

ORIGINAL ARTICLE OPEN ACCESS

Ethnic Diversity in Compulsory Schooling and Occupational Choices: Can Diversity Increase the Supply in Care-Oriented Occupations

Damiano Pregaldini¹ | Simone Balestra² | Uschi Backes-Gellner³ 

¹University of Zurich, Zurich, Switzerland | ²University of Zurich, University of St. Gallen, and CESifo, St. Gallen, Switzerland | ³University of Zurich, Department of Business Administration, Zurich, Switzerland

Correspondence: Uschi Backes-Gellner (backes-gellner@business.uzh.ch)

Received: 25 September 2024 | **Revised:** 16 August 2025 | **Accepted:** 13 October 2025

Funding: This work was supported by Staatssekretariat für Bildung, Forschung und Innovation (1315002234).

ABSTRACT

We investigate the effect of ethnic diversity on occupational choices, particularly in care-oriented occupations which are scarce in many high-income countries. We use administrative data of all students in Switzerland to study two diversity dimensions: ethnic fractionalization and ethnic polarization. We exploit variation across school cohorts to identify causal effects. We find opposing effects: ethnic fractionalization increases care-oriented occupations, while ethnic polarization reduces them. One mechanism could be that ethnic fractionalization enhances social skills and thereby the benefits of choosing care-oriented occupations. Thus, not only is the share of nonnative peers in schools important, but also the overall ethnic composition.

1 | Introduction

This paper investigates the impact of ethnic diversity in schools, specifically ethnic fractionalization and polarization, on the students' choice of care-oriented occupations. Our study touches on three relevant research areas that intersect with ongoing societal developments and gaps in existing research. First, we focus on care-oriented occupations. Industrialized countries undergo important demographic changes, leading to aging populations. These changes increase the demand for care-oriented occupations. Thus, investigating the conditions influencing young adolescents' choices of such care-oriented occupations is relevant in light of current developments.

Second, globalization, international migration, and inclusive policies for better integration of under-represented minorities have for several decades contributed to increasingly ethnically diverse school environments in most industrialized countries. For instance, there has been a notable change in the ethnic composition of public schools in the US. Between 2000 and 2017,

the proportion of Hispanic and Asian/Pacific Islander students nearly doubled from 20% to 38%, while the percentage of white students decreased from 61% to 48%. The National Center for Education and Statistics projects this trend to continue over the next decade, raising questions about the potential implications of school ethnic diversity for educational and longer-term labor market outcomes. However, previous research has mainly focused on the implications of school ethnic diversity for educational outcomes, often neglecting labor market outcomes, particularly the effects on occupational choices.

Third, the focus of previous research has often been limited to single measures of diversity, such as the percentage of immigrants or nonnative English-speaking students. The nuanced impacts of ethnic fractionalization, that is, the presence of many but small ethnic groups, and ethnic polarization, that is, the presence of only a few large groups, have remained underexplored. Nonetheless, these dimensions of ethnic diversity are pertinent, as they offer a more refined understanding of the changing ethnic landscapes in educational settings and

This is an open access article under the terms of the [Creative Commons Attribution](https://creativecommons.org/licenses/by/4.0/) License, which permits use, distribution and reproduction in any medium, provided the original work is properly cited.

© 2025 The Author(s). Industrial Relations published by Wiley Periodicals LLC on behalf of Regents of the University of California (RUC).

their potential implications for students' occupational choices. Furthermore, they may affect the skill acquisition of students and may thereby affect occupational choices.

Our paper links these three domains by analyzing how ethnic fractionalization in comparison to ethnic polarization affects the occupational choices of students after they finish school, that is, when transitioning into the labor market.

Regarding potential outcomes of ethnic diversity in schools, previous economic literature so far has largely focused on short-term school performance, such as test scores in Math or languages. For example, Ballatore et al. (2018), show that diversity can reduce the efficient provision of classroom teaching and impair the formation of cognitive skills, such as math and language skills. However, there is little evidence on the impact of ethnic diversity on a wider range of outcomes and skills. There is some evidence that peer diversity can affect the formation of social skills (e.g., Rao 2019), thus it is crucial to consider such alternative skills.

Furthermore, as previous research indicates that individuals tend to sort into occupations providing higher rewards to their particular skills (Borghans et al. 2014; Deming 2017; Jackson 2018), we hypothesize that peer ethnic diversity may affect skills acquired in school and, indirectly, occupational choices because of changing skill compositions of students and because of changes in the comparative advantage of students across different occupations, such as care-oriented occupations versus STEM or commercial occupations.

We study occupational choices by analyzing the Vocational Education and Training (VET) occupations, in which students sort right after compulsory schooling in Switzerland. In Switzerland, roughly two thirds of each student cohort decide to go into VET, thus representing a very large part of the overall labor market. We classify these VET occupational choices using the ISCED (International Standard Classification of Education) Fields of Training and Education. Specifically, we use seven major ISCED fields: (1) Clerical/commercial occupations (e.g., office clerks, retail employees), (2) IT, (3) Engineering, (4) Agriculture, (5) Services, and (6) Health and welfare and (7) Humanities and social sciences. In our main analysis, we focus on the choice of "care-oriented occupations", that is, the ISCED field "health and welfare", which includes, for example, nursing, elderly care, and social work. These occupations have the common component of providing help to individuals (Stoet and Geary 2022), for which social skills are particularly relevant.

Regarding our explanatory variable, ethnic diversity, previous economics literature mostly concentrated on using single measures of ethnic diversity. They study for example the fraction of immigrant peers in a classroom (e.g., Ballatore et al. 2018; Brunello and Rocco 2013; Figlio and Özek 2017; Figlio et al. 2021; Jensen and Rasmussen 2011; Ohinata and van Ours 2013), the fraction of non-English speakers (e.g., Diette and Oyelere 2017; Geay et al. 2013) or ethnic fractionalization indices (e.g., Bredtmann et al. 2021; Chevalier et al. 2020; Hall and Leeson 2010). However, recent studies from the political economy literature have shown that not only ethnic fractionalization but also other dimensions of diversity affect intergroup

interactions and, therefore, individual outcomes. For example, Bazzi et al. (2019) find that while ethnic fractionalization increases integration in communities in Indonesia, ethnic polarization decreases it. Therefore, we study how different dimensions of diversity simultaneously shape individual student outcomes.

In our analysis, we differentiate between two dimensions of ethnic diversity that research has shown to shape intergroup relationships: ethnic fractionalization (Alesina and La Ferrara 2005; Easterly and Levine 1997) and ethnic polarization (Esteban and Ray 1994; Montalvo and Reynal-Querol 2005; Reynal-Querol 2002). Ethnic fractionalization, which captures the fragmentation of the peer group in ethnic subgroups, measures the probability that two randomly selected students belong to different ethnic groups. The higher this probability, the higher the level of ethnic heterogeneity in the students' peer group. In contrast, ethnic polarization captures the distribution of ethnic subgroups within the peer group. Polarization reaches its maximum when two equally sized ethnic groups exist within the peer group (Alesina et al. 2003) and decreases as one ethnic group becomes dominant in relative terms.

Previous research has argued that in groups containing few large ethnic subgroups, interethnic antagonism might prevail or intensify, and individuals might become less likely to interact with individuals from other ethnic subgroups (Esteban and Ray 1994; Lazear 1999). Considering both dimensions of diversity is crucial because ethnic fractionalization and ethnic polarization may have opposing effects on individual skill formation and on occupational choices. While these two measures are widely applied to measuring diversity between countries and between regions, we are among the first to simultaneously use these well-established measures in the context of education.

For our empirical study we use longitudinal register data on the universe of students in Switzerland allowing us to track their occupational choices after finishing compulsory schooling, that is, when they are 14 to 16 years old. Switzerland is a particularly suitable setting for our analysis for two reasons. First, Switzerland is among the top OECD ("Organisation for Economic Co-operation and Development") countries with both the largest fraction of foreign-born residents and the most ethnically diverse population (OECD 2020a, 2020b). For our research question, this high level of ethnic diversity has the advantage that it generates variation in school ethnic composition that we can exploit for identification. Second, the majority (two-thirds) of each student cohort in Switzerland enters a VET program after compulsory schooling. These students choose an occupation out of roughly 220 training occupations. These occupations cover the whole economy across all industries and types of jobs. They are classified according to the ISCED Fields of Training and Education and range from STEM-oriented occupations (e.g., electronics technician) to care-oriented occupations (e.g., social worker). Both the large numbers of students entering VET after compulsory schooling and the broad range of occupations provide large variation in occupational choices that we can use in our analysis.

As our main outcome variable, we use the choice of a care-oriented occupation, which we measure right after compulsory

schooling, that is, after 9th grade. We measure our explanatory variables, ethnic fractionalization and polarization, during the last 2 years of compulsory schooling (i.e., during 8th and 9th grade). To construct ethnic fractionalization and polarization indices, we use the language spoken at home as a proxy for ethnicity, as this characteristic is one of the most critical components of ethnic identity (Stokes 2017).

To explore the effects of ethnic diversity on occupational choices, we exploit the variation in the ethnic composition of cohorts within schools. This strategy rests on the assumption that the variation in cohorts' ethnic composition is unrelated to other factors affecting occupational choices (similar approaches have been used in the peer effects literature, for example, Angrist and Lang 2004; Bifulco et al. 2011; Brenøe and Zölitz 2020; Carrell et al. 2018). We test our assumption with a number of balancing tests and find that the observed within-school across-cohort variation in ethnic composition is indeed consistent with a variation that is generated by a random process.

Our results suggest that, holding ethnic polarization constant, increasing ethnic fractionalization during compulsory school increases the likelihood of choosing a care-oriented occupation¹ and decreases the likelihood of choosing a clerical/commercial occupation (e.g., office clerks or retail employees). In contrast, we find that, holding ethnic fractionalization constant, increasing ethnic polarization decreases the likelihood of students choosing a care-oriented occupation and increases the likelihood of choosing a clerical/commercial occupation. These results suggest that ethnic fractionalization in schools may foster social skills and thereby enhance students' comparative advantage in care-oriented occupations, whereas ethnic polarization appears to have the opposite effect. While skill formation is the mechanism we explore in detail, other mechanisms, such as labor market discrimination or differential employer preferences may also play a role and deserve further investigation.

Our paper contributes to four strands of literature. First, it adds to the literature on occupational choice and particularly the choice of care-oriented, or—in a broader sense—people-oriented occupations. Our results complement, for example, the work of Borghans et al. (2014), who show that workers sort into “people jobs” according to their skills and Kuhn and Wolter (2022) who study the differential sorting of male and female adolescents into people-oriented versus things-oriented occupations. We show that peer ethnic composition in school is an additional determinant of the sorting of young adolescents into people-oriented occupations.

Second, our paper also adds to the peer effects literature in general (e.g., Brenøe and Zölitz 2020) and to the literature on peer ethnic composition in particular. While previous research has mainly analyzed the effect of peer ethnic composition on short-run student performance as measured by test results (Ballatore et al. 2018; Figlio et al. 2021; Hanushek et al. 2009), only very few studies have analyzed postschooling outcomes (e.g., Chevalier et al. 2020; Chuard et al. 2022). Our paper analyzes a novel post-compulsory schooling outcome—occupational choices—and shows that peer ethnic composition in schools appears to affect

the choice of care-oriented occupations. A better understanding of how the school environment affects occupational sorting of young adolescents and, therefore, their early careers, is not only crucial because care-oriented occupations will become more important but also because occupational choices have important implications for earnings and employment outcomes. Indeed, research has identified occupational sorting as a major driver of wage disparities across different groups (e.g., Hirsch and Macpherson 2004; Pan 2015; Plug et al. 2014; Sloane et al. 2021).

Third, our paper contributes to the literature analyzing the combined effect of different dimensions of ethnic diversity. For example, Bazzi et al. (2019) analyze the effect of ethnic fractionalization and polarization on nation building in Indonesia, finding that while ethnic fractionalization enhances nation building, ethnic polarization dampens this effect. Another example is Ager and Brückner (2013), who analyze the effect of cultural fractionalization and polarization on economic growth in the United States. Overall, these studies show that when analyzing diversity, it is crucial to account for both fractionalization and polarization, and that these two measures of diversity can have opposing effects. While the political economy literature has long recognized the importance of analyzing the combined effect of fractionalization and polarization, this approach remains largely unexplored in educational settings. Our findings indicate that even in educational settings, considering both fractionalization and polarization is crucial and that these two dimensions of diversity can lead to opposing effects on occupational choices.

Fourth, our paper contributes to a better understanding of the formation of social skills in school, skills that are becoming increasingly important in the labor market (Deming 2017; Kiener et al. 2020). While previous studies have focused on the link between ethnic diversity in schools and cognitive skills (e.g., Ballatore et al. 2018; Geay et al. 2013), we are among the first to investigate the link between ethnic diversity and social skills in schools and suggest that ethnic fractionalization might enhance the formation of social skills.

Regarding policy implications, our research provides important insights into the long-term effects of different types of ethnic diversity in schools. It shows that considering different dimensions of ethnic diversity (i.e., ethnic fractionalization and polarization) in addition to the sheer number of nonnative students is crucial. While the presence of a few large ethnic groups in a peer group might reduce intergroup interactions, a diverse mix of smaller ethnic groups may contribute to the development of social skills and a greater likelihood of choosing care-oriented occupations. Thus, future research could benefit from moving beyond aggregate measures of diversity to explore how distinct dimensions of ethnic diversity may differentially shape students' development and career trajectories.

2 | Institutional Background

The education system in Switzerland has a federal structure and gives the 26 cantons—regional administrative entities similar to U.S. states—some autonomy in educational policy decision-making. The degree of coordination among the cantons is

relatively high. Moreover, since the Intercantonal Agreement on the Harmonization of Compulsory Education in the 1970s, the cantons have applied roughly the same common curriculum for compulsory schooling. This curriculum includes a 2-year entry level (kindergarten) and 9 years of compulsory schooling,² the first 6 years of which are at the primary level and the last three at the lower secondary level.³

Almost all students in Switzerland complete compulsory education in public school; only 5% of students in a cohort go to private school. As inclusion is an important public school policy objective, children of different genders, ethnic, and socio-economic backgrounds are educated in an inclusive setting whenever possible. Importantly, students cannot freely choose their public school but are instead assigned to schools according to the ZIP code of their municipality of residence. This type of assignment reduces concerns of the potential sorting of students across schools.

After finishing compulsory schooling, students enter the upper secondary level by choosing among three types of education: VET, specialized professional schools, or Gymnasium.⁴ Around two-thirds of each student cohort choose VET in one of the roughly 220 training occupations. VET combines part-time formal education with workplace training and experience. Students in a VET program study at a school for 1 to 1.5 days per week, and for 3.5 to 4 days a week they work as apprentices in the host companies with which they have an employment contract for their entire 2–4-year training period (Wolter and Ryan 2011).

For students entering VET, the choice of a training occupation occurs between grades eight and nine, when students are 14–16 years old. This choice, while based primarily on the students' preferences, is also based on their academic performance in secondary school. The choice of a training occupation clearly has implications for future earnings, career trajectories, and occupational mobility. Students and their families therefore give this choice very careful consideration.

Given that the last 2 years of compulsory schooling are decisive for students' occupational choice, we measure the treatments of interest in these 2 years. Specifically, we calculate ethnic fractionalization and polarization separately in grades eight and nine, and use these variables to explain students' occupational choices after compulsory schooling. In our main analysis, we measure the treatment in grade nine. As we show in section VIII, measuring the treatment in grade eight has no impact on the finding, because school cohorts remain largely unchanged during secondary school.⁵

3 | Student Data and Measures of Ethnic Diversity

To analyze the effect of school ethnic diversity during compulsory schooling on the subsequent occupational choice, we draw on register data on the universe of students in Switzerland. This data is generated by the Swiss Federal Statistical Office's LABB ("Längsschnittanalysen im Bildungsbereich") program through linking different educational and labor registers and is therefore well-suited for analyzing the effect of school ethnic diversity on occupational choices.

This comprehensive dataset contains the universe of students completing compulsory schooling between 2011 and 2016.⁶ For each student, we observe the grade, cohort, and a school identifier (the data contain both public and private schools). We use this information to identify peer groups at the school-cohort level.⁷ Therefore, peers are students in the same school and cohort. The average size of these groups is 61 students.

Within peer groups, we measure student ethnicity with the student's primary language, that is, the one they most frequently speak at home.⁸ This approach is common in the literature on ethnic diversity (e.g., Alesina et al. 2003; Desmet et al. 2009). Indeed, language is one of the most critical components of national identity (Stokes 2017) and is therefore correlated with ethnicity.⁹ In total, our data contain 29 languages (see Table A1 in the Appendix).

To measure ethnic diversity within peer groups, we use two indices that are well-established in the literature: the fractionalization index (Alesina and La Ferrara 2005; Easterly and Levine 1997) and the polarization index (Esteban and Ray 1994; Montalvo and Reynal-Querol 2005; Reynal-Querol 2002). Specifically, we construct the ethnic fractionalization index according to Formula (1) and the ethnic polarization index according to Formula (2).¹⁰

$$F_{ist} = 1 - \sum_{g=1}^G (s_g^{-i})^2 \quad (1)$$

$$P_{ist} = 1 - \sum_{g=1}^G \left(\frac{0.5 - s_g^{-i}}{0.5} \right)^{2*} s_g^{-i} \quad (2)$$

where i indicates the student, s the school, and t the cohort. The subscript g indicates one of the G different languages in school s and cohort t . $s_g^{-i} = \frac{N_g - 1}{N - 1}$ is the leave-out fraction of students with primary language g in school s and cohort c , that is, the fraction of students with primary language g in school c and cohort t excluding student i . We use the leave-out fraction, rather than the full group fraction, to separate the student's own contribution to ethnic fractionalization and polarization from the peers' contribution (Angrist 2014).

The ethnic fractionalization index equals the probability that two randomly selected (with replacement) students from the same school cohort speak a different (primary) language. Therefore, a higher value of the ethnic fractionalization index indicates a higher degree of ethnic heterogeneity of the peer group. The index varies between zero (all students in the school cohort speak the same primary language) and $\frac{G-1}{G}$ (all students in the school cohort speak a different primary language), where G is the number of language groups. In contrast, the ethnic polarization index indicates how far the distribution of language subgroups in the school cohort is from the bipolar distribution (Montalvo and Reynal-Querol 2005; Reynal-Querol 2002). The index is maximized when two groups are of the same size and decreases as one group becomes dominant in relative terms.

Our outcome of interest is occupational choice, which we measure 1 year after completion of compulsory school. Therefore, while we measure school ethnic diversity (the treatment) in

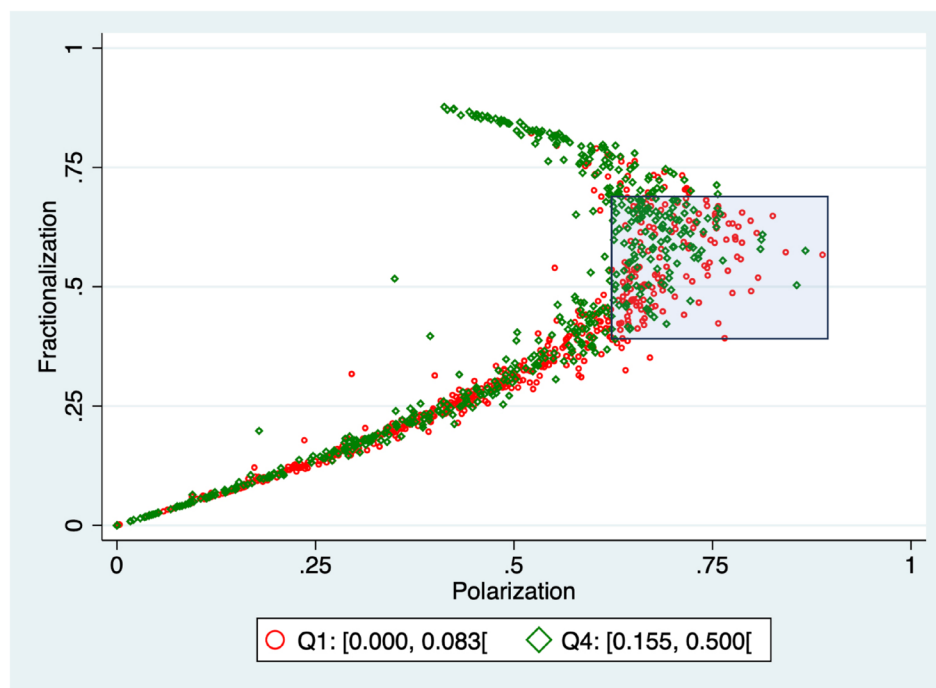


FIGURE 1 | Ethnic fractionalization, polarization, and choice of a care-oriented occupation. Data are collapsed at the school level: Each dot is a school. Ethnic fractionalization and polarization are school averages. Red circles indicate the bottom quartile of the school-level fraction of students sorting into care-oriented occupations. Green squares the top quartile. The table's legend reports the quartiles boundaries. [Color figure can be viewed at [wileyonlinelibrary.com](https://onlinelibrary.wiley.com)]

grade nine (the last year of compulsory schooling), we measure occupational choice (the outcome) 1 year later (the first year of postcompulsory education). Figure A6 in the Appendix summarizes at which stage of the educational system we measure the treatment and the outcome.

To construct the outcome variable, we consider all students who choose VET (and immediately start a VET program) after compulsory schooling as these students have to choose an occupation for their training. For students choosing VET, we observe the field of the occupation they choose. We classify these occupational choices according to the International Standard Classification of Education (ISCED) Field of Education and Training. Specifically, we define all ISCED “health and welfare” occupations as care-oriented.¹¹

Our data contain the universe of students in Switzerland. To construct our estimation sample, we restrict the initial sample to the population of students entering a VET program right after grade nine and for whom we can observe the ISCED field of the occupation they choose (44% of all students completing compulsory schooling), so that we can classify their occupational choice. We exclude individuals taking a gap year after grade nine, because we cannot observe the level of ethnic diversity of their peer group during that year. Additionally, we exclude individuals in small school cohorts (fewer than ten students, because this cohort size is highly unusual) and schools that appear only once in the data (i.e., with no within-school variation in the treatment). Moreover, we restrict the sample to students aged between 14 and 17 in their last year of compulsory schooling, as this is the typical age at which students starting a VET program make their occupational

choice. These additional restrictions further reduce the sample by 5.8%. The final estimation sample consists of 238,630 students. Table A1 in the Appendix reports descriptive statistics for the estimation sample.

Figure 1 shows the relationship of the two indices with the outcome variable, that is, the choice of care-oriented occupations. For each school (one dot), we calculate the average levels of ethnic fractionalization and polarization across all cohorts. Moreover, we calculate the school-level fraction of students sorting into care-oriented occupations and rank schools according to the quartiles of this variable. Dark green dots represent schools with fractions of students sorting into care-oriented occupations above the 75th percentile, while red dots represent schools with fractions of students sorting into care-oriented occupations below the 25th percentile.

Figure 1 is similar to the figures in Montalvo and Reynal-Querol (2005) and Bazzi et al. (2019). For low levels of fractionalization (< 0.25) and polarization (< 0.4), the two Indices are almost collinear, implying that separately identifying the effects of fractionalization and polarization at low levels of the Indices is difficult. In the mid-range, the correlation is roughly zero, whereas for high levels of fractionalization (> 0.6), the correlation is negative. This limits our analysis and implies that we are not able to separately identify the effect of ethnic fractionalization and polarization at low levels of the two indices where the two are almost collinear.

The figure shows that, for a given level of ethnic polarization, the density of schools with high fractions of students sorting into care-oriented occupations (dark green dots) increases with ethnic

TABLE 1 | Variation in the ethnic fractionalization and polarization Indices.

	<i>N</i>	Mean	SD	Min	Max
Panel A. Ethnic fractionalization					
Raw	238,630	0.371	0.243	0.000	0.915
Residuals after school FE and cohort FE	238,630	0.000	0.091	−0.588	0.561
Residuals after school FE, cohort FE, and school trends	238,630	0.000	0.075	−0.519	0.644
Residuals after school FE, cohort FE, and school trends and ethnic polarization	238,630	0.000	0.046	−0.341	0.391
Panel B. Ethnic polarization					
Raw	238,630	0.468	0.220	0.000	1.000
Residuals after school FE and cohort FE	238,630	0.000	0.109	−0.750	0.648
Residuals after school FE, cohort FE, and school trends	238,630	0.000	0.090	−0.752	0.553
Residuals after school FE, cohort FE, and school trends and ethnic fractionalization	238,630	0.000	0.055	−0.427	0.395

Note: Descriptive statistics of the ethnic fractionalization and polarization indices after residualization.

fractionalization. Conversely, for a given level of ethnic fractionalization, the density of schools with low fractions of students sorting into care-oriented occupations increases with ethnic polarization. Overall, Figure 1 provides descriptive evidence that the school-level fraction of students sorting into care-oriented occupations is positively associated with the level of ethnic fractionalization (keeping polarization constant) and negatively associated with the level of ethnic polarization (keeping fractionalization constant).¹²

4 | Empirical Strategy

4.1 | Identification Strategy

For identification, we follow an approach, first proposed by Hoxby (2000), that is now widely applied in the peer effects literature (e.g., Angrist and Lang 2004; Bifulco et al. 2011; Black et al. 2013; Brenøe and Zölitz 2020; Carrell and Hoekstra 2010; Carrell et al. 2018; Figlio and Özek 2017; Gould et al. 2009; Hanushek et al. 2009; Lavy et al. 2012; Lavy and Schlosser 2011). To overcome the potentially endogenous composition of the peer group, we leverage the variation in peer composition across cohorts within schools. In our setting, we exploit variation in the ethnic fractionalization and polarization indices across cohorts within the same schools. Our approach consists of estimating the following model:

$$o_{ist} = \alpha + \beta F_{-ist} + \gamma P_{-ist} + \delta I_{ist} + \lambda C_{-ist} + \phi_s + \rho_t + \varepsilon_{ist} \quad (3)$$

where o_{ist} is the binary indicator for student i in school s and year t choosing a care-oriented occupation after compulsory schooling. This indicator takes value one if the student chooses a care-oriented occupation and zero if he or she chooses any other occupation. F_{-ist} and P_{-ist} are the ethnic fractionalization and polarization Indices measured in grade nine at the school-cohort level. For comparability, we standardize the Indices to have zero mean and unit variance. We also include a set of individual controls I_{ist} (gender, age dummies, and nationality) and a set of school-cohort controls C_{-ist} (fraction of female peers, average age of the peers, and size of the school-grade cohort). Moreover,

we include school fixed effects ϕ_s capturing heterogeneity at the school level and cohort fixed effects ρ_t capturing systematic differences across cohorts. In a more flexible specification, we additionally include linear and quadratic school-specific time trends to control for time-variant school-specific confounding characteristics. ε_{ist} is the idiosyncratic error term. Finally, we cluster the standard errors at the level of the treatment, the school-cohort level.

The identification of β and γ rests on the assumption that the cohort-to-cohort variation in student ethnic composition is random, conditional on school fixed effects, cohort fixed effects, and school trends. Put differently, this variation must be unrelated to differences in individual student characteristics that might simultaneously affect occupational choice. The next subsection provides empirical evidence supporting this assumption.

4.2 | Validity of the Identification Strategy

To obtain precise estimates of the causal effect of diversity on occupational choices, we need sufficient variation in the ethnic fractionalization and polarization indices within schools across cohorts. Moreover, our strategy rests on the assumption that variation in the ethnic fractionalization and polarization indices across cohorts within the same school is as good as random, conditional on school fixed effects and cohort fixed effects. To assess the credibility of these assumptions, we run four tests.

First, we analyze how much of the variation in the two Indices remains after we remove school fixed effects, cohort fixed effects, and school trends. Table 1 reports these residual variations. After we account for school and cohort fixed effects, the standard deviation of the ethnic fractionalization index (panel A) drops by almost one third, from 0.25 to 0.09. Including school linear trends slightly reduces the standard deviation to 0.07. Panel B of Table 1 shows a similar pattern for the polarization index. Given that in our main specification we simultaneously include both indices, in the last rows of Panel A and Panel B we additionally control for ethnic polarization and fractionalization. Including these

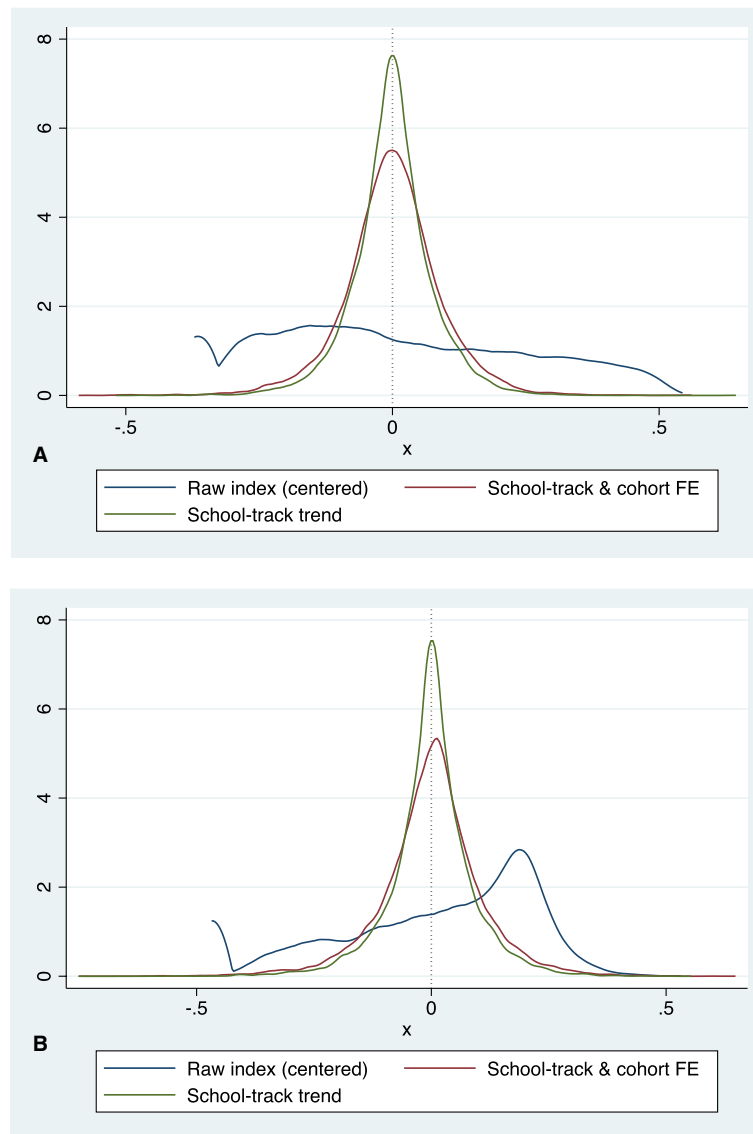


FIGURE 2 | Distribution of residuals Panel A: Ethnic fractionalization Panel B: Ethnic polarization. [Color figure can be viewed at [wileyonlinelibrary.com](https://onlinelibrary.wiley.com/doi/10.1111/ir.17001)]

indices further reduces the residual variation. These large reductions in variation indicate that our effect estimates are based on small changes in student ethnic composition. Therefore, our estimates are uninformative as to the impact of moving a single student across schools with very different ethnic compositions. Nonetheless, and most importantly, the data contain sufficient variation for us to estimate the effects of small changes in cohort ethnic composition with reasonable precision.

To visualize the full distribution of the Indices, in Figure 2 we plot the two Indices and their residuals. After we remove school and cohort fixed effects (red line) and school trends (green line), the distributions of the residuals appear normal for both Indices and are consistent with random variation in the Indices. Figures A4 and A5 compare the distribution of the residual variation of both Indices with the normal distribution and confirm that the two distributions are similar.

Second, we test whether the data show students' systematic selection into schools and cohorts according to individual student

background characteristics. In our case, students might select into school cohorts with higher or lower degrees of ethnic fractionalization and polarization according to individual (partly unobservable) characteristics related to occupational choice. While we cannot directly test whether students select into school cohorts according to their unobservable characteristics, we can test whether variation in observable student background characteristics within schools and across cohorts is correlated with variation in the ethnic fractionalization and polarization indices.

For this test, we analyze how many student characteristics are related to the two Indices. We run this test on the full sample of students and analyze 20 student background characteristics that we observe in the data: gender, four age dummies (one for each age between 14 and 17), nationality (Swiss national vs. non-Swiss national), three dummies for the type of residence area (urban, semirural, and rural), six dummies for parental education (no compulsory schooling, compulsory schooling, high school, VET, tertiary professional education, tertiary academic education), class size, and four dummies for the quarter of birth.

TABLE 2 | Student background characteristics and Indices.

# performed tests	Ethnic fractionalization			Ethnic polarization			Expected
	20	20	20	20	20	20	
# significant tests at the 1% level	1	2	1	2	1	0	0
# significant tests at the 5% level	5	2	2	3	1	1	1
# significant tests at the 10% level	5	3	2	5	2	2	2
Controls	No	Yes	Yes	No	Yes	Yes	
School FE	Yes	Yes	Yes	Yes	Yes	Yes	
School trend	No	No	Yes	No	No	Yes	

Note: The table reports the number of student background characteristics for which the H_0 of no correlation with the ethnic fractionalization and polarization Indices could not be rejected. The column “expected” reports the number of characteristics we would expect to be significantly related to the index by chance at different significance levels. This number is the product of the significance level and the number of tests performed.

Table 2 summarizes the results. The number of characteristics for which the test cannot reject the null hypothesis of no correlation between student background characteristics and school cohort ethnic fractionalization and polarization is close to the number that we would expect to be significant by chance, particularly in the models including controls and the school trends. Therefore, we exclude student selection according to individual observable characteristics into cohorts with different levels of ethnic diversity, conditional on school fixed effects, cohort fixed effects, and school trends. Table A2 in the Appendix reports the full list of characteristics used for this test and the associated p values.

Third, following Bifulco et al. (2011), we run simulations to analyze whether the variation in the Indices we observe in the data is consistent with random assignment of students to cohorts within schools. For this test, we simulate 250 random assignments of students to cohorts within schools. We then calculate school-cohort Indices of ethnic fractionalization and polarization according to these randomly assigned cohorts. Figure 3 shows that the actual and simulated distributions of the two Indices are nearly identical, supporting the assumption that variation in the Indices is as good as random.

Across 500 simulations, the average standard deviation of the residuals of the ethnic fractionalization index after we control for school and cohort fixed effects is 0.0724, as opposed to the actual 0.091 reported in Table 1. After we account for school trends, the average residual variation in the simulated ethnic fractionalization index is 0.0720, close to the residual variation of 0.075 we observe in the actual data. For the polarization index, the average standard deviation after we control for school and cohort fixed effects is 0.0896, as opposed to the actual 0.1062 reported in Table 1. After we remove school trends, the average residual variation in the simulated polarization index is 0.0891 and close to the residual variation observed in the data (0.0871). Overall, these results indicate that, after we control for school fixed effects, cohort fixed effects, and school trends, variation in both indices is consistent with random assignment of students to cohorts.

Fourth, we test the autocorrelation in the ethnic fractionalization and polarization indices over time. Such autocorrelation might indicate the existence of time-varying unobservable confounders (Brenøe and Zölitz 2020) and would support the inclusion of school-specific linear time trends for capturing linear

autocorrelation within schools. In contrast, the absence of autocorrelation would indicate that the inclusion of school-specific trends in our regression model is unnecessary.

For this test, we run for each school and index a separate regression index in year t on the index in year $t - 1$. Because this test requires a minimum of 3 years for each school, we can run the regression in 1755 schools. For the ethnic fractionalization index, the percentage of schools for which we cannot reject the null hypothesis of no autocorrelation over time is 0.34 at the 1% significance level, 3.14 at the 5% significance level, and 6.52 at the 10% significance level. For the polarization index, the percentages are 0.86, 2.97, and 6.12, respectively. All these values are below the critical values that we would expect to observe by chance. We thus find no systematic autocorrelation of the diversity index over time. Therefore, controlling for school-specific time trends in our regression should not affect our estimates.

Despite having established that the residual variation in ethnic fractionalization and polarization is plausibly random, we still might be concerned that ethnic fractionalization and polarization might lead to (a) differential selection of students into VET compared to other upper-secondary types of education and therefore (b) systematic differences in the composition of students sorting into VET. Section II describes the three types of upper-secondary education that students can choose after compulsory schooling: VET, Gymnasium (the academic track), and specialized professional schools. Moreover, some students might opt for an “interim solution” after compulsory schooling.¹³ To test whether ethnic fractionalization and polarization lead to systematic selection of students into VET, we consider the full sample of students at the end of compulsory schooling. We then analyze the effect of ethnic fractionalization and polarization on their choice of one of the three possible types of education at the upper secondary level or the choice of an interim solution.

Table A15 in the Appendix reports the effect of ethnic fractionalization and polarization on the choice of the VET track (column 1), Gymnasium (column 2), specialized schools (column 3), and interim solutions (column 4). The sample consists of students for whom we observe tracking choices after compulsory schooling. The coefficients do not show any significant effect of ethnic fractionalization or polarization on the choice of any of these four

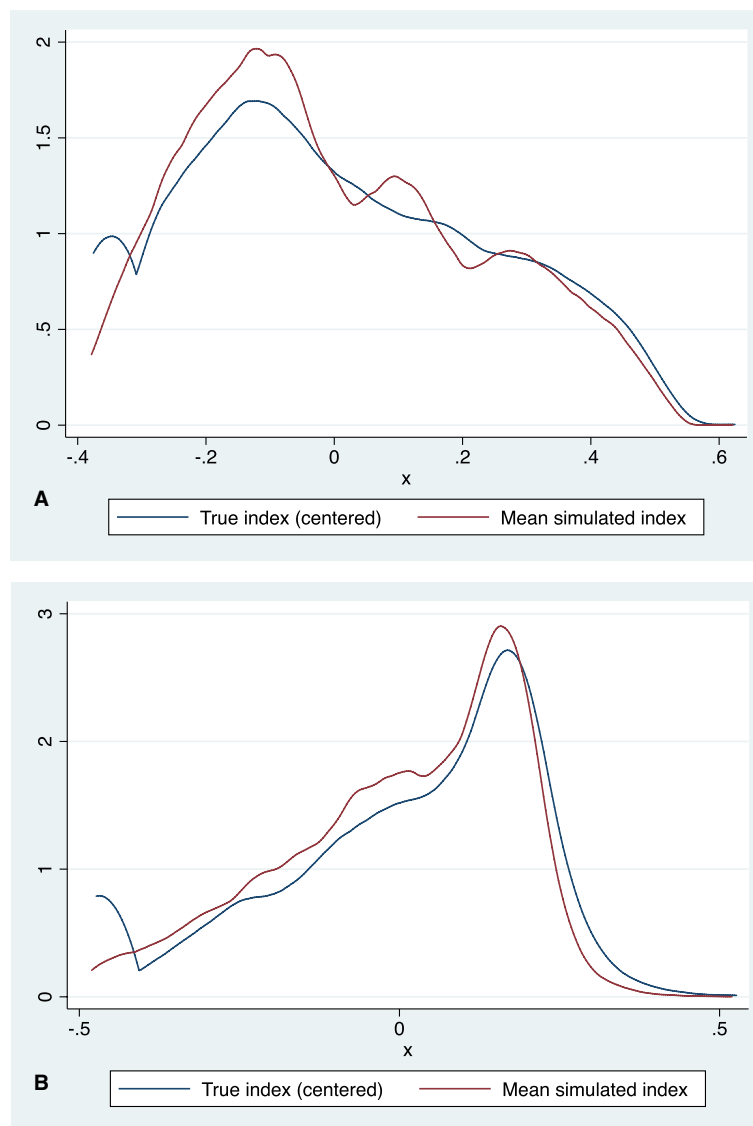


FIGURE 3 | Distribution of actual and simulated Indices PANEL A: Ethnic fractionalization PANEL A: Ethnic polarization. [Color figure can be viewed at [wileyonlinelibrary.com](https://onlinelibrary.wiley.com)]

options. We therefore find no evidence that ethnic fractionalization and polarization lead to systematic selection of students into VET.

Taken together, the results of the four tests support our assumption that—conditional on school fixed effects, cohort fixed effects, and school trends—the variation in the ethnic fractionalization and polarization indices is as good as random. Moreover, the analysis of educational choices after compulsory schooling shows that our treatments do not lead to systematic changes in the composition of students selecting into VET, the type of education we consider when analyzing occupational choices in our main analysis.

5 | Results

5.1 | Care-Oriented Occupations

Table 3 reports the coefficients obtained by estimating Equation (3), in which we subsequently add individual controls (age, gender, and nationality) (column 2); controls for cohort

characteristics (fraction of female students, average age, and class size) (column 3); school-specific linear time trends (column 4); and school-specific quadratic time trends (column 5). Columns 6 and 7 report unconditional estimates of the effects of the two indexes resulting from regressions in which the two indexes are included separately.

Columns 2 and 3 show that the inclusion of control variables has little effect on the estimated coefficients, supporting the assumption that ethnic fractionalization and polarization are as good as random, conditional on school and year fixed effects (as discussed in Section 2). Model 4, which includes school-specific linear time trends, is our preferred specification while model 5 includes school-specific quadratic time trends, allowing for a more flexible specification of the time trends. However, the coefficients from model 4 remain virtually unchanged.¹⁴

The coefficients represent the effect (in percentage points) of a one standard deviation increase in each index. The estimated

TABLE 3 | The effect of ethnic peer diversity on occupational choice.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Fractionalization	1.115*** (0.300)	1.134*** (0.273)	1.325*** (0.294)	1.119*** (0.337)	1.119*** (0.338)	0.402** (0.172)	
Polarization	−0.687*** (0.221)	−0.581*** (0.203)	−0.625*** (0.204)	−0.605*** (0.231)	−0.605*** (0.232)		−0.021 (0.126)
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
School FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Individual controls	No	Yes	Yes	Yes	Yes	No	No
Cohort controls	No	No	Yes	Yes	Yes	No	No
School time trend	None	None	None	Linear	Quadratic	None	None
Obs.	238,630	238,630	238,630	238,630	238,630	238,630	238,630

Note: The dependent variable is 1 if the occupation is care-oriented, and 0 otherwise. Ethnic fractionalization and polarization are standardized with zero mean and unit variance. The coefficients are multiplied by 100. Standard errors are in parentheses. Standard errors are clustered at the school cohort level.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

coefficients imply that—keeping polarization constant, that is, keeping the distribution of ethnic groups within school cohorts constant—a one standard deviation increase in ethnic fractionalization increases the likelihood of choosing a care-oriented occupation by roughly 1.12 to 1.14 percentage points. A one standard deviation increase in the ethnic fractionalization index is roughly 0.24, corresponding to a reduction of the probability that two randomly selected students from the same school cohort belong to the same ethnic group by 24 percentage points.¹⁵ These effects suggest that going from a school cohort in the 25th percentile of the ethnic fractionalization distribution to one in the 75th percentile would increase, all else being equal, the likelihood of choosing a care-oriented occupation by roughly 2 percentage points. Given that about 12.5% of students in our sample choose a care-oriented occupation, this effect is economically significant.

The coefficients also imply that—keeping ethnic fractionalization constant, that is, keeping the degree to which the school cohort is split into distinct ethnic subgroups constant—a one standard deviation increase in the ethnic polarization index reduces the likelihood of choosing a care-oriented occupation by about 0.58 to 0.69 percentage points. A one standard deviation increase in the ethnic polarization index is roughly 0.22.¹⁶ These effects suggest that going from a school cohort in the 25th percentile to one in the 75th percentile would decrease the likelihood of choosing a care-oriented occupation by roughly 1.6 percentage points. Again, given that the proportion of students choosing a care-oriented occupation is about 12.5%, this effect is economically significant.

To better understand the distinction between estimating conditional and unconditional effects of the two indices, columns 6 and 7 present regression results in which the indexes are included separately. The coefficient associated with ethnic fractionalization is positive and statistically significant while the coefficient associated with ethnic polarization is close to zero and not statistically significant. However, since the indexes are correlated (as shown in Figure 1), unconditional variation in one index automatically captures variation in the other index confounding the estimated effect of a change in one index by simultaneous changes in the other.

This confounding makes it difficult to interpret the effects of each index separately. Therefore, it is crucial to estimate conditional effects by including both indexes in the same model (a point also emphasized by Bazzi et al. (2019)) to properly assess the distinct impacts of correlated dimensions of diversity.

Overall, these estimates show that ethnic fractionalization and polarization affect the choice of a care-oriented occupation. Students in school cohorts with many small groups (high fractionalization and low polarization) are more likely to sort into care-oriented occupations. In contrast, students in cohorts with few large ethnic groups (high polarization and low fractionalization) are less likely to sort into care-oriented occupations.

5.2 | Other Occupations

Given that ethnic diversity increases the likelihood of students choosing a care-oriented occupation, the question arises as to which occupations students are pulled away from. For example, if ethnic diversity reduces the student acquisition of cognitive skills, students in more diverse schools could be less likely to choose an occupation that requires strong academic and cognitive skills, such as an occupation in STEM (e.g., Ballatore et al. 2018; Gould et al. 2009; Hanushek et al. 2009).

To answer this question, we estimate Equation (3) for all ISCED fields that we observe in the data.¹⁷ Table A6 in the Appendix reports the estimated coefficient. In addition to the positive effect on the choice of a care-oriented occupation (column 6), we find no effect of the ethnic fractionalization index on the choice of an occupation in the field “engineering, manufacturing, and construction.” Some occupations in this field are STEM occupations requiring mathematical skills, such as electronics engineering (“Elektroniker/in EFZ”) and mechanical engineering (“Polymechaniker/in EFZ”). Therefore, diversity does not appear to pull students away from STEM occupations. In contrast, we find negative coefficients for choosing an occupation in the fields “business, administration, and law.” These results suggest that the

marginal students who move into care-oriented occupations when exposed in school to a higher degree of diversity are not those who would have otherwise chosen a career in STEM but rather those who would have chosen a career in clerical occupations.

6 | Mechanism: Skill Formation

In this section, we examine potential mechanisms through which ethnic diversity may influence occupational choices, focusing specifically on skill formation. Before discussing the mechanism that we study in this paper in more detail, we emphasize that our mechanism is one of several possible mechanisms that could drive our results. Another potential alternative mechanism is demand effects, which we briefly discuss after having presented the results for skill formation mechanisms.

The mechanisms we study in this paper are skill formation. Exposure to higher levels of ethnic diversity in schools may foster the development of certain skills while potentially limiting the formation of others (e.g., hard skills such as math or language skills). On the one hand, ethnic fractionalization in school could enhance the formation of social skills by increasing the frequency of student interethnic interactions. The interaction with students with a different ethnic background might make other students more prosocial and empathetic, increasing their likelihood of engaging in care-oriented occupations in which these social skills are comparatively more rewarded (i.e., in which they have a comparative advantage).¹⁸ However, empirical evidence is still scarce, and only a few studies analyze how ethnic diversity affects social skill formation (Burns 2012; Rao 2019).

On the other hand, ethnic fractionalization might reduce the formation of hard skills (such as math and language skills) by making the efficient provision of classroom teaching more difficult (e.g., by increasing student disruption as in Lazear (1999)). In turn, the reduced provision of classroom teaching could adversely affect the students' formation of cognitive skills, such as math and reading skills, leading students to avoid occupations in which these skills are comparatively more rewarded (i.e., in which they have a comparative disadvantage). However, empirical evidence on the effects of ethnic diversity is mixed (e.g., Ballatore et al. 2018; Bredtmann et al. 2021; Figlio et al. 2021; Geay et al. 2013; Jensen and Rasmussen 2011). Therefore, it is a priori unclear how ethnic diversity might affect occupational choice through student cognitive skill formation.

As a result, students in more diverse schools may acquire different skill sets compared to those in less diverse schools. Given that individuals tend to sort into those occupations in which they have a comparative advantage, that is, in which the returns to their skills are highest (Borghans et al. 2014; Deming 2017), these different sets of social and hard skills could lead to different patterns of occupational choice.

One alternative mechanism is labor demand effects. For instance, ethnic minorities may be more likely to settle in larger cities, where demand for care-oriented occupations is higher due to a greater concentration of care facilities. Employers in these areas may also be more willing to hire workers from ethnic minorities compared to those in rural areas. This residential sorting could create a

correlation between ethnic diversity in schools and the likelihood of entering care-oriented occupations. Our empirical model partially accounts for these effects by incorporating school fixed effects and school-specific linear time trends, which control for both systematic differences and linear trends over time across schools. This means that if residential selection remains constant over time or follows a linear pattern, it would not affect our results. However, we acknowledge that our analysis does not allow us to fully rule out discrimination or other labor market selection mechanisms. For example, additional tests examining effect heterogeneity across more or less conservative regions yield inconclusive results.

To empirically investigate the mechanisms for the relationship between ethnic diversity in schools and skill formation, we draw on data on cognitive and noncognitive skills from the “Stellwerk 8” test. Tests are mandated by the cantons who own the data and decide upon access. We were able to gain access to these data for two of the largest cantons of Switzerland. Stellwerk 8 is a computer-based standardized test administered to 8th graders with the goal of providing a comparable measure of students' skills at the end of grade eight.¹⁹ The test is widely used by German-speaking cantons, each of which independently decides whether to implement it and is responsible for its administration.

Stellwerk 8 includes a mandatory section that all students must complete. This section covers core subjects such as math, German, and English. This test is norm-referenced, self-scoring, and adaptive: the set of questions students face is not the same for all students. Instead, students face questions of varying difficulty depending on the number of correct answers given in the previous questions. In addition to mandatory core subjects, Stellwerk 8 also includes an additional test on personal, social, and methodological competencies (“PSM test”). This section of the test is optional, and it is up to the teacher to decide whether students should take it. The PSM test comprises 162 items measuring different noncognitive skills, from the ability and willingness to work in a team to empathy.²⁰ Students rate each item on a scale from 1 (strongly disagree) to 6 (strongly agree). In the PSM test, all students answer the same set of questions. While we have test score data for all students in core subjects across the two Swiss cantons we analyze, the number of observations for the PSM section is much lower since participation is voluntary.

At the end of the test, students receive a certificate indicating the score achieved in the different subjects. Because the test provides a measure of students' competencies that is comparable across schools and regions, it has substantial signaling power. Indeed, students often have to provide their test results when applying for apprenticeship training positions. Therefore, Stellwerk 8 test scores can impact the set of occupations to which a student can and is applying for an apprenticeship training position.

For our analysis, we use the Stellwerk 8 data of two large Swiss cantons. We aggregate these data at the school-cohort level, and we then match the aggregated data to our main data containing the indices of ethnic fractionalization and polarization.²¹ Our final sample comprises 504 school-by-cohort observations for the social skill data and 2,305 school-by-cohort observations for the cognitive skill data.²²

To proxy social skills, we use the PSM test scores in items related to four skills that are related to care-oriented occupations: empathy, sociability, teamplay, and tolerance. To proxy cognitive skills, we use the test scores ranging between 0 and 1000 in math, German (i.e., the language of instruction), and English (i.e., the most common foreign language). For comparability, we standardize test scores in math, German, and English to have a 0 mean and unitary standard deviation.

To analyze the effects of ethnic fractionalization and polarization on cognitive and social skill formation, we estimate the following model similar in spirit to our main model in Equation (3):

$$z_{st} = \alpha + \beta F_{st} + \gamma P_{st} + \lambda C_{st} + \phi_s + \rho_t + \varepsilon_{st} \quad (4)$$

where z_{st} is the average of skill z in school s and at time t . z is either one of the four social skills (empathy, sociability, team play, tolerance) or one of the three cognitive skills (math, German, English). F_{st} and P_{st} are the ethnic fractionalization and polarization Indices measured in grade eight (i.e., in the same grade in which students take the Stellwerk 8 test) at the school-cohort level. We additionally include a set of school controls C_{st} (fraction of female peers, average age of the peers, and size of the school-grade cohort). C_{st} also includes a linear school-specific time trend to capture school-specific confounding characteristics that linearly vary over time. Moreover, we include school fixed effects ϕ_s capturing heterogeneity at the school level and cohort fixed effects ρ_t capturing systematic differences across cohorts. ε_{st} is the idiosyncratic error term. Finally, we weigh each observation by the size of the school cohort, and we cluster the standard errors at the level of the treatment, that is, at the school-cohort level.

Table A7 reports in columns (1) to (4) the estimated effects of ethnic fractionalization and polarization on social skills. Although most of the coefficients are not significant at conventional levels, they are all positive, suggesting a positive association between ethnic fractionalization and social skills. Only the estimated effect on sociability is statistically significant at the 10% level. For ethnic polarization, the estimated effects are all negative, but none of the coefficients is statistically significant. The low power of the analysis results from the fact that we can only link the PSM data to the administrative data at the school level, rather than at the individual level, thereby reducing the number of observations substantially. The low power of the analysis combined with the fact that the two indexes are correlated might partly explain why most coefficients, despite having the expected sign, are not statistically significant at conventional significance levels. Therefore, these results only provide supporting evidence for our mechanism, that is for a positive link between ethnic fractionalization and social skill formation, but more research is certainly needed to further analyze this—or other mechanisms.

Columns (5) to (7) of Table A7 report the estimated effects of ethnic fractionalization and polarization on cognitive skills. The coefficients associated with the ethnic fractionalization index are negative but only the estimated effects on German (the language of instruction) and English (the foreign language) are statistically significant. For math, the effect is nonsignificant at any conventional level. For ethnic polarization, the estimates are positive, but none of the coefficients is statistically significant. The estimates suggest that a one standard deviation increase in

the ethnic fractionalization index is associated with a 0.12 standard deviation reduction in the German test scores and a 0.11 reduction in English test scores.

Given that we construct our measures of ethnic diversity using the language students speak at home, these results are easily explained. Indeed, schools with high ethnic fractionalization have many small groups of students speaking different languages. In these schools, local language proficiency varies greatly across students, and teaching languages becomes more difficult. The same does not hold for math class, in which differences in language proficiency might play less of a role. For this reason, we observe a negative effect of ethnic fractionalization on German and English but not on math.

Taken together, the results in Table A7 provide suggestive evidence that while ethnic fractionalization in school could enhance the students' formation of social skills, it could also dampen the formation of language skills. Therefore, students exposed to higher levels of fractionalization are likely to develop a comparative advantage in occupations with high returns to social skills and low returns to language skills.

To reconcile these findings with the results of our main analysis, we consider the cognitive and social skill requirements of different occupational fields. Assuming that skill formation is driving the effects of ethnic fractionalization and polarization on the choice of care-oriented occupations, we would expect these occupations to require above-average social skills or, alternatively, below-average language skills. Indeed, Table A5 shows that care-oriented occupations (i.e., care occupations) require above-average social skills, such as empathy and teamplay. However, these occupations also require above-average language skills. We interpret these findings as suggestive evidence that the effect of ethnic fractionalization and polarization on the choice of care-oriented occupations primarily operates through social skills formation.

7 | Heterogeneity and Other Outcomes

7.1 | Heterogeneity According to Student Characteristics

School ethnic diversity might have different effects on the occupational choices of students with different background characteristics, such as gender and nationality. Moreover, the effect of ethnic diversity could also differ according to whether students are in the ethnic minority or majority group within the peer group. To analyze effect heterogeneity, we estimate Equation (3) in subsamples of male, female, Swiss, non-Swiss, minority, and majority students. We assign students to the majority group if their first language is the local language (e.g., German in the German-speaking regions, French in the French-speaking regions) and otherwise to the minority group. The estimated effects of fractionalization and polarization in the different subsamples appear in Figure 4.

Consistent with our main findings in Table 3, the estimates of the effect of fractionalization are positive, and the estimates of the effect of polarization are negative in all subsamples. However, both coefficients for the subsample of male students and the coefficient

of the polarization index for the subsample of non-Swiss students are marginally significant. Figure 4 shows that the effect is different for male and female students: both ethnic fractionalization and polarization have stronger effects on the choices of female students. For the subsamples of non-Swiss and minority students, Figure 4 shows little evidence of effect heterogeneity.

The heterogeneity in the magnitude of the effects by gender can be partly explained by statistical power issues generated by different proportions of male and female students choosing care-oriented occupations. Specifically, only about 1.7% of male students chose care-oriented occupations, while the share is 25.9% for female students. As a result, the group of male students choosing care-oriented occupations may be more strongly selected than that of female students. For example, it is possible that female students react differently to the ethnic composition of their peer group than male students as previous research has shown that there are systematic gender differences in peer effects when it comes to occupational choices (e.g., Hoxby 2000; Palffy et al. 2023; Pregaldini et al. 2020).

7.2 | Nonlinear Effects

This section investigates whether the effects of ethnic fractionalization and polarization are nonlinear. Similar to Balestra et al. (2022), we construct a cubic spline to relax the linearity assumption and allow for a more flexible specification of the relation between the two indexes and the choice of care-oriented occupations. A cubic spline produces a continuous, smooth function that is linear before the first knot and after the last, and follows piecewise cubic polynomials between the knots.

Figure A2 plots the predicted outcome (Panel A) and estimated marginal effect (Panel B) of ethnic fractionalization. Figure A3 plots the same results for ethnic polarization. As for the results reported in Table 3, ethnic fractionalization and polarization

are standardized with zero mean and unit variance and therefore do not vary between 0 and 1 as the underlying raw indexes. The estimated effect of ethnic fractionalization (Figure A2, Panel B) shows no substantial evidence of nonlinear patterns. In fact, the positive relationship between the ethnic fractionalization index and the likelihood of choosing a care-oriented occupation remains largely positive, declining only slightly as the index increases. This indicates that, for a given level of ethnic polarization, greater ethnic fractionalization—characterized by a larger number of smaller ethnic groups—increases the probability of students choosing care-oriented occupations, regardless of the initial level of ethnic fractionalization.

Similarly, for ethnic polarization (Figure A3, Panel B), we find little evidence of nonlinear effects. However, the effect becomes statistically insignificant at high levels of polarization (i.e., when the standardized index exceeds 0.075). This suggests that in cohorts with low polarization (but a given level of ethnic fractionalization), an increase in polarization—meaning fewer and larger ethnic groups—reduces the likelihood of students entering care-oriented occupations. In contrast, further increases in polarization within cohorts that already exhibit high levels of polarization do not seem to significantly affect the choice of care-oriented occupations.

7.3 | Other Outcomes

To examine how labor market outcomes differ across occupational fields and for students who selected into care-oriented occupations in particular, we use the SLFS. We report in Table A8 in the Appendix the 2017 median wages and the unemployment rate in these occupational fields.

Table A8 shows that care-oriented occupations are not low-paying jobs. Indeed, full-time equivalent median wages in the care-oriented occupations are comparable to median wages in

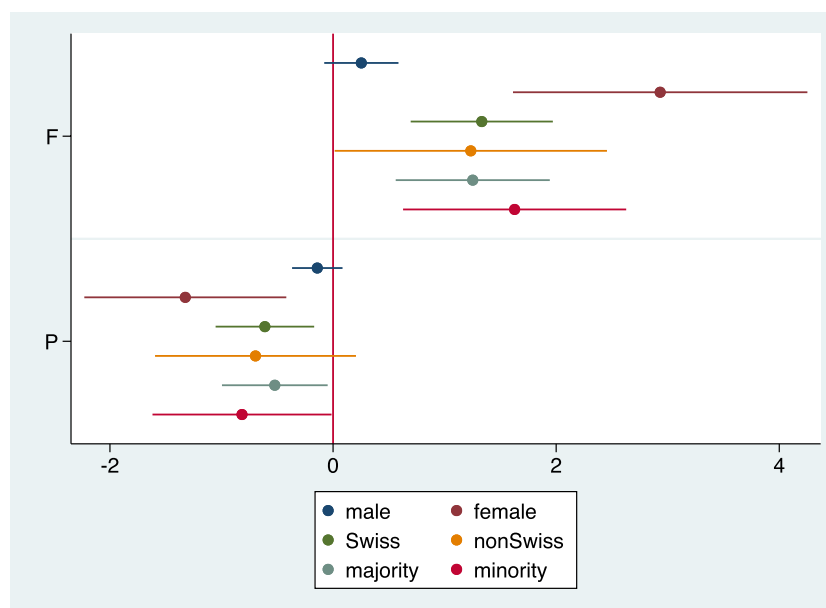


FIGURE 4 | Estimates and 95% confidence intervals of the effect of fractionalization and polarization in different subsamples of female, male, Swiss, and non-Swiss students. [Color figure can be viewed at [wileyonlinelibrary.com](https://onlinelibrary.wiley.com)]

clerical occupations. According to Table A6, these clerical occupations are those into which students sort less frequently when exposed to higher levels of ethnic fractionalization and lower levels of ethnic polarization.

In contrast, the unemployment rate in clerical occupations is almost twice as high (9%) as the unemployment rate in care-oriented occupations (5%). Therefore, while students sorting into care-oriented occupations face a lower risk of unemployment, they face a higher risk in clerical occupations.

In Table A9 we analyze the effects of ethnic fractionalization and polarization on additional outcomes. In column 1 we analyze the choice of a care-oriented occupation. However, unlike with our main specification, we consider the occupation 2 years after completion of compulsory schooling. By doing so, we analyze how ethnic fractionalization and polarization affect the likelihood not only of choosing a care-oriented occupation but also of staying in it up to 2 years after completing compulsory schooling. Consistent with our main analysis, we again find that ethnic fractionalization increases the probability of being in a care-oriented occupation 2 years after completion of compulsory schooling, while ethnic polarization decreases this probability.

Moreover, in column 2 we examine the probability of leaving the panel after compulsory schooling and therefore not having any outcome at the upper-secondary level. Students leave the panel if they do not start a formal education at the upper-secondary level, mostly because they enter the labor market right after compulsory schooling.²³ While we find no effect of ethnic fractionalization on the probability of leaving the panel, we find that ethnic polarization decreases the probability of leaving the panel.²⁴

Finally, in columns 3 and 4, we consider the probability (a) of leaving the country (out-migration) and (b) of retention (repeating the last year of compulsory schooling). None of the coefficients is significant, suggesting that ethnic fractionalization and polarization do not affect these probabilities.

8 | Sensitivity Analysis

In this section, we analyze the robustness of our results for the timing of the treatment, the different specifications of the school time trend, and the exclusion of extreme values, single schools, cantons, and years.

8.1 | Treatment in Grade Eight

Given that the choice of a training occupation typically occurs in grade eight or nine, we test whether measuring ethnic fractionalization and polarization in grade eight instead of grade nine produces different results. Table A11 reports the results when the treatment is measured in grade eight, the second-to-last year of compulsory schooling. The results are in line with the results in Table 3, showing that, for a given level of polarization, ethnic fractionalization in grade eight has a positive effect on the likelihood of choosing a care-oriented occupation. Conversely, for a given level of ethnic fractionalization, polarization reduces the likelihood of choosing a care-oriented occupation.

Table A12 in the Appendix reports the estimated effects of ethnic fractionalization and polarization in different occupations when the two Indices are measured in grade eight. Again, the results are largely consistent with those in Table A6, when the two Indices are measured in grade nine. Therefore, measuring the treatments in grade eight instead of grade nine does not produce different results.

8.2 | Time Trends

The results of the test in subsection 2 suggest that linear autocorrelation of ethnic fractionalization and polarization within schools is not a concern in our setting. Indeed, the results in Table 3 show that including school-specific linear time trends has little effect on the estimates. However, school-specific time trends might be nonlinear. To deal with this concern, we follow Brenøe and Zölitz (2020), Hill (2017), and Lavy and Schlosser (2011) by including quadratic and cubic school-specific time trends in our regression model. We can thus identify the effect of ethnic fractionalization and polarization by exploiting the deviations of ethnic fractionalization and polarization from their school-specific time trends.

Table A13 in the Appendix reports the results of these models. It shows that the inclusion of quadratic and cubic time trends has virtually no effect on the estimates of the effect of ethnic fractionalization and polarization. Therefore, we find that school-specific time trends do not drive our results.

8.3 | Exclusion of Single Cantons, Schools, Years, and Extreme Values

To ensure that no single year, canton, or school drives our results, we estimate Equation (3) by excluding one of the 6 years (2011 through 2016), one of the 26 cantons, and one of the 2721 schools at a time. Figure A7 in the Appendix reports the results, showing that the estimates of the effect of ethnic fractionalization and polarization are robust to the exclusion of single years, cantons, and schools.

To ensure that extreme values of ethnic fractionalization, polarization, and the outcome variable do not drive our results, we estimate Equation (3) in subsamples excluding schools with average values of ethnic fractionalization, polarization, and the outcome variable above the 99th, 95th, and 90th percentiles and below the 1st, 5th and 10th percentiles.

Table A14 in the Appendix reports the estimates of these models. The estimates are stable across all restricted subsamples, indicating that schools with extreme values of ethnic fractionalization, polarization, and the outcome variable (the choice of a care-oriented occupation) do not drive our results.

9 | Conclusion

This paper analyzes how school ethnic diversity affects occupational choice and, in particular, the choice of care-oriented occupations. One major novelty is that we distinguish

between two dimensions of diversity: fractionalization and polarization. Our results show that an increase in ethnic fractionalization is associated with a higher likelihood of choosing care-oriented occupations, mainly at the cost of clerical occupations. Moreover, we find that polarization is associated with a lower likelihood of students sorting into care-oriented occupations. At the same time, other mechanisms, such as labor market discrimination or differential employer preferences across regions, may also contribute and warrant further investigation in future research.

Overall, our analysis provides new insights into potential effects of peer ethnic diversity on occupational choice. Our results contribute to the literature on the effects of ethnic diversity in schools. While previous studies have mainly investigated short-run educational outcomes (e.g., test scores in math and languages), we analyze a novel postcompulsory schooling outcome—occupational choice—and suggest that school ethnic diversity may also be linked to postcompulsory schooling outcomes, with potential implications for future earnings and career trajectories. Moreover, this paper suggests that, even in educational settings, accounting for the combined effects of ethnic fractionalization and polarization may be important, as these two distinct dimensions of diversity may have opposing effects on the choice of care-oriented occupations. Given current demographic developments, these occupations are likely to become socially important over the next several decades.

Our results also suggest that teachers and school principals should consider not only the presence of different ethnic groups (i.e., fractionalization) but also their distribution (i.e., polarization) in addition to the sheer number of nonnative students. Indeed, while the presence of a few large ethnic groups in a peer group might reduce intergroup interactions, a diverse mix of smaller ethnic groups can foster intergroup interactions and the development of social skills. This, in turn, could contribute to a greater inclination towards care-oriented occupations, which are increasingly in demand.

Acknowledgments

This study is funded by the Swiss State Secretariat for Education, Research, and Innovation (SERI) through its “Leading House VPET-ECON: A Research Center on the Economics of Education, Firm Behavior and Training Policies.” We are grateful to Eric Bettinger, Aline Bütikofer, Thomas Dohmen, Beatrix Eugster, David Figlio, Roland Hodler, Dinand Webbink, and Stefan Wolter for their constructive comments. The paper benefited from valuable feedback at the following meetings: Causal Inference in Personality Research, Economics of Education Association, and Swiss Society of Economics and Statistics, and departmental seminars at the universities of Bamberg, St. Gallen, and Zurich. For the data, we thank the Swiss Federal Statistical Office (BFS) and the Stellwerk test service provider. Open access publishing facilitated by Universität Zurich, as part of the Wiley - Universität Zurich agreement via the Consortium Of Swiss Academic Libraries.

Ethics Statement

Ethics approval was not required for this study as it only used anonymized administrative register data from the Swiss Federal Statistical Office's LABB program and the Cantonal Stellwerk Data. No human participants

were directly involved, and all data were previously collected by government agencies as part of routine educational and labor market monitoring. The research complied with institutional data use agreements and Swiss data protection regulations. All data were anonymized prior to analysis, removing any possibility of individual identification.

Conflicts of Interest

The authors declare no conflicts of interest.

Data Availability Statement

The data that support the findings of this study are available from Bundesamt für Statistik, Neuchâtel und Stellwerk, St. Gallen. Restrictions apply to the availability of these data, which were used under license for this study. Data are available from the author(s) with the permission of Bundesamt für Statistik, Neuchâtel und Stellwerk, St. Gallen.

Endnotes

- ¹ The analysis of wages and unemployment rates across ISCED fields shows that, in Switzerland, care-oriented occupations are not low-paying jobs and have a lower unemployment rate compared to other occupations.
- ² In this paper, “grades” refers to the 9 years of compulsory schooling and “school year” to the 12 years consisting of both kindergarten and compulsory schooling.
- ³ Switzerland has four language regions (German, French, Italian, and Romansh). Within each region, the compulsory school curricula are virtually identical, with some minor differences. For example, in a few cantons, primary school goes from grade one through five, while the lower secondary level goes from grade six through nine. Nonetheless, the total number of years of compulsory education is the same for all cantons.
- ⁴ “Specialized professional schools” provide general and professional education in specific occupational fields. “Gymnasiums” are academic high schools, which grant direct access to university education. Approximately one-third of each student cohort chooses one or the other.
- ⁵ In Switzerland, student mobility across schools is limited. In the subsample of students choosing VET after compulsory schooling, more than 85% of students stay in the same school during the last 3 years of compulsory schooling, and more than 92% remain at an institution within the same municipality. Therefore, student selection across schools in response to changes in school diversity is unlikely to affect our results. Studies on single cantons report even lower mobility rates among young adults (Balestra et al. 2023).
- ⁶ Data are available from 2011, when linking different registers through the social security number became possible. The last cohort for which we observe both the last year of compulsory schooling and the first year of VET is 2016.
- ⁷ Students in grade nine are typically divided into tracks according to their performance. Some schools divide students into tracks for only a few subjects (e.g., math and foreign languages). In these schools, students spend most of the instructional time in classes with other students from different tracks, so that they are likely to interact with students both in the same cohort and track and in the same cohort but different tracks. For these schools, we define the peer group at the school-cohort level. Other schools divide students into tracks for all subjects, so that students interact mainly with students in the same track and cohort. For these schools, we define the peer group at the school-track-cohort level. Around 20% of the schools have both mixed-track and single-track classes. For these schools, we define the peer group at the school-cohort level if more than 80% of the school classes are mixed-track. If fewer than 80% of the classes are single-track, we define the peer group at the school-cohort level.

- ⁸ Each student in the data reports one primary language. If students have two or more primary languages and one is the language of instruction, the students report the language of instruction. If students have two or more primary languages and the language of instruction is not among them, the students report the language they used most frequently during early childhood.
- ⁹ Clearly, there are exceptions in which language does not optimally capture ethnicity. For example, in the U.S., both Non-Hispanic White and African American speak English.
- ¹⁰ We construct both indices separately for grades eight and nine, using all students in the data; that is, the universe of students in grade eight or nine in a given year.
- ¹¹ The other ISCED fields of study that we observe are art and humanities; social sciences, journalism, and information; business, administration, and law; communication technologies; engineering, manufacturing, and construction; agriculture, forestry, fisheries, and veterinary; and services. Tables A3 and A4 in the appendix report the full list of occupations in each ISCED field of study.
- ¹² To graphically illustrate how changes in the composition of a peer group relate to our measures of ethnic fractionalization and polarization, Figure A1 in the appendix shows four fictive groups of students with different levels of fractionalization and polarization.
- ¹³ In Switzerland, the choice postponement known as an “interim solution” usually entails an additional school year at the compulsory school level (for a detailed description, see Jaik and Wolter 2016).
- ¹⁴ When analyzing the effects of ethnic fractionalization and polarization in specific occupations within the group of care-oriented occupations—defined according to the ISCED Field of Study classification—we find that the direction of the effects is generally consistent with our main results. However, in some occupations, the effects are not statistically significant at conventional levels, likely due to the small number of students choosing these fields, which limits the statistical power of the analysis.
- ¹⁵ Consider a group of 20 students all belonging to the same ethnic group. If we were to replace three of these students with three students belonging to a different ethnic group, we would achieve an increase in the ethnic fractionalization index of 25.5 percentage points, corresponding to roughly one standard deviation in the index.
- ¹⁶ Consider a group of 20 students in which 17 students belong to the same ethnic group and three students belong to a different ethnic group. If we were to replace two students of the majority group with two students of the minority group, the ethnic polarization index would increase by 0.24.
- ¹⁷ In the subsample of students choosing VET after compulsory schooling, we observe seven ISCED fields in total (see Figure A8). For simplicity, we aggregate ISCED fields “arts and humanities” and “social sciences, journalism, and information” into one category.
- ¹⁸ For ethnic polarization, we expect the opposite effect because ethnic polarization potentially reduces the frequency of student inter-ethnic interactions.
- ¹⁹ The test is comparable to U.S. standardized tests such as the GRE.
- ²⁰ The 162 items are grouped in 14 skills: autonomy, resilience, empathy, emotional stability, flexibility and creativity, need for harmony, sociability, learning ability, consciousness, self-confidence, team play, tolerance, and reliability.
- ²¹ For the matching, we use the municipality of the school and the size and year of the cohort. We do so, as we are not allowed to identify single students across the two data sets.
- ²² While the test in core subjects is compulsory for all students of the two cantons, only a subsample of students (roughly 16% of all students in both cantons) takes the PSM test. Therefore, the number of observations in the cognitive and social skill datasets is different.

- ²³ In a few cases, the student might start an education that is not recognized as formal or might start an education abroad. In such special cases, that education would not appear in our data.

- ²⁴ Table A10 reports differences in observable characteristics between students with and without post-secondary outcomes.

References

- Ager, P., and M. Brückner. 2013. “Cultural Diversity and Economic Growth: Evidence From the US During the Age of Mass Migration.” *European Economic Review* 64: 76–97.
- Alesina, A., A. Devleeschauwer, W. Easterly, S. Kurlat, and R. Wacziarg. 2003. “Fractionalization.” *Journal of Economic Growth* 8, no. 2: 155–194.
- Alesina, A., and E. La Ferrara. 2005. “Ethnic Diversity and Economic Performance.” *Journal of Economic Literature* 43, no. 3: 762–800.
- Angrist, J. 2014. “The Perils of Peer Effects.” *Labour Economics* 30: 98–108.
- Angrist, J., and K. Lang. 2004. “Does School Integration Generate Peer Effects? Evidence From Boston’s Metco Program.” *American Economic Review* 94, no. 5: 1613–1634.
- Balestra, S., B. Eugster, and H. Liebert. 2022. “Peers With Special Needs: Effects and Policies.” *Review of Economics and Statistics* 104, no. 3: 602–618. https://doi.org/10.1162/rest_a_00960.
- Balestra, S., A. Sallin, and S. Wolter. 2023. “High-Ability Influencers? The Heterogeneous Effect of Gifted Classmates.” *Journal of Human Resources* 60.
- Ballatore, R., M. Fort, and A. Ichino. 2018. “Tower of Babel in the Classroom: Immigrants and Natives in Italian Schools.” *Journal of Labor Economics* 36, no. 4: 885–921.
- Bazzi, S., A. Gaduh, A. Rothenberg, and M. Wong. 2019. “Unity in Diversity? How Intergroup Contact Can Foster Nation Building.” *American Economic Review* 109, no. 11: 3978–4025.
- Bifulco, R., J. Fletcher, and S. Ross. 2011. “The Effect of Classmate Characteristics on Post-Secondary Outcomes: Evidence From the Add Health.” *American Economic Journal: Economic Policy* 3, no. 1: 25–53.
- Black, S. E., P. J. Devereux, and K. G. Salvanes. 2013. “Under Pressure? The Effect of Peers on Outcomes of Young Adults.” *Journal of Labor Economics* 31, no. 1: 119–153.
- Borghans, L., B. Ter Weel, and B. A. Weinberg. 2014. “People Skills and the Labor-Market Outcomes of Underrepresented Groups.” *ILR Review* 67, no. 2: 287–334. <https://doi.org/10.1177/001979391406700202>.
- Bredtmann, J., S. Otten, and C. Vonnahme. 2021. “Linguistic Diversity in the Classroom, Student Achievement, and Social Integration.” *Education Economics* 29, no. 2: 121–142. <https://doi.org/10.1080/09645292.2020.1866499>.
- Brenøe, A. A., and U. Zölitz. 2020. “Exposure to More Female Peers Widens the Gender Gap in STEM Participation.” *Journal of Labor Economics* 38, no. 4: 1009–1054.
- Brunello, G., and L. Rocco. 2013. “The Effect of Immigration on the School Performance of Natives: Cross Country Evidence Using PISA Test Scores.” *Economics of Education Review* 32: 234–246.
- Burns, J. 2012. “Race, Diversity and Pro-Social Behavior in a Segmented Society.” *Journal of Economic Behavior & Organization* 81, no. 2: 366–378.
- Carrell, S., and M. Hoekstra. 2010. “Externalities in the Classroom: How Children Exposed to Domestic Violence Affect Everyone’s Kids.” *American Economic Journal: Applied Economics* 2, no. 1: 211–228.
- Carrell, S., M. Hoekstra, and E. Kuka. 2018. “The Long-Run Effects of Disruptive Peers.” *American Economic Review* 108, no. 11: 3377–3415.

- Chevalier, A., I. Isphording, and E. Lisauskaitė. 2020. "Peer Diversity, College Performance and Educational Choices." *Labour Economics* 64: 101833.
- Chuard, C., A. Aerne, S. Balestra, B. Eugster, and R. Hodler. 2022. *Ethnic Clustering in Schools and Early Career Outcomes*. CEPR Discussion Paper no. 17505. CEPR.
- Deming, D. 2017. "The Growing Importance of Social Skills in the Labor Market." *Quarterly Journal of Economics* 132, no. 4: 1593–1640.
- Desmet, K., I. Ortuño-Ortín, and S. Weber. 2009. "Linguistic Diversity and Redistribution." *Journal of the European Economic Association* 7, no. 6: 1291–1318.
- Diette, T., and R. U. Oyelere. 2017. "Do Limited English Students Jeopardize the Education of Other Students? Lessons From the North Carolina Public School System." *Education Economics* 25, no. 5: 446–461.
- Easterly, W., and R. Levine. 1997. "Africa's Growth Tragedy: Policies and Ethnic Divisions." *Quarterly Journal of Economics* 112, no. 4: 1203–1250.
- Esteban, J., and D. Ray. 1994. "On the Measurement of Polarization." *Econometrica* 62, no. 4: 819–851.
- Figlio, D. N., P. Giuliano, R. Marchingiglio, U. Oezek, and P. Sapienza. 2021. "Diversity in Schools: Immigrants and the Educational Performance of U.S. Born Students." *NBER Working Papers* 28596. National Bureau of Economic Research, Inc. <https://ideas.repec.org/p/nbr/nberwo/28596.html>.
- Figlio, D., and U. Özek. 2017. *Unwelcome Guests? The Effects of Refugees on the Educational Outcomes of Incumbent Students*. *Nber Working Paper* no. 23661. National Bureau of Economic Research.
- Geay, C., S. McNally, and S. Telhaj. 2013. "Non-Native Speakers of English in the Classroom: What Are the Effects on Pupil Performance?" *Economic Journal* 123, no. 570: F281–F307.
- Gould, E., V. Lavy, and D. Paserman. 2009. "Does Immigration Affect the Long-Term Educational Outcomes of Natives? Quasi-Experimental Evidence." *Economic Journal* 119, no. 540: 1243–1269.
- Hall, J. C., and P. T. Leeson. 2010. "Racial Fractionalization and School Performance." *American Journal of Economics and Sociology* 69, no. 2: 736–758.
- Hanushek, E., J. Kain, and S. Rivkin. 2009. "New Evidence About Brown v. Board of Education: The Complex Effects of School Racial Composition on Achievement." *Journal of Labor Economics* 27, no. 3: 349–383.
- Hill, A. 2017. "The Positive Influence of Female College Students on Their Male Peers." *Labour Economics* 44: 151–160.
- Hirsch, B. T., and D. A. Macpherson. 2004. "Wages, Sorting on Skill, and the Racial Composition of Jobs." *Journal of Labor Economics* 22, no. 1: 189–210. <https://doi.org/10.1086/380407>.
- Hoxby, C. 2000. "The Effects of Class Size on Student Achievement: New Evidence From Population Variation." *Quarterly Journal of Economics* 115, no. 4: 1239–1285.
- Jackson, K. 2018. "What Do Test Scores Miss? The Importance of Teacher Effects on Non-Test Score Outcomes." *Journal of Political Economy* 126, no. 5: 2072–2107.
- Jaik, K., and S. C. Wolter. 2016. *Lost in Transition: The Influence of Locus of Control on Delaying Educational Decisions*. *Leading House Working Paper* No. 118. Swiss Leading House on Economics of Education.
- Jensen, P., and A. W. Rasmussen. 2011. "The Effect of Immigrant Concentration in Schools on Native and Immigrant Children's Reading and Math Skills." *Economics of Education Review* 30, no. 6: 1503–1515.
- Kiener, F., A.-S. Gnehm, and U. Backes-Gellner. 2020. *Non-Cognitive Skills in Training Curricula and Heterogeneous Wage Returns*. *Economics of Education Working Paper Series* 0175. University of Zurich, Department of Business Administration (IBW).
- Kuhn, A., and S. C. Wolter. 2022. "Things Versus People: Gender Differences in Vocational Interests and in Occupational Preferences." *Journal of Economic Behavior & Organization* 203: 210–234. <https://www.sciencedirect.com/science/article/pii/S0167268122003201>.
- Lavy, V., D. Paserman, and A. Schlosser. 2012. "Inside the Black Box of Ability Peer Effects: Evidence From Variation in the Proportion of Low Achievers in the Classroom." *Economic Journal* 122, no. 559: 208–237.
- Lavy, V., and A. Schlosser. 2011. "Mechanisms and Impacts of Gender Peer Effects at School." *American Economic Journal: Applied Economics* 3: 1–33.
- Lazear, E. 1999. "Culture and Language." *Journal of Political Economy* 107, no. S6: S95–S126.
- Montalvo, J., and M. Reynal-Querol. 2005. "Ethnic Polarization, Potential Conflict, and Civil Wars." *American Economic Review* 95, no. 3: 796–816.
- OECD. 2020a. *All Hands in? Making Diversity Work for All*. OECD Publishing.
- OECD. 2020b. *International Migration Outlook 2020*. OECD Publishing.
- Ohinata, A., and J. van Ours. 2013. "How Immigrant Children Affect the Academic Achievement of Native Dutch Children." *Economic Journal* 123, no. 570: F308–F331.
- Palfy, P., P. Lehnert, and U. Backes-Gellner. 2023. "Social Norms and Gendered Occupational Choices of Men and Women: Time to Turn the Tide?" *Industrial Relations: A Journal of Economy and Society* 62, no. 4: 380–410. <https://doi.org/10.1111/irel.12332>.
- Pan, J. 2015. "Gender Segregation in Occupations: The Role of Tipping and Social Interactions." *Journal of Labor Economics* 33, no. 2: 365–408.
- Plug, E., D. Webbink, and N. Martin. 2014. "Sexual Orientation, Prejudice, and Segregation." *Journal of Labor Economics* 32, no. 1: 123–159.
- Pregaldini, D., U. Backes-Gellner, and G. Eisenkopf. 2020. "Girls' Preferences for STEM and the Effects of Classroom Gender Composition: New Evidence From a Natural Experiment." *Journal of Economic Behavior & Organization* 178: 102–123. <https://www.sciencedirect.com/science/article/pii/S0167268120302407>.
- Rao, G. 2019. "Familiarity Does Not Breed Contempt: Generosity, Discrimination, and Diversity in Delhi Schools." *American Economic Review* 109, no. 3: 774–809.
- Reynal-Querol, M. 2002. "Ethnicity, Political Systems, and Civil Wars." *Journal of Conflict Resolution* 46, no. 1: 29–54.
- Sloane, C. M., E. G. Hurst, and D. A. Black. 2021. "College Majors, Occupations, and the Gender Wage Gap." *Journal of Economic Perspectives* 35, no. 4: 223–248. <https://www.jstor.org/stable/27074132>.
- Stoet, G., and D. C. Geary. 2022. "Sex Differences in Adolescents' Occupational Aspirations: Variations Across Time and Place." *PLoS One* 17: 1–18. <https://doi.org/10.1371/journal.pone.0261438>.
- Stokes, B. 2017. *What It Takes to Truly Be One of Us*. Technical Representative: Pew Research Center.
- Wolter, S., and P. Ryan. 2011. "Apprenticeship." In *Handbook of the Economics of Education*, edited by E. Hanushek, S. Machin, and L. Woessmann, vol. 3, 521–576. Elsevier.

Appendix 1

TABLE A1 | Descriptive statistics.

	Obs.	Mean	SD	Min	Max
Care occupation	238,630	0.119	0.32	0	1
Fractionalization	238,630	0.371	0.24	0	1
Polarization	238,630	0.468	0.22	0	1
School cohort size	238,630	58.343	45.53	10	410
Male	238,630	0.581	0.49	0	1
Age in grade nine	238,630	14.959	0.66	14	17
Swiss national	238,630	0.834	0.37	0	1
Languages					
German	238,630	0.619	0.49	0	1
French	238,630	0.132	0.34	0	1
Italian	238,630	0.052	0.22	0	1
Albanian	238,630	0.052	0.22	0	1
Portuguese	238,630	0.034	0.18	0	1
Serbian and Croatian	238,630	0.034	0.18	0	1
Turkish	238,630	0.015	0.12	0	1
Spanish	238,630	0.011	0.10	0	1
Indo-Aryan and Dravidian languages	238,538	0.009	0.09	0	1
East Asian languages	238,630	0.005	0.07	0	1
Other languages	238,630	0.005	0.07	0	1
English	238,630	0.004	0.06	0	1
Macedonian	238,630	0.004	0.06	0	1
African languages	238,630	0.003	0.05	0	1
Arabic	238,630	0.003	0.06	0	1
West Asian languages	238,630	0.003	0.05	0	1
Romansh	238,630	0.003	0.06	0	1
Other European languages	238,630	0.003	0.06	0	1
Other Slavic languages	238,630	0.003	0.06	0	1
Russian	238,630	0.002	0.04	0	1
Dutch	238,630	0.001	0.03	0	1
Romanian	238,630	<0.001	0.03	0	1
Czech and Slovak	238,630	<0.001	0.03	0	1
Finnish	238,630	<0.001	0.01	0	1
Greek	238,630	<0.001	0.03	0	1
Hungarian	238,630	<0.001	0.02	0	1
Polish	238,630	<0.001	0.03	0	1
Slovenian and Bulgarian	238,630	<0.001	0.02	0	1
Scandinavian languages	238,630	<0.001	0.02	0	1

Note: Descriptive statistics of the estimation sample. Ethnic fractionalization and polarization are measured in grade nine.

TABLE A2 | Full list of student characteristics used in the test.

Gender	Male	Fractionalization			Polarization		
		0.00	0.01	0.04	0.00	0.01	0.05
Age	14	0.20	0.80	0.86	0.80	0.43	0.14
	15	0.26	0.67	0.38	0.06	0.14	0.14
	16	0.02	0.85	0.32	0.00	0.16	0.72
	17	0.23	0.78	0.44	0.62	0.25	0.27
Nationality	Swiss	0.78	0.00	0.00	0.42	0.19	0.03
Geographic area	Urban	0.03	0.22	0.35	0.15	0.40	0.55
	Rural centers	0.11	0.39	0.92	0.29	0.59	0.79
	Rural centers	0.53	0.67	0.34	0.71	0.76	0.74
Parental education	No compulsory education	0.03	0.23	0.63	0.02	0.11	0.76
	Compulsory education	0.21	0.31	0.28	0.87	0.88	0.53
	Upper secondary academic	0.75	0.64	0.79	0.67	0.92	0.36
	Upper secondary VET	0.38	0.28	0.63	0.50	0.44	0.40
	Tertiary professional	0.05	0.16	0.69	0.07	0.15	0.97
	Tertiary academic	0.65	0.09	0.21	0.37	0.08	0.44
Quarter of birth	Quarter 1	0.95	0.60	0.64	0.83	0.79	0.65
	Quarter 2	0.63	0.81	0.31	0.36	0.43	0.18
	Quarter 3	0.52	0.77	0.42	0.87	0.85	0.81
	Quarter 4	0.29	0.96	0.84	0.37	0.70	0.20
Class size		0.66	0.35	0.13	0.97	0.67	0.33
Controls		No	Yes	Yes	No	Yes	Yes
School FE		Yes	Yes	Yes	Yes	Yes	Yes
School trend		No	No	Yes	No	No	Yes

Note: The table presents the two-tailed p values associated with each characteristic in regressions of the fractionalization and polarization index on that characteristic, incorporating different sets of controls.

TABLE A3 | Full list of occupations in different ISCED fields of study I.

Name (German)	Name (English translation)
Arts, humanities, social sciences, journalism, and information	
Grafiker/in EFZ	Graphic Designer
Florist/in EFZ	Florist
Mediamatiker/in EFZ	Media technician
Polygraf/in EFZ	Polygraph
Gestalter/in Werbetechnik EFZ	Advertising designer
Drucktechnologe/–technologin EFZ	Printing technologist
Polydesigner/in 3D EFZ	3D Designer
Mediamatiker/in	Media technician
Fotofachmann/–frau EFZ	Photo specialist
Fachmann/–frau Information und Dokumentation EFZ	Information and Documentation Specialist
Business, administration, and law	
Kaufmann/–frau EFZ	Commercial clerk
Detailhandelsfachmann/–frau	Retail employee
Logistiker/in EFZ	Logistician
Detailhandelsassistent/in EBA	Retail employee (2-years training)
Pharma-Assistent/in EFZ	Pharmaceutical assistant
Information and Communication Technologies	
Informatiker/in EFZ	Information technologist
Informatikpraktiker/in EBA	Information Technologist (2-years training)
Engineering, manufacturing and construction	
Elektroinstallateur/in EFZ	Electrician
Polymechaniker/in EFZ	Polymechanic
Zeichner/in EFZ	Draftsman
Automobil-Fachmann/–frau EFZ	Automotive technician
Schreiner/in	Carpenter
Automobil-Mechatroniker/in EFZ	Automotive mechatronics
Sanitärinstallateur/in EFZ	Plumber
Automatiker/in EFZ	Automation technician
Maurer/in EFZ	Bricklayer

TABLE A4 | Full list of occupation in different ISCED fields of study II.

Name (German)	Name (English translation)
Agriculture, forestry, fisheries and veterinary	
Landwirt/in EFZ	Farmer
Gärtner/in EFZ	Gardener
Forstwart/in EFZ	Forestry technician
Tiermedizinische/r Praxisassistent/in	Veterinary practice assistant
Gärtner/in EBA	Gardener (2-years training)
Tierpfleger/in EFZ	Animal keeper
Pferdefachmann/–frau EFZ	Equine technician
Agrarpraktiker/in EBA	Agricultural technician (2-years training)
Winzer/in EFZ	Winemaker
Health and welfare	
Fachmann/–frau Gesundheit EFZ	Healthcare assistant
Fachmann/–frau Betreuung EFZ	Social worker
Medizinische/r Praxisassistent/in EFZ	Medical practice assistant
Dentalassistent/in EFZ	Dental assistant
Assistent/in Gesundheit und Soziales EBA	Health and social assistant (2-years training)
Dentalassistent/in	Dental assistant
Medizinische/r Praxisassistent/in	Medical practice assistant
Augenoptiker/in EFZ	Optician
Fachangestellte/r Gesundheit	Health care specialist
Services	
Koch/Köchin EFZ	Chef
Coiffeur/–euse EFZ	Hairdresser
Fachmann/–frau Betriebsunterhalt EFZ	Maintenance specialist
Restaurationsfachmann/–frau EFZ	Restaurateur
Fachmann/–frau Hauswirtschaft EFZ	Hospitality specialist
Hotelfachmann/–frau EFZ	Hotel specialist
Küchenangestellte/r EBA	Kitchen assistant (2-years training)
Hauswirtschaftspraktiker/in EBA	Hospitality assistant (2-years training)
Kosmetiker/in EFZ	Beautician

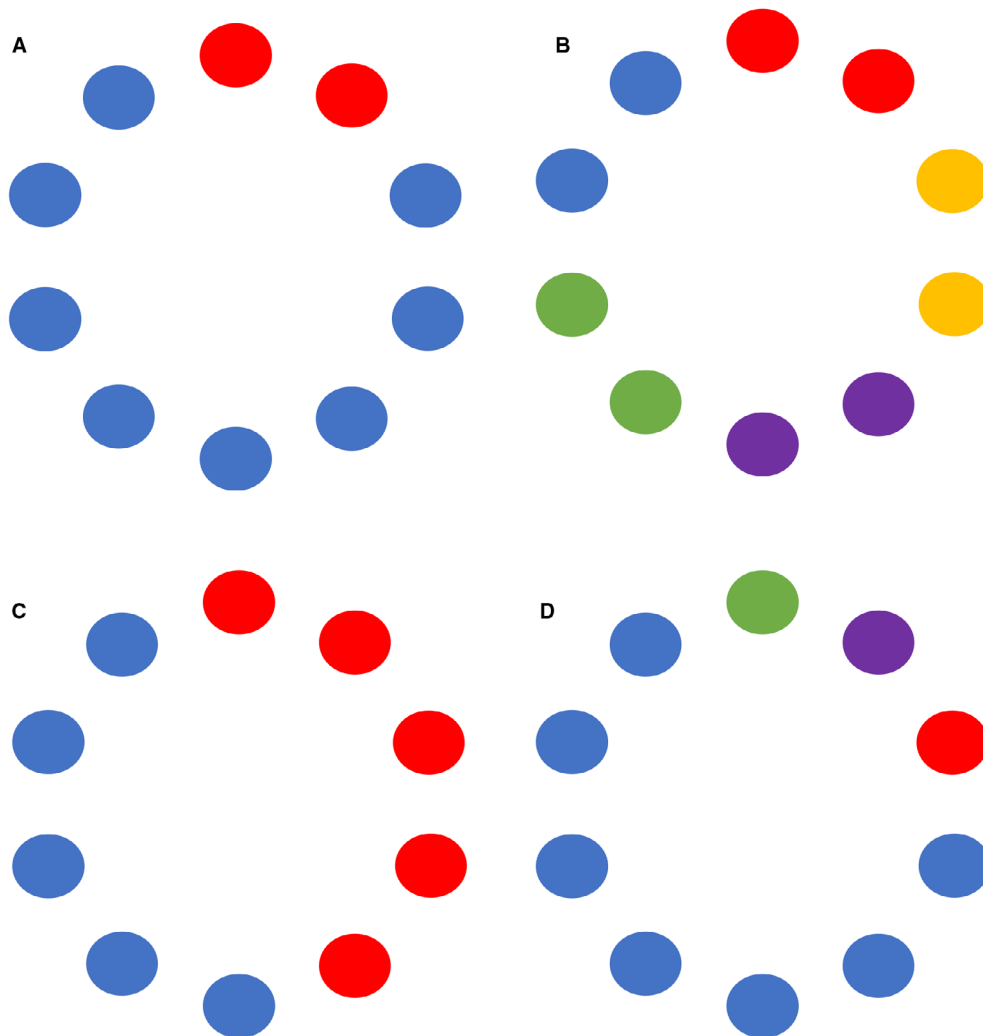


FIGURE A1 | Fractionalization and polarization in four fictive peer groups. PANEL (A) Group one: Fractionalization = 0.32; polarization = 0.64 PANEL (B) Group two: Fractionalization = 0.8; polarization = 0.64 PANEL (C) Group three: Fractionalization = 0.5; polarization = 1 PANEL (D) Group four: Fractionalization = 0.48; polarization = 0.7. To graphically illustrate how changes in the composition of a peer group relate to our measures of ethnic fractionalization and polarization, Figure A1 shows four fictive groups with different compositions. Each color represents a different language group. For simplicity, each peer group contains 10 students. Group one is characterized by low levels of fractionalization and polarization. Fractionalization is low because the group contains only two different language groups, one of which is very small (red group) compared to the majority group (blue group). Polarization is low because one group (blue group) dominates in size. Group two has the same level of polarization as peer group one (i.e., 0.64). However, because group two contains five different language groups, the level of fractionalization is higher compared to group one, which contains only two language groups. Group three has higher levels of both fractionalization and polarization compared to group one because the language groups in group three are equal in size (each group has five students). Finally, group four has a level fractionalization comparable to group three but a much lower polarization, as one of the two group (the blue group) is now dominant in size. [Color figure can be viewed at [wileyonlinelibrary.com](https://onlinelibrary.wiley.com/doi/10.1111/rel.12011)]

TABLE A5 | Skill requirement in each occupational field.

	(1) Humanities Soc. sciences	(2) Clerical	(3) IT	(4) Engineering	(5) Agriculture	(6) Care	(7) Services
Cognitive skills							
Math skills	+	–	+	+	–	–	–
Language skills	+	+	–	–	–	+	–
Noncognitive skills							
Empathy	+	–	–	–	–	+	+
Team play	–	+	–	–	–	+	+

Note: (1) Arts, humanities, social sciences, journalism, information (e.g., graphic designer); (2) Business, administration, law (e.g., office clerk, retail employee); (3) Communication technologies (e.g., information technologist); (4) Engineering, manufacturing, construction (e.g., electronics engineer); (5) Agriculture, forestry, fisheries, veterinary (e.g., farmer); (6) Health, welfare (e.g., social worker); (7) Services (e.g., chefs). + (–) indicates that the average skill requirement of occupations in that field is above (below) the average skill requirement of all occupations. Data on cognitive skill requirement come from the website “Anforderungsprofile”: for a subset of occupations in each field, experts rate the skill requirement of these occupations on a range from 0 to 100. Data on social skill requirement come from the website “Berufsberatung”: for a subset of occupations in each field, experts list skills required in these occupations. For each occupation, we compute the proportion of skills that is either “Empathy” or “Teamplay” and average these proportions over all occupations in the field. Weighted averages by the number of apprentices each occupation.

TABLE A6 | All occupations—Treatment in grade nine.

	Humanities Soc. sciences	Clerical	IT	Engineering	Agriculture	Care	Services
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Fractionalization	0.006 (0.139)	–1.327*** (0.495)	–0.139 (0.165)	0.671 (0.420)	0.106 (0.162)	1.118*** (0.337)	–0.435 (0.287)
Polarization	0.096 (0.101)	0.560* (0.332)	0.006 (0.115)	–0.397 (0.301)	0.144 (0.128)	–0.603*** (0.231)	0.193 (0.202)
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
School-track FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Individual controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cohort controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
School time trend	Linear	Linear	Linear	Linear	Linear	Linear	Linear
Obs.	238,630	238,630	238,630	238,630	238,630	238,630	238,630

Note: (1) Arts, humanities, social sciences, journalism, information (e.g., graphic designer); (2) Business, administration, law (e.g., commercial employee); (3) Communication technologies (e.g., information technologist); (4) Engineering, manufacturing, construction (e.g., electronics engineer); (5) Agriculture, forestry, fisheries, veterinary (e.g., farmer); (6) Health, welfare (e.g., social care worker); (7) Services (e.g., chefs). Fractionalization and Polarization are standardized with zero mean and unit variance. The coefficients are multiplied by 100. Standard errors in parentheses. Standard errors clustered at the school-cohort level.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

TABLE A7 | Effects of ethnic fractionalization and polarization on social skills.

	Social skills				Cognitive skills		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Empathy	Sociability	Team play	Tolerance	Math	German	English
Fractionalization	0.104 (0.086)	0.228* (0.130)	0.138 (0.105)	0.002 (0.147)	−0.051 (0.051)	−0.115** (0.050)	−0.110* (0.059)
Polarization	−0.061 (0.066)	−0.089 (0.083)	−0.094 (0.081)	−0.030 (0.112)	0.024 (0.031)	0.042 (0.032)	0.039 (0.036)
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
School FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cohort controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
School time trend	Linear	Linear	Linear	Linear	Linear	Linear	Linear
Obs.	504	504	504	504	2305	2305	2305
Adj. R^2	0.406	0.471	0.354	0.427	0.860	0.885	0.843

Note: The dependent variable is the mean score in the social skills empathy, sociability, team play, and tolerance. The score ranges from 1 to 6, with 6 being the highest value. Each observation is a school cohort. Observations are weighted by the size of the cohort. Ethnic fractionalization and polarization are standardized with zero mean and unit variance. Standard errors are in parentheses. Standard errors are clustered at the school cohort level.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

TABLE A8 | Wages and employment in different ISCED fields.

	Humanities Soc. sciences	Clerical	IT	Engineering	Agriculture	Care	Services
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Median annual wage 2017 (in CHF)	58,950	65,000	94,700	76,650	60,000	57,050	55,950
Median annual wage FTE, 2017 (in CHF)	76,850	81,550	98,333	80,000	66,300	79,450	69,500
Median annual wage fulltime only, 2017 (in CHF)	76,250	85,150	99,750	80,600	65,000	74,350	72,550
Unemployment	0.07	0.09	0.07	0.08	0.05	0.05	0.11

Note: (1) Arts, humanities, social sciences, journalism, information (e.g., graphic designer); (2) Business, administration, law (e.g., commercial employee); (3) Communication technologies (e.g., information technologist); (4) Engineering, manufacturing, construction (e.g., electronics engineer); (5) Agriculture, forestry, fisheries, veterinary (e.g., farmer); (6) Health, welfare (e.g., social care worker); (7) Services (e.g., chefs). Annual wages and unemployment in each ISCED field in 2017 reported for the subsample of workers aged 22–59 with VET as first education after compulsory schooling (source: Swiss Labor Force Survey, we use the weights provided with the survey).

TABLE A9 | Other outcomes.

	(1)	(2)	(3)	(4)
	Care-oriented t + 2	No outcome	Out-migration	Retention
Fractionalization	0.915** (0.426)	0.361 (0.220)	−0.024 (0.062)	−0.183 (0.221)
Polarization	−0.747*** (0.286)	−0.513*** (0.151)	0.002 (0.041)	0.165 (0.150)
Year FE	Yes	Yes	Yes	Yes
School FE	Yes	Yes	Yes	Yes
Individual controls	Yes	Yes	Yes	Yes
Cohort controls	Yes	Yes	Yes	Yes
School time trend	Linear	Linear	Linear	Linear
Obs.	236,355	456,736	456,736	456,736

Note: The dependent variables are: (1) 1 if the occupation 2 years after completion of compulsory schooling is care-oriented and 0 otherwise; (2) 1 if we do not observe any postcompulsory schooling outcome and 0 otherwise; (3) 1 if an individual out-migrated (i.e., left the country) and 0 otherwise; and (4) 1 if an individual repeated the last year of compulsory schooling and 0 otherwise. In column 1 the sample consists of individuals in the VET track for whom we observe the occupation 2 years after completion of compulsory schooling. In columns 2–4 the sample consists of all students in their last year of compulsory schooling. The coefficients are multiplied by 100. Standard errors in parentheses. Standard errors clustered at the school-cohort level.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

TABLE A10 | Descriptive statistics of students with and without outcome.

	Outcome					No outcome				
	Obs.	Mean	SD	Min	Max	Obs.	Mean	SD	Min	Max
Male	439,451	0.506	0.50	0	1	17,285	0.418	0.49	0	1
Age	439,451	14.877	0.68	14	17	17,285	15.011	0.76	14	17
Swiss	439,451	0.819	0.39	0	1	17,285	0.644	0.48	0	1
Area										
Urban	437,411	0.582	0.49	0	1	16,855	0.629	0.48	0	1
Suburban	437,411	0.240	0.43	0	1	16,855	0.216	0.41	0	1
Rural	437,411	0.178	0.38	0	1	16,855	0.155	0.36	0	1

Note: Descriptive statistics of the samples of students with and without postcompulsory schooling outcome.

TABLE A11 | Treatment in grade eight.

	(1)	(2)	(3)	(4)	(5)
Fractionalization	1.122*** (0.343)	0.990*** (0.314)	1.1182*** (0.346)	1.043*** (0.392)	1.043*** (0.394)
Polarization	−0.702*** (0.251)	−0.487** (0.230)	−0.518** (0.232)	−0.553** (0.261)	−0.553** (0.262)
Year FE	Yes	Yes	Yes	Yes	Yes
School-track FE	Yes	Yes	Yes	Yes	Yes
Individual controls	No	Yes	Yes	Yes	Yes
Cohort controls	No	No	Yes	Yes	Yes
School time trend	None	None	None	Linear	Quadratic
Obs.	196,983	196,983	196,983	196,983	196,983

Note: Dependent variable is 1 if the occupation is care-oriented and 0 otherwise. Ethnic fractionalization and polarization are standardized with zero mean and unit variance. The coefficients are multiplied by 100. Standard errors in parentheses. Standard errors clustered at the school-cohort level.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

TABLE A12 | All occupations—Treatment in grade eight.

	Humanities Soc. sciences	Clerical	IT	Engineering	Agriculture	Care	Services
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Fractionalization	0.293 ^a (0.151)	−1.892 ^b (0.546)	−0.053 (0.174)	0.642 (0.472)	−0.142 (0.183)	1.043 ^b (0.392)	0.108 (0.327)
Polarization	−0.002 (0.115)	1.208 ^b (0.377)	−0.190 (0.124)	−0.287 (0.347)	0.157 (0.143)	−0.553 ^c (0.261)	−0.333 (0.238)
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
School-track FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Individual controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cohort controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
School time trend	Linear	Linear	Linear	Linear	Linear	Linear	Linear
Obs.	196,983	196,983	196,983	196,983	196,983	196,983	196,983

Note: (1) Arts, humanities, social sciences, journalism, information (e.g., graphic designer); (2) Business, administration, law (e.g., commercial employee); (3) Communication technologies (e.g., information technologist); (4) Engineering, manufacturing, construction (e.g., electronics engineer); (5) Agriculture, forestry, fisheries, veterinary (e.g., farmer); (6) Health, welfare (e.g., social care worker); (7) Services (e.g., chefs). F and P are standardized with zero mean and unit variance. The coefficients are multiplied by 100. Standard errors in parentheses. Standard errors clustered at the school-cohort level.

^a $p < 0.10$.

^b $p < 0.01$.

^c $p < 0.05$.

TABLE A13 | Time trends.

	(1)	(2)	(3)	(4)
Fractionalization	1.325*** (0.294)	1.119*** (0.337)	1.119*** (0.338)	1.119*** (0.340)
Polarization	−0.625*** (0.204)	−0.605*** (0.231)	−0.605*** (0.232)	−0.605*** (0.233)
Year FE	Yes	Yes	Yes	Yes
School-track FE	Yes	Yes	Yes	Yes
Individual controls	Yes	Yes	Yes	Yes
Cohort controls	Yes	Yes	Yes	Yes
School time trend	None	Linear	Quadratic	Cubed
Obs.	238,630	238,630	238,630	238,630

Note: Dependent variable is 1 if the occupation is care-oriented and 0 otherwise. Ethnic fractionalization and polarization are standardized with zero mean and unit variance. The coefficients are multiplied by 100. Standard errors in parentheses. Standard errors clustered at the school-cohort level.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

TABLE A14 | Exclusion of extreme values.

	Choice of care-oriented occupation			Fractionalization			Polarization		
	p1/p99	p5/p95	p10/p90	p1/p99	p5/p95	p10/p90	p1/p99	p5/p95	p10/p90
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Fractionalization	1.139*** (0.332)	1.050*** (0.348)	0.826** (0.377)	1.060*** (0.331)	0.875*** (0.317)	0.978*** (0.308)	1.120*** (0.339)	1.129*** (0.346)	1.215*** (0.359)
Polarization	−0.632*** (0.232)	−0.656*** (0.247)	−0.568** (0.272)	−0.582** (0.229)	−0.532** (0.230)	−0.638*** (0.238)	−0.588*** (0.228)	−0.544*** (0.220)	−0.588*** (0.218)
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
School FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Individual controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cohort controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
School time trend	Linear	Linear	Linear	Linear	Linear	Linear	Linear	Linear	Linear
Obs.	232,802	214,736	190,928	233,811	214,768	190,818	233,712	214,761	190,934

Note: Estimates in subsamples excluding schools with an average fraction of students sorting into care-oriented occupations above the 99th or below the 1st percentiles (1), above the 95th or below the 5th percentiles (2), and above the 90th or below the 10th percentiles (3). We do the same in columns (4)–(6) using the school average ethnic fractionalization and in columns (7)–(9) using the school average ethnic polarization. Ethnic fractionalization and polarization are standardized with zero mean and unit variance. The coefficients are multiplied by 100. Standard errors in parentheses.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

TABLE A15 | Tracking.

	(1)	(2)	(3)	(4)
	VET	Academic	Specialized schools	AdInterim
Fractionalization	0.342 (0.435)	0.230 (0.247)	−0.169 (0.192)	−0.392 (0.385)
Polarization	0.089 (0.309)	0.059 (0.204)	−0.079 (0.143)	−0.076 (0.266)
Year FE	Yes	Yes	Yes	Yes
School-track FE	Yes	Yes	Yes	Yes
Individual controls	Yes	Yes	Yes	Yes
Cohort controls	Yes	Yes	Yes	Yes
School time trend	Linear	Linear	Linear	Linear
Obs.	439,451	439,451	439,451	439,451

Note: Estimates of the effects of fractionalization and polarization on track choices after compulsory schooling: (1) Vocational education and training (VET); (2) Academic high schools; (3) Specialized schools; (4) Ad Interim (e.g., gap year). The sample consists of students for whom we observe the postsecondary tracking choice. Ethnic fractionalization and polarization are standardized with zero mean and unit variance. The coefficients are multiplied by 100. Standard errors in parentheses clustered at the school-cohort level.

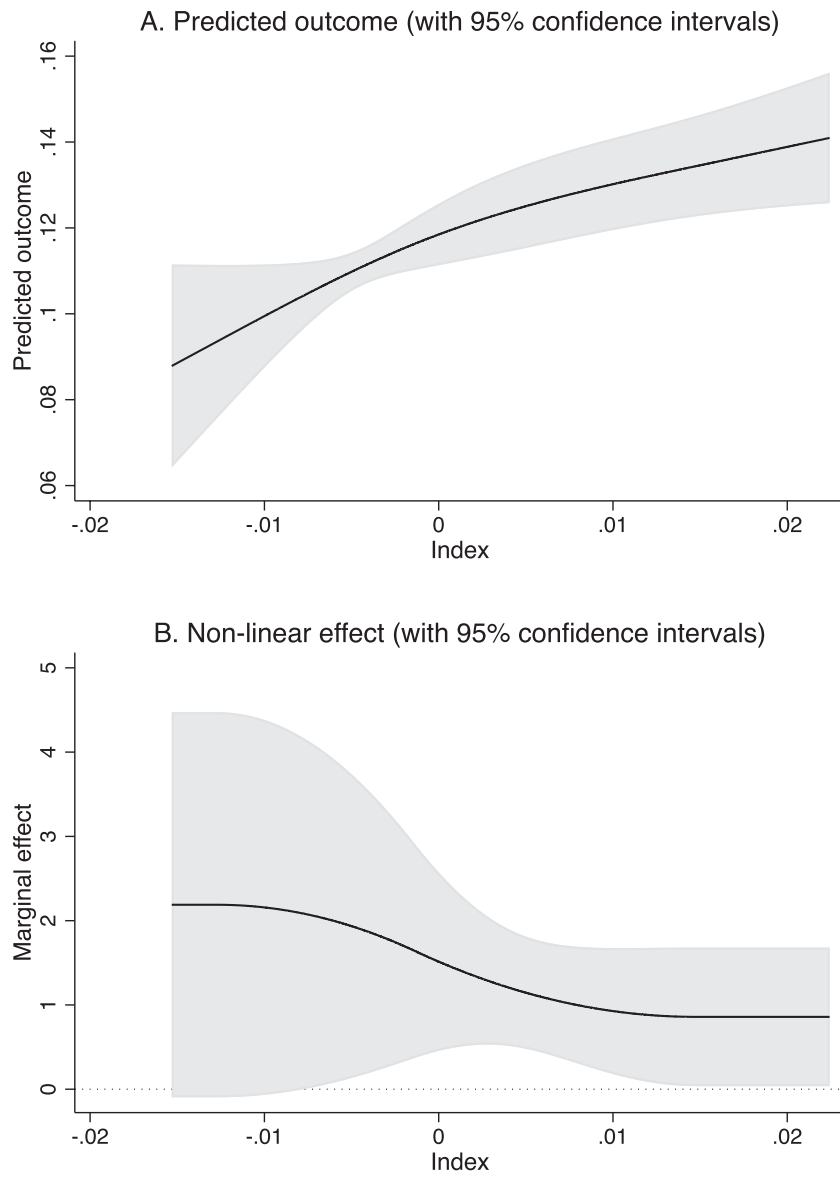


FIGURE A2 | Nonlinear effects of ethnic fractionalization. Predicted outcome and marginal effects of ethnic fractionalization using restricted cubic splines. The estimates are obtained from a model including both ethnic fractionalization and polarization.

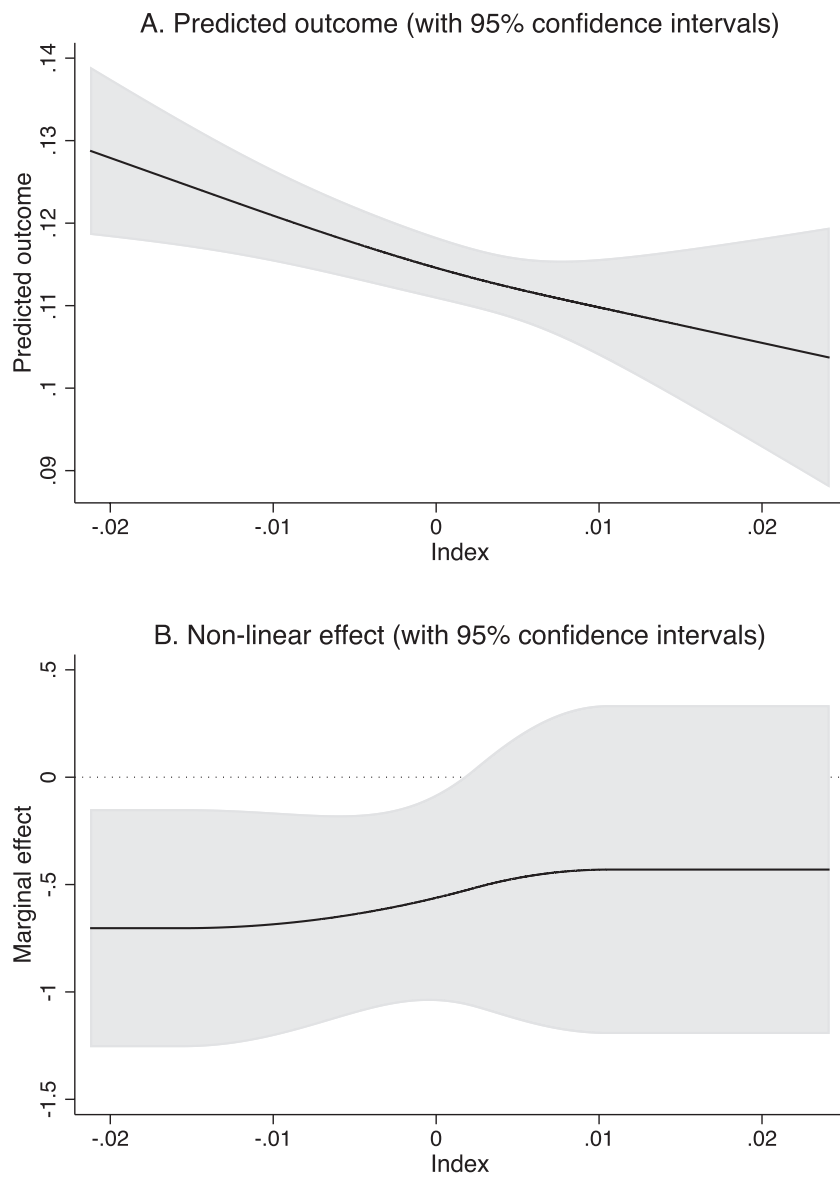


FIGURE A3 | Nonlinear effects of ethnic polarization. Predicted outcome and marginal effects of ethnic polarization using restricted cubic splines. The estimates are obtained from a model including both ethnic fractionalization and polarization.

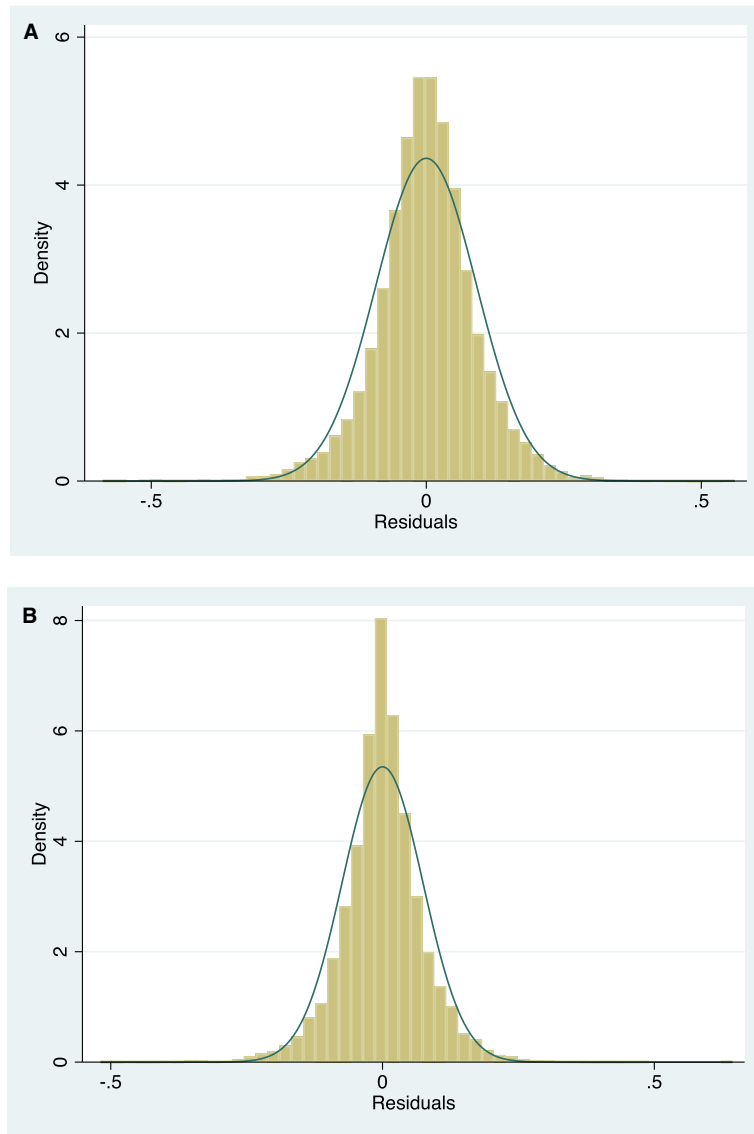


FIGURE A4 | Distribution of residuals and normal distribution (in green), ethnic fractionalization index PANEL (A) Residuals after school and cohort FE, PANEL (B) Residuals after school and cohort FE and school trends. [Color figure can be viewed at [wileyonlinelibrary.com](https://onlinelibrary.wiley.com/doi/10.1111/rel.12001)]

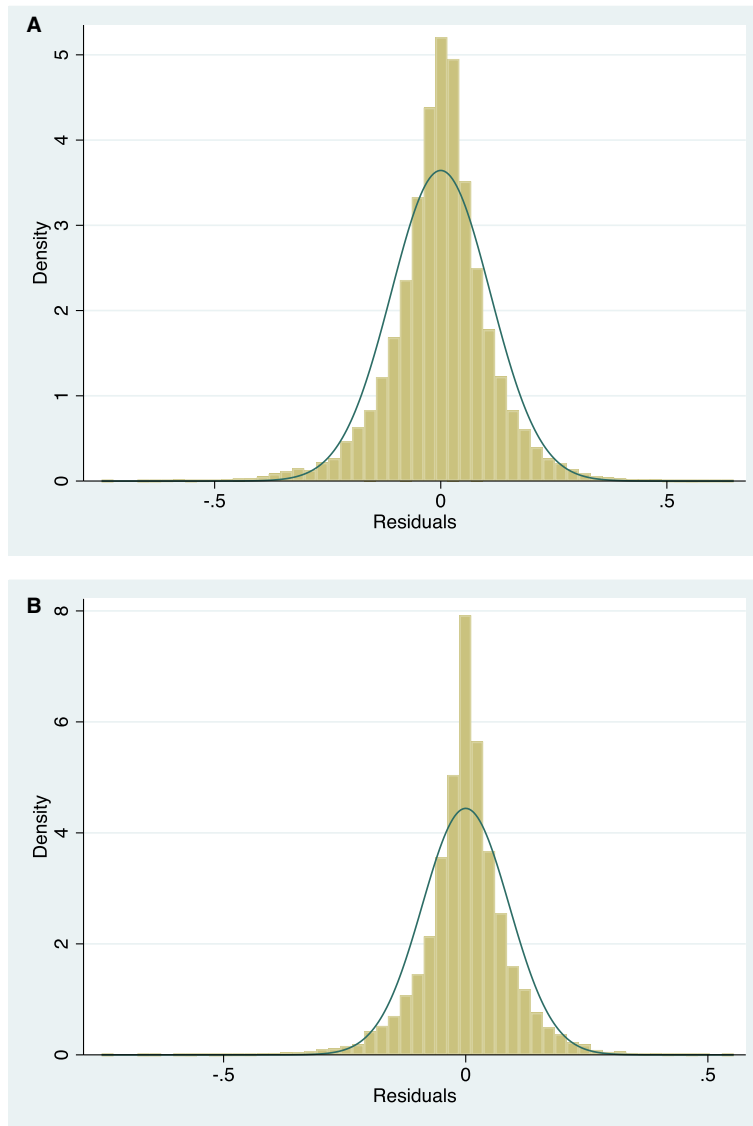


FIGURE A5 | Distribution of residuals and normal distribution (in green), ethnic polarization index PANEL (A) Residuals after school and cohort FE, PANEL (B) Residuals after school and cohort FE and school trends. [Color figure can be viewed at [wileyonlinelibrary.com](https://onlinelibrary.wiley.com/terms-and-conditions)]

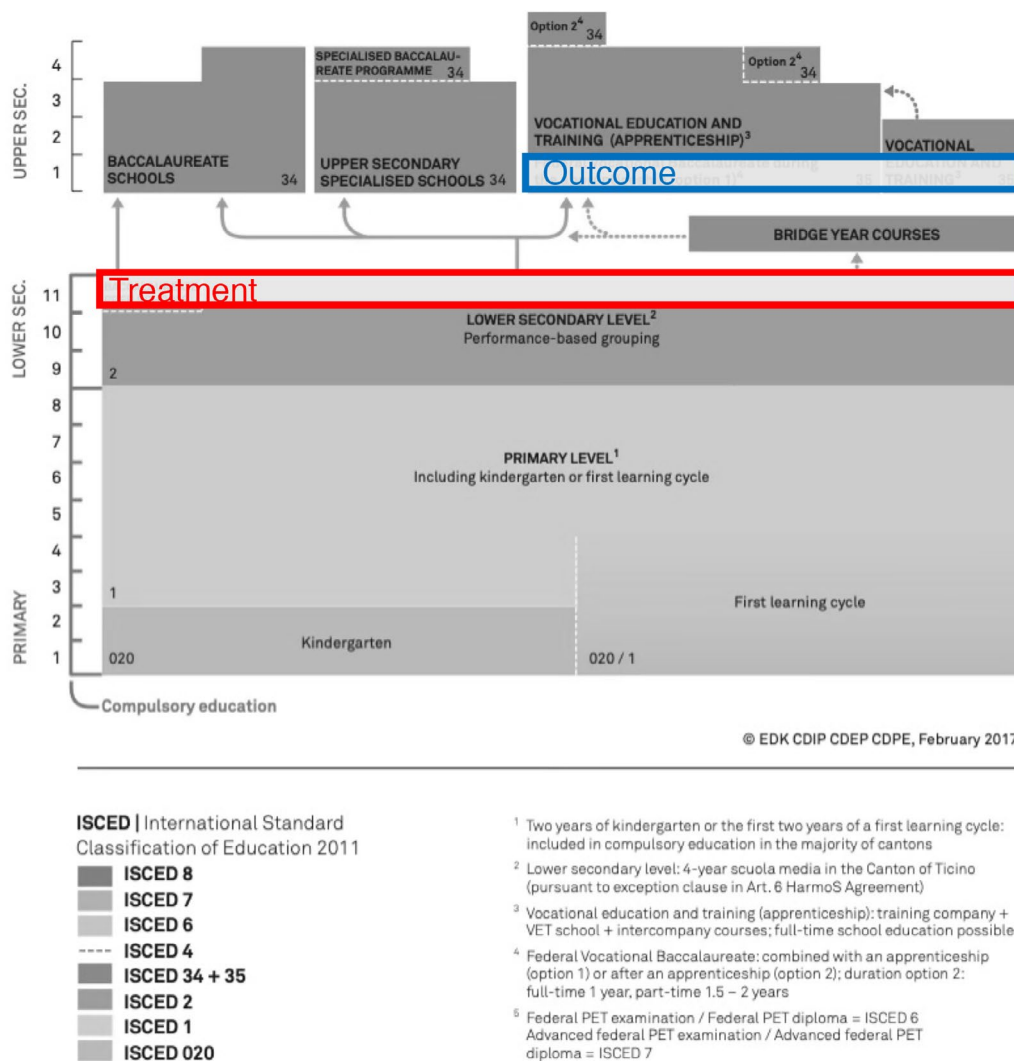


FIGURE A6 | Swiss educational system and measurement of treatment and outcome. [Color figure can be viewed at [wileyonlinelibrary.com](https://onlinelibrary.wiley.com/doi/10.1111/rel.12001)]

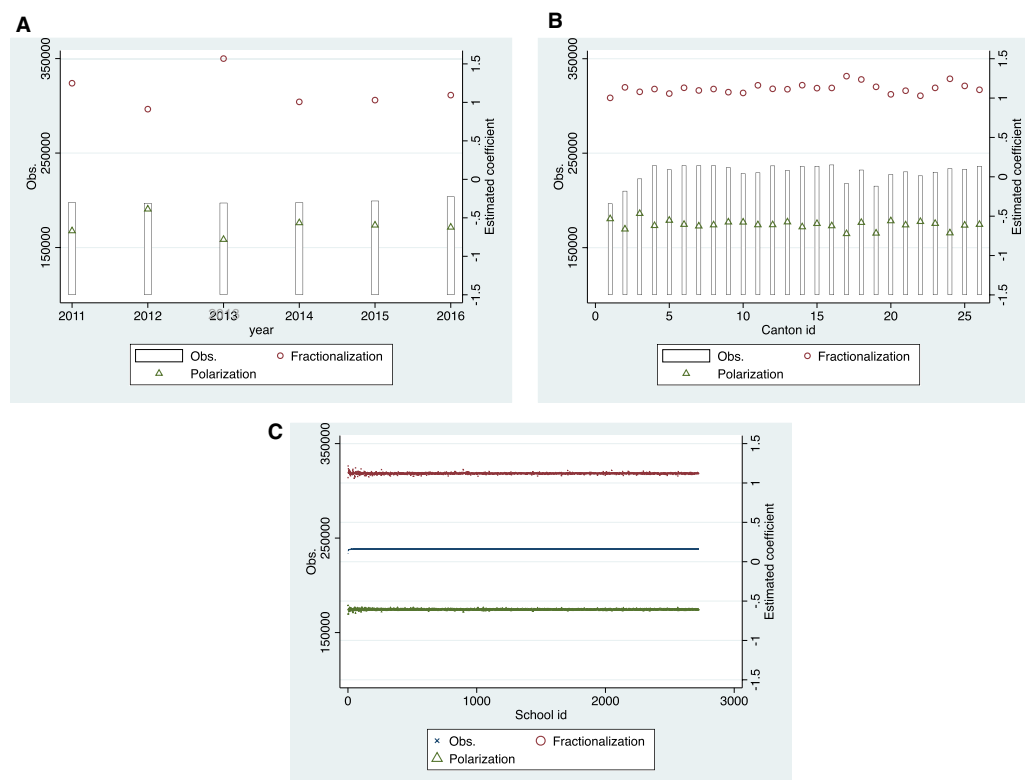


FIGURE A7 | Exclusion of years, cantons, and schools. PANEL (A) Estimated coefficients of ethnic fractionalization and polarization after excluding 1 year at a time. PANEL (B) Estimated coefficients of ethnic fractionalization and polarization after excluding one canton at a time. PANEL (C) Estimated coefficients of ethnic fractionalization and polarization after excluding one school at a time. [Color figure can be viewed at [wileyonlinelibrary.com](https://onlinelibrary.wiley.com/doi/10.1111/rel.12011)]

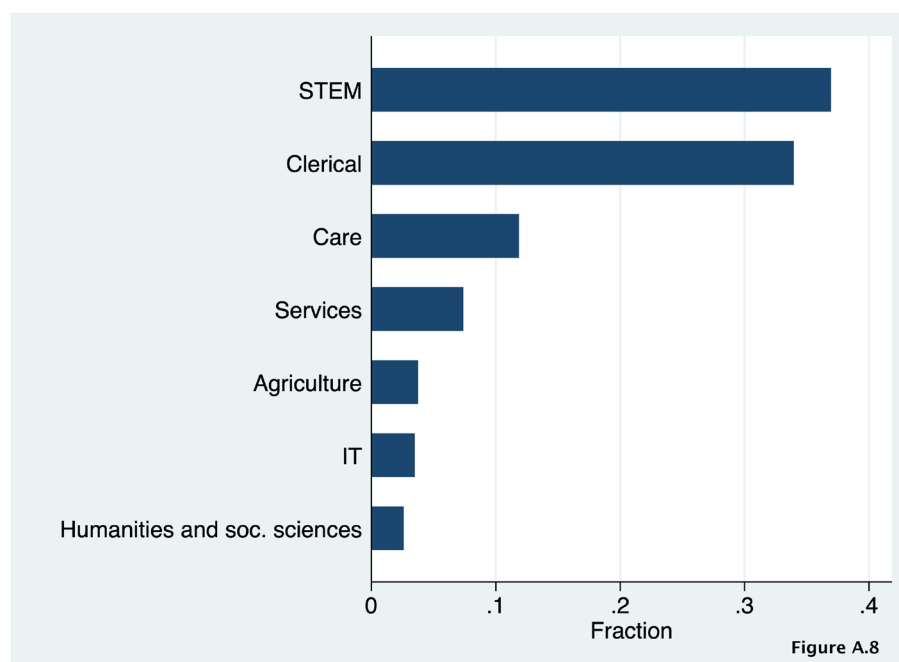


FIGURE A8 | Prevalence of ISCED fields of study. [Color figure can be viewed at [wileyonlinelibrary.com](https://onlinelibrary.wiley.com/doi/10.1111/rel.12011)]

Biography

Damiano Pregaldini is Research Fellow at the Leading House VPET Econ and received his PhD at University of Zurich. Simone Balestra is a Policy Advisor with the Swiss Federal Administration and was previously a postdoctoral researcher at University of Zurich specializing in education and labor economics. Uschi Backes-Gellner is Professor of Business and Personnel Economics at University of Zurich, Director of the Swiss Leading House VPET-ECON, and IZA Research Fellow, with expertise in personnel, education, and innovation economics.