D. and Astor, A. (2006) Immigrant assimilation and crime. *In* Martinez Jr., R. and Valenzuela Jr., A. (Eds.), *Immigration and Crime: Race, Ethnicity, and Violence*. New York: New York University Press.

Mouw, T. and Entwisle, B. (2006). Residential segregation and interracial friendship in schools. *American Journal of Sociology*, **112**, 394–441.

Musterd, S. (2005). Social and ethnic segregation in Europe: levels, causes, and effects. *Journal of Urban Affairs*, **27**, 331–348.

OECD. (2015). *In It Together: Why Less Inequality Benefits All*. Paris: OECD.

OECD. (2020). *International Migration Outlook*. Paris: OECD.

Ousey, G. C. and Kubrin, C. E. (2018). Immigration and crime: assessing a contentious issue. *Annual Review of Crime*, **1**, 63–84.

Portes, A. (1998). Social capital: its origins and applications in modern sociology. *Annual Review of Sociology*, **24**, 1–24.

Portes, A. and MacLeod, D. (1996). Educational progress of children of immigrants: the roles of class, ethnicity, and school context. *Sociology of Education*, **69**, 255–275.

Portes, A. and Rumbaut, R. G. (2001). *Legacies: The Story of the Immigrant Second Generation*. Berkeley: Russell Sage Foundation.

Portes, A. and Zhou, M. (1993). The new second generation: segmented assimilation and its variants. *Annals of the American Academy of Political and Social Science*, **530**, 74–96.

Sampson, R. J., Morenoff, J. D. and Earls, F. (1999). Beyond social capital: spatial dynamics of collective efficacy for children. *American Sociological Review*, **64**, 633–660.

Sampson, R. J., Raudenbush, S. W. and Earls, F. (1997). Neighborhoods and violent crime: a multilevel study of collective efficacy. *Science*, **277**, 918–924.

Schwartz, A. E. and Stiefel, L. (2011) Immigrants and inequality in public schools. *In* Duncan, G. J. and Murnane, R. J. (Eds.), *Whither Opportunity? Rising Inequality, Schools, and Children's Life Chances*. New York/Chicago: Russell Sage Foundation/Spencer Foundation.

Sharkey, P. and Faber, J. W. (2014). Where, when, why, and for whom do residential contexts matter? Moving away from the dichotomous understanding of neighborhood effects. *Annual Review of Sociology*, **40**, 559–579.

Shaw, C. R. and McKay, H. D. (1942). *Juvenile Delinquency and Urban Areas*. Chicago: University of Chicago Press.

Smith, S. *et al.* (2016). Ethnic composition and friendship segregation: differential effects for adolescent natives and immigrants. *American Journal of Sociology*, **121**, 1223–1272.

Statistics Norway. (1999). *Regional Classifications. A Survey of Standards in Official Statistics of Norway*. Oslo/Kongsvinger: Statistics Norway.

Statistics Norway. (2021). *Immigrants and Norwegian-Born to Immigrant Parents*, *January 1, 2019* [available at <http://ssb.no/en/befolkning/statistikker/innvbef >]. Oslo/Kongsvinger: Statistics Norway.

Thomas, P. M. (2011). Theoretical articulation on immigration and crime. *Homicide Studies*, **15**, 382–403.

Verkuyten, M. (2004). *The Social Psychology of Ethnic Identity*. London, UK: Psychology Press.

Vogel, M. and South, S. J. (2016). Spatial dimensions of the effect of neighborhood disadvantage on delinquency. *Criminology*, **54**, 434–458.

Wooldridge, J. M. (2010). *Econometric Analysis of Cross Section and Panel Data*. Cambridge, Mass.: MIT Press.

Xie, Y. and Greenman, E. (2011). The social context of assimilation: testing implications of segmented assimilation theory. *Social Science Research*, **40**, 965–984.

Zhou, M. and Bankston, C. (1998). *Growing up American: How Vietnamese Children Adapt to Life in the United States*. New York: Russell Sage Foundation.

Zimmerman, G. M. and Messner, S. F. (2011). Neighborhood context and nonlinear peer effects on adolescent violent crime. *Criminology*, **49**, 873–903.