Seismo

Swiss Journal of Sociology, 52 (3), 2026, 1–34

Social Origin and Institutional Context in Educational Trajectories: Evidence on Access to the Academic Path from the Swiss Tracked System

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Abstract: This article questions the extent to which social origin, school context, and lower secondary track attendance affect access to the Gymnasium, or general baccalaureate, in Switzerland. Using data from the second TREE cohort, we show that unequal Gymnasium access results from not only differences in social origin, but also from the structuring effect of early tracking and from school context. In addition, students from different social origins benefit equally from school track attendance and school context.

Keywords: Tracking, educational inequality, Gymnasium, school composition, Switzerland

Origine sociale et contexte institutionnel dans les parcours scolaires : l'accès au gymnase au sein du système suisse à filières

Résumé : Cet article examine dans quelle mesure l'origine sociale, la composition scolaire et la fréquentation des filières du secondaire I influencent l'accès au Gymnase, ou baccalauréat général, en Suisse. À partir des données de la deuxième cohorte TREE, nous montrons que les inégalités d'accès au Gymnase résultent non seulement des différences d'origine sociale, mais aussi de l'organisation en filières et du contexte scolaire. De plus, les élèves issus de différentes origines sociales tirent le même bénéfice de l'orientation et du contexte scolaire.

Mots-clés : Orientation scolaire, inégalités scolaires, Gymnase, composition scolaire, Suisse

Soziale Herkunft und Institutioneller Kontext in Bildungslaufbahnen: der Zugang zum Gymnasium im leistungsdifferenzierten Schweizer Schulsystem

Zusammenfassung: Dieser Artikel untersucht, inwieweit soziale Herkunft, schulisches Umfeld und der auf der Sekundarstufe I besuchte Schultyp den Zugang zum Gymnasium in der Schweiz beeinflussen. Analysen der zweiten TREE-Kohorte zeigen, dass der Zugang zum Gymnasium nicht nur auf Einflüsse der sozialen Herkunft zurückzuführen sind, sondern auch auf die strukturierende Wirkung der frühen Selektion und des schulischen Kontexts. Gleichzeitig profitieren Schülerinnen und Schüler unterschiedlicher Herkunft ähnlich vom jeweiligen Bildungszweig und Umfeld.

Schlüsselwörter: Tracking, Bildungsungleichheit, Gymnasium, Schulkomposition, Schweiz

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DOI 10.26034/cm.sjs.2026.8850

1 Introduction

Reducing the impact of socioeconomic factors on educational inequalities is a key priority in the Swiss social policy agenda, as it is the case in many other countries. Nevertheless, the Swiss education system is failing to level out social inequalities (UNICEF, 2026). Instead, various features of the education system are associated with a strong influence of social background on educational trajectories. One of these features is early tracking, which starts at the beginning of lower secondary education, around the age of 12.

Tracking is linked to educational inequality through three well-documented mechanisms (Karlson, 2015). Firstly, it places students in differentiated learning environments with distinct curricula and learning requirements, contributing to performance gaps between tracks. Secondly, it has a strong signalling effect of opportunities of achieving certain types of education and it delimits the educational opportunities that are accessible at post-compulsory education level depending on track attendance, leading to differences in the transition of education norms and educational choices. Thirdly, another mechanism often cited as relevant to educational achievement is the school context. School context can be understood as spatial context as well as school composition. These two are intertwined. On the one hand, from a didactic perspective, a homogeneous school context is considered beneficial, as it is assumed that teaching can be better adapted to students' abilities if the school composition, that is, students' characteristics, is homogeneous in terms of prior achievement (Hupka-Brunner, 2017). On the other hand, there is evidence that a homogeneous school context can negatively impact students' learning if the student body consists largely of disadvantaged pupils (Solga & Wagner, 2000). This can be understood as an effect of both spatial segregation or (self-) selection. Therefore, the division of students into homogeneous ability groups (i. e., tracking) carries the risk of homogenizing the school context. This interplay between school context and tracking has not yet been thoroughly investigated in previous research.

Yet, a better understanding of this relationship is crucial. Given that students are mainly grouped based on school grades and given the correlation between school grades and socioeconomic background, tracking contributes to the establishment of homogeneous peer groups in terms of academic ability, social background, and ethnicity (Baumert et al., 2006; Burger, 2016; Felouzis & Charmillot, 2023). Beyond spatial segregation, tracking reinforces school-level segregation, amplifying the influence of school context on educational pathways compared to more comprehensive school systems (Terrin & Triventi, 2023).

Examining the relationship between tracking and school context seems particularly relevant for academic programmes targeted towards high-achieving students and that, as shown by previous research, are more frequently attended by students with high, rather than low, socioeconomic status (SES). Academic pathways depend not only on individual and family-related factors (Mele et al., 2023) but evolve

in a broader multi-level system (Blossfeld et al., 2016; Symonds et al., 2025) and are embedded in institutional contexts (Burger et al., 2020). Navigating complex institutional contexts, such as educational systems, is easier for families with ample resources and a thorough understanding of the education system (Blossfeld et al., 2016). This raises the question of the extent to which socioeconomic background and ability grouping in lower secondary tracking amplify or mitigate each other's effects on subsequent pathways (Triventi, 2013; Zwier et al., 2023). Despite growing policy interest in the effects of inequalities stemming from school composition, there is a lack of evidence on how school contexts and early tracking interact with students' social origin and becomes key to transitions to academic upper secondary education (Lievore & Triventi, 2023). For educational policymaking, shedding more light on this relationship is crucial.

In this study, "school composition" refers to how groups of students within a given school are composed in terms of their social and migration backgrounds, and ability levels. We explore the joint roles of social origin, lower secondary tracking, and school composition, for access to upper secondary academic education, namely Gymnasium or general baccalaureate. The life course approach (Bernardi et al., 2019; Elder et al., 2003) is particularly well suited to assess this complex relationship. It allows for the integration of relationships and contexts into the development of educational trajectories. Particularly, the concepts of linked lives (here: parents–child; peers), levels (tracking and school context), and path dependencies shed light on how, in addition to social origin, tracking and school composition are related to educational pathways and social inequalities (Elder, 1994).

Switzerland represents a particularly relevant context for examining these dynamics. Its early tracking and pronounced social inequalities in educational outcomes make it an instructive case. Moreover, access to Gymnasium, that is the most academically demanding and prestigious upper secondary pathway, is highly selective with only around 25 percent of students entering it. Previous research has established that, also in Switzerland, accessing academically demanding and prestigious educational programmes at upper secondary level requires students to navigate complex institutional pathways shaped by both individual and contextual factors (Mele et al., 2023). Against this background, the present study investigates how social origin, track attendance, and school composition jointly condition access to academic educational programmes at upper secondary level. We elaborate on three research questions:

1. To what extent does track attendance in lower secondary education matter with respect to Gymnasium attendance (in addition to socioeconomic background)?
2. To what extent are transitions to Gymnasium related to school contexts, in addition to socioeconomic background and lower secondary tracking?
3. In what ways do the relations of school contexts and lower secondary tracking with the likelihood of attending Gymnasium vary by socioeconomic resources?

Using nationally representative data from the "Transitions from Education to Employment" (TREE) cohort of 2016 (TREE, 2024) and applying regression analyses, we thus examine how institutional contexts, particularly school composition and early tracking, are linked to the reproduction of educational inequalities in a highly stratified education system.

2 Educational Path-Dependencies and Socioeconomic Resources

The literature has well-established the concept of educational path-dependency (Heckhausen & Buchmann, 2019; Hillmert & Jacob, 2010; Shanahan et al., 2016), emphasizing that previous educational experiences influence subsequent educational pathways. Tracking marks critical junctures in educational trajectories (Burger, 2021; Johnson-Hanks et al., 2011; Mele et al., 2023), as it shapes educational experiences (Karlson, 2015) and channels students into predefined transition sequences. Consequently, (dis)advantages related to social origin and earlier educational experiences accumulate over time and along educational pathways (Turek & Henkens, 2021).

In this cumulative process, socioeconomic resources are a key mechanism through which (dis)advantages are maintained and reinforced. Across educational pathways, socioeconomic resources systematically shape students' probabilities of transitioning to general baccalaureate programmes (Symonds et al., 2025). Drawing on the concept of linked lives (Settersten, 2018) and processes of socialization and guidance (Breen & Jonsson, 2005), family income and parental education (hereafter referred to socioeconomic resources for the sake of brevity) have well-documented benefits for educational attainment (Pensiero & Schoon, 2019).

For the analysis of socioeconomic resources, this study considers two key dimensions, the cultural and economic resources as developed by Bourdieu (1983; 1986). *Cultural resources* refer to the accumulation of education in the home environment, the presence of cultural objects and preferences, as well as parents' educational background. A greater accumulation of cultural resources within a family can foster a more stimulating learning environment, support more informed parental guidance in educational decision-making (Gomensoro et al., 2025; Kamm et al., 2023; Van de Werfhorst, 2019), and enhance parental understanding of the education system (Ditton et al., 2019). Better-off families have access to more resources (Jæger & Holm, 2007), which enable them to support their children's learning (Lareau, 2011; Mistry & Elenbaas, 2021). In addition, the *economic resources*, particularly the financial burden on families during longer periods of education is more challenging for lower-income families, which makes shorter programmes more attractive to them (Blanden & Gregg, 2004; Nennstiel & Becker, 2025).

In Switzerland, the first educational transition occurs relatively early, at around the age of 12. Because parental influence tends to diminish as adolescents grow older

(Berger & Combet, 2017; Heckhausen, 2021; Mare, 1980; Tucker-Drob et al., 2013), it can be assumed that in systems where tracking occurs at such an early stage, parental resources exert a particularly strong influence on children's educational pathway and success (Berger & Combet, 2017; Hillmert & Jacob, 2010; Leemann et al., 2022).

3 School Composition and Access to Highly Demanding Educational Programmes

School composition shapes students' probabilities to transition to academically demanding education programmes (Terrin & Triventi, 2023). Differences in the composition of schools provide distinct developmental opportunities beyond those from students' own academic competencies and their families' socioeconomic resources (Baumert et al., 2006; Scharenberg & Rollett, 2023). A greater similarity of student socioeconomic and cultural backgrounds within a school can provide transitional support, as transitioning together with peers from a familiar social background may facilitate social integration (Jæger & Holm, 2007), as well as acceptable or desirable behaviours in the education system (Lareau, 2015). Similarly, school composition can facilitate the transmission of information about available learning opportunities, access to study materials, and effective academic practices, thereby further shaping students' educational transitions and achievement (Crosnoe et al., 2003; Rosenqvist & Brandén, 2025). Crosnoe et al. (2003) showed that adolescent friendships represent an important form of social capital that can buffer academic difficulties. Overall, the literature shows that school composition can be decisive in students' decisions at key educational junctures. Compositional advantages, such as a higher concentration of socioeconomically privileged or high-achieving peers, facilitate access to information, resources, and achievement-oriented norms that support progression into academically demanding programmes (Crosnoe et al., 2003; Wölfer et al., 2012). In contrast, lower-status tracks often concentrate on students from disadvantaged backgrounds, creating peer contexts with fewer opportunities and weaker orientations toward demanding programmes (Jæger & Holm, 2007; Van de Werfhorst, 2019).

This study captures school composition by focusing on social and migration background, as well as on ability. Social and migration background influence educational transitions via socialization processes (Glauser et al., 2025; Van de Werfhorst, 2019) and peer influence (Landes & Settersten, 2019; Raabe & Wölfer, 2019). Higher academic ability of the student body benefits the instructional pace, learning opportunities, and academic engagement (Basarkod et al., 2024; Batruch et al., 2023; Sorjonen et al., 2025; Zwier et al., 2023). We focus on mathematical abilities, which, in the Swiss context, are key for transitioning to Gymnasium (Angelone & Keller, 2019; Gomensoro & Meyer, 2021).

School composition can strengthen students' capacity and confidence to opt for and succeed in more challenging educational programmes. Thereby, they amplify the influence of individual and familial resources at critical educational junctures (Engzell & Raabe, 2023; Rosenqvist & Brandén, 2025). Importantly, students from disadvantaged backgrounds, who tend to have fewer support networks, rely more on information, emotional support, and norms of what is acceptable and desirable to succeed, compared to students who surround them (Zwier et al., 2023). Hence, peer networks represent important resources that otherwise would not be available for disadvantaged students (Ross & Mirowsky, 2006).

The accumulation of advantage or disadvantage may characterize the link between socioeconomic resources and school composition (Dannefer, 2003). Such an accumulation occurs when resources (or a lack thereof) add up or multiply and result in differences in learning and later labour market opportunities. Children from advantaged social backgrounds may reap larger benefits from attending an advantaged school, thereby amplifying their socioeconomic resources compared to less privileged children during upper secondary transitions.

4 The Intertwining of Socioeconomic Resources, Lower Secondary Tracking, and School Composition

Life-course perspectives (Bernardi et al., 2019; Elder, 1998) and life-span developmental psychology (Lerner et al., 2021; Li & Baltes, 2006) emphasize that developmental trajectories are embedded in institutional contexts (Burger et al., 2020). In the educational domain, such institutional contexts are already characterized during primary school by organizational features such as school composition, ability grouping practices, and assessment and recommendation procedures. After primary schooling, tracking is one of the most important institutional features characterized by differences in curriculum, learning environment, transition norms, and educational opportunities. These elements constitute the institutional environment in which performance is evaluated and interpreted, and through which signals about future educational pathways emerge (Hanappi, 2007).

A core assumption across these theories is that human development is molded by and unfolds within institutional contexts that both open and limit pathways for growth. This suggests that the benefits of socioeconomic resources for student outcomes can be undermined by institutional constraints, which can then limit the extent to which socioeconomic resources translate into positive educational outcomes (Hallinan, 2012). Institutional tracking is a key factor in assigning students to different learning environments and directing them into specific post-compulsory educational routes. These routes, once established, often structure subsequent learning opportunities, including access to academically demanding tracks, and thereby

influence long-term educational outcomes (Baumert et al., 2006; Hanushek & Woessmann, 2006; Heckhausen & Buchmann, 2019; Van de Werfhorst & Mijs, 2010). Once placed in a particular educational track, students are likely to proceed through a standardized sequence of transitions within the system (Breen & Jonsson, 2000). Multiple available routes allow students' educational trajectories to diverge at certain points and later reconverge at certain junctures (Breen & Jonsson, 2005; CEDEFOP, 2012). This phenomenon is frequently discussed under the umbrella of educational system permeability, representing a fundamental guiding principle for Switzerland (WBF & EDK, 2015). However, it is crucial to recognize the distinction between theoretical and actual/empirical permeability, as these can vary significantly in Switzerland (Kost, 2013; Meyer, 2016; Neuenschwander, 2015; Oesch, 2017; SCCRE, 2023). Overall, the benefits (or disadvantages) of socioeconomic resources are likely to be reinforced by how institutional routes structure students' progression through the education system. This potentially magnifies initial benefits in resources (Hallinan, 2012). In doing so, the resources, as well as the institutional routes, steer otherwise similar students into predetermined destinations that lead to markedly different tracks (Borghans et al., 2019). Moreover, tracking not only increases disparities in academic achievement (Hanushek & Woessmann, 2006), but also amplifies inequalities of opportunity, because the influence of socioeconomic resources on educational outcomes becomes stronger in early tracked systems (Gamoran & Mare, 1989; Lucas, 2001). Comparative studies demonstrate that these resources exert a greater impact on achievement in more rigidly tracked systems (Bol & Van de Werfhorst, 2013; Brunello & Checchi, 2007; Jackson, 2013), where gains tend to accrue to students from higher socioeconomic backgrounds (Hallinan, 2012).

In addition, tracked systems can affect school composition. By channeling students into differentiated pathways, tracking structures the peer environments in which educational trajectories unfold (Dupriez, Dumay, et al., 2008). Through these mechanisms, school composition and tracking might operate as mutually reinforcing processes, with institutional differentiation shaping peer contexts that, in turn, stabilize and amplify initial inequalities (Batruch et al., 2023; Raabe & Wölfer, 2019; Rosenqvist & Brandén, 2025). The reinforcement of initial inequalities through path dependencies in stratified education systems can be interpreted in terms of the theory of cumulative (dis)advantages (Dannefer, 2003).

5 The Swiss Education System

The Swiss education system is characterized by early tracking, strong cantonal variation, and the dominance of vocational education and training (SCCRE, 2023). After six years of primary schooling (around age 12), students are assigned to two to four lower-secondary tracks that differ in pace, curriculum, and academic requirements,

with about one-third nationally placed in basic-requirement tracks (Gomensoro et al., 2025). Alongside these selective models, some cantons operate comprehensive lower-secondary schools in which students of different ability levels are taught together under a common curriculum, thereby delaying differentiation. Despite such institutional variation and formal claims of permeability, track allocation remains largely path-dependent and strongly linked to social origin in Switzerland (Bayard, 2018; Neuenschwander et al., 2012; Oesch, 2017; SCCRE, 2023). In most of the cantons, students are neither legally entitled nor obliged to continue their education at upper secondary level and beyond (SCCRE, 2023). At the upper-secondary level, stratification is reinforced through the division between general and vocational education. While Gymnasium provides direct access to universities, vocational education and training primarily channels students into the labour market or universities of applied sciences (through the federal vocational baccalaureate).

Students from more advantaged backgrounds are disproportionately represented in Gymnasium (Felouzis et al., 2011; Felouzis & Charmillot, 2023; Kronig, 2007). Yet, while the impact of family socioeconomic background is well established, less is known about whether institutional structures and peer environments are associated with Gymnasium attendance. Evidence indicates that school contexts affect competence development and educational transitions (Baumert et al., 2006; Scharenberg, 2016). Importantly, the strength of composition effects depends on the type of tracking: models that track tend to stratify resources and peer groups more strongly than comprehensive and integrative models (Burger, 2016). In most Swiss cantons, the education system is organized into tracks rather than following a comprehensive or integrated model (SCCRE, 2023). Since recent harmonization reforms, particularly *HarmoS* (EDK, 2009), some cantons have incentivized later tracking, which is assumed to reduce social selectivity. Still, cantonal differences remain, and initial allocations continue to structure later opportunities and thus trajectories.

The transition to upper secondary education marks a key milestone. While most students enter vocational training, often through one of roughly 200 apprenticeships that vary in academic demand, a smaller share pursues general education. Within this route, Gymnasium grants direct university access, whereas specialized middle schools, positioned between general and vocational education, provide a narrower curriculum and a specialized baccalaureate qualifying for universities of applied sciences. While participation in general education has grown over time, vocational education continues to dominate, shaping the pathways available to most students (Gomensoro & Meyer, 2021). This strong vocational orientation makes access to Gymnasium particularly critical, because it represents the main pathway into general university, thereby amplifying the importance of understanding the link between social origin, track placements, school contexts, and transitions at this stage.

6 Research Hypotheses

In the analysis below, we test three hypotheses. We start by testing the relationship between lower secondary track attendance and Gymnasium entry, net of familial socioeconomic resources. Attending different lower secondary tracks allows more or less direct access to Gymnasium.

> *Hypothesis (1): Attending a high requirement track at lower secondary level increases the likelihood of Gymnasium attendance, while attending a low requirement track at lower secondary level decreases the likelihood of Gymnasium attendance.*

We then test the relationship between advantaged school contexts and entry to Gymnasium one year later. School context is measured by three school composition indicators in lower secondary education, namely, social and migration background, as well as on ability. As outlined in section 3, different school composition contexts may create additional opportunities or constraints. Therefore, we expect that attending a school with a higher share of socioeconomically advantaged students, a smaller proportion of migrant peers, or a greater number of students who have reached basic competence levels will increase the likelihood of transitioning to Gymnasium. In addition, the tracking process contributes to the production of homogeneous school contexts by sorting students with similar school grades in the same classrooms or schools. Part of the effect of tracking might be attributed to school composition, particularly as some cantons operate between-school tracking, i. e. grouping students of a given track within specific schools and not as for within-school tracking inside the same school. It is thus interesting to assess the relationship between school composition and Gymnasium entry and to establish if the relationship between lower secondary track attendance and Gymnasium entry changes once accounting for school composition.

> *Hypothesis (2.1): A higher proportion of socioeconomically advantaged peers in a school is linked to a higher likelihood of Gymnasium attendance.*

> *Hypothesis (2.2): A higher proportion of migrant peers in a school is linked to a lower likelihood of Gymnasium attendance.*

> *Hypothesis (2.3): A higher proportion of peers who have achieved basic competence levels in a school is linked to a higher likelihood of Gymnasium attendance.*

Finally, we test the interaction between students' familial socioeconomic resources and lower secondary tracking as well as the three measures of school compositions on Gymnasium entry. Students with high socioeconomic resources could benefit more in educational contexts that are more demanding, that offer more opportunities and regroup more resources.

> *The effects of the attended lower secondary track (hypothesis 3.1), the proportion of socioeconomically advantaged peers (hypothesis 3.2), the proportion of migrant peers (hypothesis 3.3), and the proportion of peers who have achieved basic competence levels (hypothesis 3.4) are more pronounced among students from families with high socioeconomic resources.*

7 Data and Methods

Data were used from the second cohort of the Transitions from Education to Employment study (TREE2; Hupka-Brunner et al., 2024; TREE, 2024) which follows students who left compulsory school in Switzerland in 2016. Most of these students were born between 1999 and 2001. The survey is representative of the German-, French-, and Italian-speaking parts of Switzerland and started with an initial sample of 8 429 individuals. This baseline sample was selected from the *Assessment of the Attainment of Educational Standards* (AES) 2016 survey, a large-scale national assessment of mathematics skills that covered one fourth of 2016 nine graders (22 423 of approximately 85 000 students; Hupka-Brunner et al., 2024; Sacchi, 2025).[1] The AES 2016 survey not only assessed mathematics but also included a context questionnaire about learning family background and school. Additional information about the school was also collected from the school management and administration (Verner & Helbling, 2019). The AES 2016 sample was selected by accounting for cantonal and school sampling units (Verner & Helbling, 2019). Part of the information used in our analysis (parents' occupations, gender, migration background, mathematical test scores) was collected from the students in schools and assessed by computer questionnaires (closed-end questions). These measures reflect either self-reports or assessments. Other information (lower secondary track, language region) was provided by the schools. School composition variables were accurately estimated by the AES survey team from the responses (one quarter of the entire population) and by accounting for sample selection bias. Finally, the first follow-up survey (2017)

1 Nationwide, the population of interest comprised just under 85 000 students attending around 1 500 schools. Because it was essential for the AES to have a sample that was representative not only nationally but also at cantonal level, single-stage and two-stage sampling procedures were used. The AES sample comprised 22 423 students. Response rates at the individual level averaged 93% across Switzerland (Angelone & Keller, 2019; Verner & Helbling, 2019).

asked the TREE2 respondents about the type of education they were attending one year after the end of compulsory schooling. We consider the educational situation in the first year of post-compulsory education, rather than at a later stage, because transitioning to a Gymnasium is done directly after the end of compulsory schooling in the large majority of cases (96%) (BFS/TREE, 2003). The analytical sample with complete information includes 7 731 respondents. Thus, this analysis draws on data from the baseline survey conducted in 2016, which provides information on the independent variables, and on the follow-up measure of Gymnasium attendance one year after the end of compulsory schooling in 2017, serving as the dependent variable.

The dependent variable, the covariates, and the control variables are as follows:

Upper-Secondary Education attended: The dependent variable is a binary indicator of whether students attended Gymnasium (general baccalaureate school) in the first post-compulsory year (2017; coded as 1), or not (coded as 0). Attendance of Gymnasium applied to roughly one-quarter of students (see Table 1).

Socioeconomic resources in the family were measured in the AES 2016 baseline survey using the highest parental International Socio-Economic Index of Occupational Status (ISEI). ISEI is a widely used and validated scale that captures the relative position of parental occupations in the social stratification system (Ganzeboom, 2010). The International Socio-Economic Index of Occupational Status (ISEI) combines income, education, and prestige of occupations to capture the status of an occupation (see Ganzeboom & Treiman, 1996). Information on the occupation and education level were used from pooled International Social Survey Programme (ISSP) waves 2002–2007 on almost 200 000 men and women in 42 countries to construct the ISEI-08 version (Ganzeboom, 2010) that we use in our analysis. The lowest value of ISEI-08 is 11.56 (e.g., field crop and vegetable growers) and the highest 88.96 (e.g., judges). To avoid observing too small coefficients in the regression models, we divided the parental ISEI values by 10, meaning the coefficients correspond to a change of ten points on the ISEI scale.

Lower secondary track: We differentiate three levels of track requirements measured at the end of compulsory school (9th grade; 2016): high, advanced, and basic/low requirements. The advanced requirements track regroups almost 40% of students in 2016 when high and basic/low requirements regroup around 30% of the students each.

School composition includes three measures at the school level assessed in the baseline survey 2016. First, *school mean ISEI* measures the mean highest parental ISEI of the students in the different schools. In the data, the school mean ISEI ranges from 39.9 to 80.4 with an average of 55.4. Second, the *school proportion of migrant students* ranges from 0 to 0.927 with an average of 0.299. The third composition variable is the *school proportion of students reaching basic math competencies* as defined by AES (Angelone & Keller, 2019; Verner & Helbling, 2019). It ranges from 0 to 1 with an average of 0.622. Those three variables are weighted estimates constructed

Table 1 Descriptive Statistics

	% or mean	95% confidence interval	
Transition to Gymnasium			
Yes	25.2%	23.1%	27.3%
No	74.8 %	72.7%	76.9%
Lower secondary tracks			
High requirements	31.3 %	29.2%	33.6%
Extended requirements	39.8 %	37.7%	41.9%
Basic/low requirements	28.9 %	27.0%	30.8%
Parental highest ISEI	55.9	55.1	56.7
School mean ISEI	55.4	54.8	56.0
School proportion of migrant students	0.299	0.284	0.313
School proportion of students reaching basic competencies	0.622	0.606	0.773
Gender			
Female	49.7 %	48.0%	51.4%
Male	50.3 %	48.6%	52.0%
Language region			
German-speaking	70.0 %	68.2%	71.8%
French-speaking	25.8 %	24.1%	27.6%
Italian-speaking	4.1 %	3.6%	4.8%
Immigration status			
Swiss	70.6 %	68.7%	72.4%
Second generation immigrant	19.5 %	18.0%	21.1%
First generation immigrant	9.9 %	8.8%	11.2%
AES maths test score	0.0478	−0.019	0.115
Weighted calculation on TREE2; n = 7 731			

by AES (Angelone & Keller, 2019). Again, to avoid observing too small coefficients in the regression models, we divided the school mean ISEI by ten, meaning the coefficients correspond to a change of ten points on the ISEI scale. For the other two

school context covariates, the coefficients represent a change from 0% to 100% in the share of migrant students or students reaching basic mathematics competencies at school, respectively.

Control variables: We account for three relevant control variables. *Gender* was assessed at baseline distinguishing between male (coded as 1) and female (coded as 0). The *language region* was collected and distinguished German- (coded as 0), French- (1), and Italian-speaking (2) regions. *Immigration status* was assed at baseline and distinguished Swiss (coded as 0), second generation (1), and first generation (2). Finally, a control for individual cognitive ability was added to capture math competencies via the *AES math test score* (weighted likelihood estimate; ranges from −5.36 to 5.214 with an average of 0.048; Angelone & Keller, 2019).

Descriptive bivariate statistics are used to illustrate transitions to general baccalaureate schools by the covariates and the control variables (see Table 2). To test the hypotheses, we estimated several logit regression models examining the likelihood of transitioning to Gymnasium. In Table 3 (and Table A1 in the Appendix), Model 1 only includes parental socioeconomic resources to observe the relation with the dependent variable (without testing any hypothesis), Model 2 includes lower secondary track affiliation (to test hypothesis 1), and Model 3 includes school composition variables (to test hypotheses 2.1, 2.2, and 2.3). In Model 4 (see Table A1 in the Appendix), we additionally account for the interactions between parental socioeconomic resources with lower secondary tracking and school composition variables (to test hypotheses 3.1, 3.2, 3.3, and 3.4). In additional analyses (see Tables A2 and A3 in the Appendix), the models were recalculated with the inclusion of relevant control variables (in the same sequence but with control variables, respectively Models 5, 6, 7 and 8). Tables 3 and A2 in the Appendix report Average Marginal Effects (AMEs) that express the difference in percentage points (PPs) in the access to Gymnasium. For categorical variables, AMEs indicate the difference in the probability of access to Gymnasium between a given category and the reference category. For continuous variables, AMEs represent the change in PPs associated with a one-unit increase in the variable. Tables A1 and A3 in the Appendix report logistic regression coefficients that indicate how the predicted log-odds of a category change with a one-unit increase in an independent variable, while all other variables are held constant. All analyses were weighted to correct for unequal selection probabilities and sample attrition. Descriptive statistics (weighted) are reported in Table 1.

8 Results

8.1 Bivariate Results

Overall, 25% of the students in the sample transitioned to Gymnasium in the year following compulsory education, while 75% did not (see Table 1). Pronounced

Table 2 Bivariate Analysis. Transition to Gymnasium by Covariates and Control Variables (% or Mean)

	Transition to Gymnasium	
	No	Yes
Parental highest ISEI	52.0	67.6
Lower secondary tracks		
High requirements	26.6%	73.4%
Extended requirements	94.8%	5.2%
Basic/low requirements	99.8%	0.2%
School mean ISEI	53.0	62.4
School proportion of migrant students	0.310	0.274
School proportion of students reaching basic competencies	0.556	0.811
Gender		
Female	72.4%	27.6%
Male	77.3%	22.7%
Language region		
German-speaking	78.7%	21.3%
French-speaking	65.9%	34.1%
Italian-speaking	64.4%	35.6%
Immigration status		
Swiss	73.6%	26.4%
Second generation immigrant	77.7%	22.3%
First generation immigrant	78.1%	21.9%
AES mathematics test score	−0.337	1.193

weighted calculation on TREE2; n = 7 731

differences are observed across family background, lower secondary tracks, school composition, and competencies (see Table 2).

Parental socioeconomic resources are strongly associated with transition rates. On average, students who transition to a baccalaureate school have a parental ISEI of 68, whereas students who do not transition to Gymnasium have an average ISEI of 52.

Important differences are found for *lower-secondary track attendance*. Among students attending the high-requirements track, 73% transitioned to the general baccalaureate, compared to only 5% in the extended-requirements track, and virtually none (0.2%) in the basic/low-requirements track.

School contexts show similar stratification. Students who entered Gymnasium came from schools with higher mean ISEI values (53 vs. 62) and a substantially greater proportion of peers achieving basic mathematics competencies (0.556 vs. 0.811). By contrast, the proportion of migrant students in a school was slightly lower among those who transitioned to Gymnasium (0.274 vs. 0.310), suggesting that peer social background and achievement rather than migration background may be more decisive for access to advanced educational routes.

Individual characteristics also reveal patterned disparities. Gender differences are observed, with 28% of females and 23% of males entering Gymnasium. Substantial *regional variation* is observed: students in the Italian-speaking (36%) and French-speaking (34%) regions were significantly more likely to transition than their German-speaking peers (21%). Immigration status, however, shows little effect, with native-born, first-generation, and second-generation students displaying quite similar transition rates. Finally, prior academic competencies strongly predict entry to the academic track. Students who transitioned achieved a mean AES mathematics score of 1.163, compared to –0.337 among those who did not.

Taken together, these descriptive results highlight considerable inequalities in the transition to the academic track along the lines of family background, institutional placement, and school composition measures, with additional variation by region and competencies. They demonstrate how socioeconomic and institutional factors together with early academic tracking are intertwined with students' educational trajectories and, by extension, their longer-term life-course opportunities.

8.2 Regression Analysis

This study estimated a sequence of regression models to test the hypotheses. Model 1 includes only parental ISEI; Model 2 incorporates lower secondary track affiliation, capturing institutional structuring; Model 3 adds school mean ISEI, school proportion of migrant students and school proportion of students reaching basic competencies; and Model 4 introduces the interaction terms between parental ISEI with lower secondary track affiliation, school mean ISEI, school proportion of migrant students, and school proportion of students reaching basic competencies (see Table A1 in the Appendix). Models 5, 6, 7, and 8 follow the same sequence but include individual controls (gender, language region, immigration background, and mathematics competencies) in order to evaluate their relationship with Gymnasium entry and assess the robustness of our findings (see Table A2 and Table A3 in the Appendix).

The Average Marginal Effect from Model 1 shows that parental socioeconomic resources are a strong factor in transitions to Gymnasium (see Table 3). An increase

Table 3 Average Marginal Effects of Parental Highest ISEI, Lower Secondary Tracking and School Contexts on Gymnasium Attendance in 2017

	Model 1				Model 2				Model 3			
	AME	P-value	95% Confidence Interval		AME	P-value	95% Confidence Interval		AME	P-value	95% Confidence Interval	
Parental highest ISEI (divided by 10)	0.071	0.000	0.063	0.078	0.024	0.000	0.019	0.029	0.017	0.000	0.013	0.022
Lower secondary tracks (ref: extended requirements)												
High requirements					0.626	0.000	0.590	0.661	0.522	0.000	0.473	0.572
Basic/low requirements					−0.050	0.000	−0.063	−0.037	−0.064	0.000	−0.079	−0.049
School mean ISEI (divided by 10)									0.064	0.000	0.048	0.080
School proportion of migrant students									0.186	0.000	0.121	0.251
School proportion of students reaching basic competencies									0.021	0.527	−0.044	0.085
Observations	7731				7731				7731			

AME: Average Marginal Effect; ISEI: International Socio-Economic Index; weighted calculation on TREE2.

of ten points in parental ISEI would lead to 7 percentage points (PPs) more access to the Gymnasium. Model 2 introduces *lower-secondary track affiliation*, a core institutional feature of the Swiss education system. Students in the high-requirements track have a 63 PPs higher probability of entering the academic track compared to those in the extended-requirements track (reference category). Conversely, students in the basic-requirements track are almost fully excluded from direct entry, with an estimated 5-percentage-point reduction in transition to Gymnasium. Although upward mobility from basic tracks is possible, it requires additional intermediate steps and significant personal and familial investment, with only 2% eventually reaching university (BFS, 2016). This highlights the role of early tracking as a central gatekeeping mechanism that structures subsequent opportunities and constrains permeability across pathways, reinforcing institutional path dependency (Heckhausen & Buchmann, 2019). Hypothesis 1 is thus confirmed, that is, that students who have attended an academically more demanding track at the lower secondary level are more likely to attend Gymnasium than their counterparts from less demanding lower secondary tracks. When early tracking is included, the effect of parental background is further reduced: an increase of ten points of parental ISEI leads to an increase of 2.4 PPs in Gymnasium access.

Model 3 additionally assesses the impact of three *school composition* variables measured at the end of compulsory education. As expected, attending a school with a higher mean ISEI is positively associated with transition to the baccalaureate school. An increase of ten points in the school mean ISEI is linked to a 6.4 PPs increase in the transition to Gymnasium. More surprisingly, a higher proportion of migrant students at school is associated with a higher transition likelihood. Going from 0 to 100% of migrant students within school increases the Gymnasium entry by 18.6 PPs. This relationship reverses in the regression analysis (compared to the bivariate analysis) once parental highest ISEI, lower secondary tracking, school mean ISEI, and school proportion of students reaching basic competencies are controlled for. This suggests that high aspiration levels for baccalaureate school among migrant students (Gomensoro et al., 2025) and social contagion mechanisms (Van Houtte & Stevens, 2010; Wicht, 2016) may play an important role. The proportion of students reaching the basic level of competencies in mathematics has no statistically significant effect on Gymnasium entry. This is not surprising, given that the different tracks tend to be homogeneous in terms of the students' competencies. The effect of this specific school context variable is fully confounded with track allocation. Together, these findings confirm that family resources, lower-secondary tracking, and school contexts are partly correlated but all relevant in the prediction of Gymnasium access.

Notably, the inclusion of school-context variables attenuates the effects of parental ISEI and lower-secondary tracking. This pattern suggests several conclusions: (1) Parental socioeconomic resources are a robust predictor of access to the most selective and prestigious upper-secondary pathway in Switzerland (as observed in

the three models). The effect is partly mediated by lower-secondary tracking, with the coefficient of parental socioeconomic resources decreasing in Model 3. (2) Part of lower secondary tracking effects can be attributed to school composition as the coefficient of lower secondary tracking decreases in Model 3. (3) School mean ISEI and school proportion of migrant students are positively linked to transition to Gymnasium. Hypothesis 2.1 is thus confirmed, hypotheses 2.2 and 2.3 are rejected.

Additional models included gender, language region, migration background, and individual mathematics competencies (see Tables A2 and A3 in the Appendix). Including these individual-level variables does not substantially alter the effects of parental SES, tracking, or school composition, underscoring the robustness of the main findings.

Model 4 and Model 8 (see Tables A1 and A3 in the Appendix) include the interaction between parental ISEI and lower secondary tracking, as well as school composition variables. There are no significant interaction terms, meaning that the effects of lower secondary tracks, school mean ISEI, school proportion of migrant students, and school proportion of students reaching basic competencies on the likelihood of Gymnasium entry do not vary by parental socioeconomic resources. This strongly suggests that lower secondary tracking and school composition are similarly linked with Gymnasium entry, regardless of socioeconomic resources. Hypotheses 3.1, 3.2, 3.3, and 3.4 are thus rejected in Switzerland regarding access to Gymnasium.

9 Discussion, Conclusion, and Limitations

Social origin and institutional context in tracked education systems may be a major factor for young people to benefit from in accessing later educational and occupational opportunities. The extent to which the school context influences subsequent educational transitions, when socioeconomic circumstances and the institutional characteristics of the education system are taken into account, is less clear (Symonds et al., 2025). The present study examines the relationship between socioeconomic contexts and upper-secondary transitions in the tracked Swiss education system, as well as the associations between socioeconomic resources, early track affiliation, school context, and educational trajectories.

Results indicate that both advantaged socioeconomic familial resources and lower secondary track affiliation are important for educational pathways. A first major contribution of this study lies in demonstrating the structuring role of tracking in shaping transitions to the academic path. In line with Hypothesis 1, our results show that lower-secondary track placement exerts an exceptionally strong influence on Gymnasium attendance, and even after controlling for family background, school contexts, and competencies. Students from the high-requirements track had a 62-percentage-point higher probability of entering Gymnasium compared to

their peers in extended-requirements tracks, while students from basic tracks were almost fully excluded from direct entry. These results confirm that once placed in a particular educational track, students are likely to proceed through a standardized sequence of transitions within the system (Breen & Jonsson, 2000; Hillmert & Jacob, 2010; Reichelt et al., 2019). This further suggest that early institutional sorting in Switzerland functions as a powerful gatekeeping mechanism that generates strong path dependency (Heckhausen & Buchmann, 2019).

A second major contribution lies in accounting for the effects of school composition in addition to those of tracking. Students from advantaged origins may be particularly equipped to succeed in demanding tracks; they may often be oriented into advanced requirement tracks at lower secondary education and may frequently attend schools with a high mean socioeconomic status. In the contrary situation, children from less favourable social backgrounds face the opposite situation in terms of track attended and school contexts. In line with Hypothesis 2.1, our findings indicate that, in addition to socioeconomic background and tracking, advantaged socioeconomic school contexts significantly predict students' probabilities of transitioning to general baccalaureate. This is an important finding because upper-secondary transitions occur during adolescence, challenging life stage that implies physiological changes, and increased salience of the peer group (Buchmann & Kriesi, 2011; Dupriez, Orianne, et al., 2008). The result is in line with Dannefer's (2003) theory of cumulative advantage/disadvantage, and empirical findings on inequality (Blossfeld et al., 2016; Buchmann et al., 2021). The study also finds a positive relationship between the share of migrant peers in schools and the access to Gymnasium pointing at the complexity of the school context dynamics. These results call for further research on school context related to migration by considering differences in the migration student population characteristics by cantons or regions and their effects on educational choices.

Beyond those direct effects, our findings also confirm that the influence of family socioeconomic resources is partly *mediated* by tracking and that tracking is an important factor in the formation of homogeneous school contexts. Part of the predictive power of parental resources was absorbed by the institutional mechanism of early tracking as well as by school context. In addition, once school context variables were accounted for, the coefficients of tracking weakened substantially. Without concretely testing it, this points to the fact that tracking operates as the institutional channel through which origin- and context-based advantages are translated into later outcomes. The three aspects are indeed correlated. The results echo earlier research suggesting that lower secondary tracking structures and canalizes disparities in academic achievement into unequal educational opportunities (Brunello & Checchi, 2007; Gomensoro et al., 2025; Heckhausen & Buchmann, 2019).

These results further highlight the absence of interactions between socioeconomic resources and lower secondary tracking or school context, rejecting thus hypotheses 3.1, 3.2, 3.3 and 3.4. Socioeconomic background impacts the odds of

being placed in different lower secondary tracks or school contexts. However, once entry has been achieved, the different tracks and school contexts have the same impact on the odds of entering the Gymnasium, independently of socioeconomic resources. This suggests that socioeconomically advantaged students do not benefit more from being placed in a demanding lower secondary track or from attending a school with advantaged peers. Therefore, there are no differences in the relationship between lower secondary tracking and school contexts with Gymnasium entry when socioeconomic resources are taken into account.

To conclude, the findings underscore that tracking is closely associated with the institutional routes and learning contexts available to students and is also related to school composition. In addition, the association between socioeconomic background and Gymnasium attendance appears to operate partly through track placement. In doing so, it results in advantages for students from socioeconomically privileged backgrounds, while structurally restricting upward mobility for those from less advantaged origins. The Swiss case is instructive in this respect: because tracking occurs relatively early and is highly segregated, it leads to especially pronounced stratification of educational opportunities (Felouzis et al., 2011; Terrin & Triventi, 2023).

This resonates with comparative evidence on achievement showing that resources in the home exert a greater impact on achievement in more segregated and rigidly tracked systems (Engzell & Raabe, 2023). The first orientation at the entry of lower secondary education is thus crucial in Switzerland, also given the relatively low rates of track changes during lower secondary school (SCCRE, 2023). The absence of significant interactions nonetheless adds to ongoing debates. It suggests that, in Switzerland, where tracking occurs early and is strongly segregated, the *canalization* of post-compulsory pathways (Heckhausen & Buchmann, 2019) by track allocation is so strong that little room remains for additional amplification through interactions with family or school context. The Swiss case therefore highlights the decisive power of early institutional allocation.

Our study has various limitations. Modelling school composition is very complex (Thrupp et al., 2002). Here we have used three measures at the school level, but these only represent a part of what contextual characteristics are composed of. Future research should assess other characteristics to ensure the robustness of the findings and to explore further mechanisms that occur at different levels. Classroom composition has been shown to matter (Glauser et al., 2025), however, no (reliable) data thereon are available as part of TREE2. Furthermore, school organization is very complex and many schools, especially in the Western part of Switzerland, offer different educational programmes. There is no evidence in Switzerland on which compositional levels (for instance at the school level or at the class level) matter more. Moreover, beyond schools, many students are also exposed to their peers in other contexts, e. g. in sports clubs, daily activities, and in their neighbourhood. Like other countries, Switzerland has a certain degree of residential segregation, yet it appears to arise on a fairly small scale in many places. Moreover, social interactions

in leisure-time settings may serve as important mechanisms of social integration, which is an aspect that is not addressed in our analysis.

The organization of lower secondary education is complex and varies somewhat even within cantons, as some cantons allow different models (separate, cooperative, integrated) to coexist. It can be assumed that the composition of individual schools and their specific context also differ in terms of which and how many organizational models are offered per canton. Efforts are being made to avoid homogenization of schools (and classes) in terms of student body. However, since it is difficult to assess the effect of the composition of the student body on transitions, particularly in cases where schools differentiate according to performance, further research on this aspect would be desirable. To our knowledge, however, there is currently a lack of data on this subject.

10 References

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Appendix

Table A1 Logistic Regressions Predicting Gymnasium Attendance in 2017 by Parental Highest ISEI, Lower Secondary Tracking and School Contexts

	Model 1				Model 2				Model 3				Model 4			
	Coef.	P-value	95% Confidence Interval		Coef.	P-value	95% Confidence Interval		Coef.	P-value	95% Confidence Interval		Coef.	P-value	95% Confidence Interval	
Parental highest ISEI (divided by 10)	0.420	0.000	0.367	0.473	0.309	0.000	0.246	0.373	0.243	0.000	0.177	0.310	−0.212	0.529	−0.875	0.450
Lower secondary tracks (ref: extended requirements)																
High requirements					3.874	0.000	3.584	4.165	3.521	0.000	3.216	3.825	3.945	0.000	2.920	4.970
Basic/low requirements					−2.974	0.000	−3.884	−2.064	−2.979	0.000	−3.901	−2.057	−2.563	0.021	−4.743	−0.383
School mean ISEI (divided by 10)									0.891	0.000	0.662	1.120	0.309	0.472	−0.534	1.153
School proportion of migrant students									2.587	0.000	1.676	3.498	2.118	0.111	−0.491	4.726

Continuation of Table A1 on the next page.

Continuation of Table A1.

	Model 1			Model 2			Model 3			Model 4		
	Coef.	P-value	95% Confidence Interval	Coef.	P-value	95% Confidence Interval	Coef.	P-value	95% Confidence Interval	Coef.	P-value	95% Confidence Interval
School proportion of students reaching basic competencies							0.289	0.527	-0.608 1.186	0.670	0.684	−2.563 3.903
Interactions: Parental highest ISEI (divided by 10) # Lower secondary tracks (ref: extended requirements)												
High requirements										−0.063	0.420	−0.216 0.090
Basic/low requirements										−0.067	0.710	−0.420 0.286
Interactions: Parental highest ISEI (divided by 10) # School mean student ISEI (divided by 10)										0.092	0.158	−0.036 0.219

Continuation of Table A1 on the next page.

Continuation of Table A1.

	Model 1				Model 2				Model 3				Model 4			
	Coef.	P-value	95% Confidence Interval		Coef.	P-value	95% Confidence Interval		Coef.	P-value	95% Confidence Interval		Coef.	P-value	95% Confidence Interval	
Interactions: Parental highest ISEI (divided by 10) # School proportion of migrant students													0.068	0.738	−0.330	0.465
Interactions: Parental highest ISEI (divided by 10) # School proportion of students reaching basic competencies													−0.061	0.797	−0.529	0.406
Constant	−3.628	0.000	−3.989	−3.267	−4.787	0.000	−5.261	−4.313	−10.317	0.000	−11.681	−8.953	−7.452	0.001	−11.709	−3.195
Observations	7731				7731				7731				7731			
Pseudo R-squared	0.1008				0.5509				0.5793				0.5803			

Coef.: logarithm of the odds ratio; ISEI: International Socio-Economic Index; weighted calculation on TREE2.

Table A2 Average Marginal Effects of Parental Highest ISEI, Lower Secondary Tracking and School Contexts on Gymnasium Attendance in 2017, Including Control Variables

	Model 5				Model 6				Model 7			
	AME	P-value	95% Confidence Interval		AME	P-value	95% Confidence Interval		AME	P-value	95% Confidence Interval	
Parental highest ISEI (divided by 10)	0.048	0.000	0.042	0.054	0.025	0.000	0.021	0.030	0.018	0.000	0.014	0.023
Lower secondary tracks (ref: extended requirements)												
High requirements					0.539	0.000	0.488	0.591	0.439	0.000	0.375	0.503
Basic/low requirements					−0.053	0.000	−0.068	−0.039	−0.068	0.000	−0.086	−0.049
School mean ISEI (divided by 10)									0.067	0.000	0.050	0.085
School proportion of migrant students									0.138	0.000	0.070	0.207
School proportion of students reaching basic competencies									−0.045	0.162	−0.108	0.018
Observations	7 731				7 731				7 731			

AME: Average Marginal Effect; ISEI: International Socio-Economic Index; control variables: gender, language region, immigration status and mathematics test score; weighted calculation on TREE2.

Table A3 Logistic Regressions Predicting Gymnasium Attendance in 2017 by Parental Highest ISEI, Lower Secondary Tracking and School Contexts, Including Control Variables

	Model 5				Model 6				Model 7				Model 8			
	Coef.	P-value	95% Confidence Interval		Coef.	P-value	95% Confidence Interval		Coef.	P-value	95% Confidence Interval		Coef.	P-value	95% Confidence Interval	
Parental highest ISEI (divided by 10)	0.390	0.000	0.335	0.446	0.353	0.000	0.287	0.419	0.268	0.000	0.199	0.336	−0.360	0.309	−1.055	0.335
Lower secondary tracks (ref: extended requirements)																
High requirements					3.740	0.000	3.396	4.085	3.375	0.000	2.994	3.757	3.879	0.000	2.858	4.899
Basic/low requirements					−2.557	0.000	−3.506	−1.608	−2.517	0.000	−3.473	−1.562	−2.037	0.071	−4.249	0.174
School mean ISEI (divided by 10)									0.990	0.000	0.722	1.257	0.320	0.472	−0.552	1.192
School proportion of migrant students									2.031	0.000	1.028	3.033	0.586	0.698	−2.374	3.545
School proportion of students reaching basic competencies									−0.657	0.163	−1.580	0.266	−0.748	0.648	−3.958	2.462

Continuation of Table A3 on the next page.

Continuation of Table A3.

	Model 5				Model 6				Model 7				Model 8			
	Coef.	P-value	95% Confidence Interval		Coef.	P-value	95% Confidence Interval		Coef.	P-value	95% Confidence Interval		Coef.	P-value	95% Confidence Interval	
Gender (ref: female)																
Male	−0.715	0.000	−0.914	−0.517	−0.487	0.000	−0.741	−0.233	−0.566	0.000	−0.822	−0.310	−0.588	0.000	−0.837	−0.339
Language region (ref: German)																
French	0.617	0.000	0.343	0.891	−0.296	0.066	−0.612	0.019	−0.010	0.953	−0.340	0.320	−0.030	0.855	−0.356	0.296
Italian	1.099	0.000	0.747	1.451	−0.485	0.026	−0.912	−0.058	−0.007	0.978	−0.475	0.462	−0.049	0.834	−0.511	0.412
Immigration status (ref: Swiss)																
Second generation	0.956	0.000	0.672	1.240	1.133	0.000	0.769	1.498	0.885	0.000	0.466	1.303	0.904	0.000	0.489	1.319
First generation	0.628	0.000	0.292	0.965	1.225	0.000	0.673	1.777	0.944	0.001	0.365	1.523	0.933	0.002	0.345	1.520
AES mathematics test score	1.139	0.000	1.035	1.242	0.456	0.000	0.320	0.592	0.520	0.000	0.384	0.656	0.521	0.000	0.385	0.658

Continuation of Table A3 on the next page.

Continuation of Table A3.

	Model 5			Model 6			Model 7			Model 8			
	Coef.	P-value	95% Confidence Interval	Coef.	P-value	95% Confidence Interval	Coef.	P-value	95% Confidence Interval	Coef.	P-value	95% Confidence Interval	
Interactions: Parental highest ISEI (divided by 10) # Lower secondary tracks (ref: extended requirements)													
High requirements										−0.073	0.357	−0.227	0.082
Basic/low requirements										−0.079	0.670	−0.442	0.285
Interactions: Parental highest ISEI (divided by 10) # School mean student ISEI (divided by 10)										0.106	0.113	−0.025	0.237
Interactions: Parental highest ISEI (divided by 10) # School proportion of migrant students										0.224	0.315	−0.213	0.661

Continuation of Table A3 on the next page.

Continuation of Table A3.

	Model 5				Model 6				Model 7				Model 8			
	Coef.	P-value	95% Confidence Interval		Coef.	P-value	95% Confidence Interval		Coef.	P-value	95% Confidence Interval		Coef.	P-value	95% Confidence Interval	
Interactions: Parental highest ISEI (divided by 10) # School proportion of students reaching basic competencies													0.008	0.972	−0.453	0.470
Constant	−4.111	0.000	−4.541	−3.682	−5.247	0.000	−5.801	−4.694	−10.459	0.000	−12.091	−8.828	−6.491	0.005	−11.022	−1.961
Observations			7 731				7 731				7 731				7 731	
Pseudo R-squared			0.3204				0.5775				0.6006				0.6019	

Coef.: logarithm of the odds ratio; ISEI: International Socio-Economic Index; weighted calculation on TREE2.