European Societies

ISSN: (Print) (Online) Journal homepage: https://www.tandfonline.com/loi/reus20

Who chooses fast-track programs in mathematics? The role of class origin, ethnicity, and gender among Norwegian lower-secondary students

Håvard Helland, Øyvind Wiborg & Karl Ingar Kittelsen Røberg

To cite this article: Håvard Helland, Øyvind Wiborg & Karl Ingar Kittelsen Røberg (13 Apr 2023): Who chooses fast-track programs in mathematics? The role of class origin, ethnicity, and gender among Norwegian lower-secondary students, European Societies, DOI: 10.1080/14616696.2023.2197988

To link to this article: https://doi.org/10.1080/14616696.2023.2197988

EUROPEAN SOCIETIES
https://doi.org/10.1080/14616696.2023.2197988

RESEARCH ARTICLE

OPEN ACCESS Check for updates

Who chooses fast-track programs in mathematics? The role of class origin, ethnicity, and gender among Norwegian lower-secondary students

Håvard Helland [a], Øyvind Wiborg [a,b] and Karl Ingar Kittelsen Røberg [a]

[a]Center for the study of professions, OsloMet – Oslo metropolitan University, Oslo, Norway; [b]Department of Sociology and Human Geography, University of Oslo, Oslo, Norway

ABSTRACT

This article examines Norwegian lower-secondary students who enrol in fast-track programs in mathematics. These fast-track programs are designed to accommodate high-performing students who want a faster learning pace than the average student. In general, both educational performance and choice depend on class origin, ethnicity, and gender, according to research. Therefore, in studying the probability of entering the fast track, we focus on the role played by class origin, ethnicity, and gender. Our findings suggest that class origin and ethnicity affect students' choice to enter the fast track or not, but after accounting for their prior performance on national tests in 8th grade the initial differences are considerably smaller. There are no differences in this choice between boys and girls. Our analyses rely on high-quality Norwegian administrative register data on 10th-grade students from 2010 to 2014.

ARTICLE HISTORY Received 9 September 2022; Accepted 23 March 2023

EDITED BY Marii Paskov

KEYWORDS Accelerated learning; mathematics; social class; immigrants; gender

Introduction

This article examines inequalities based on immigrant status, social class background, and gender in the choice of the fast track in mathematics in Norwegian secondary schools. Fast tracks, in Norway, are accelerated

CONTACT Håvard Helland havard.helland@oslomet.no Center for the study of professions, OsloMet – Oslo metropolitan University, Oslo, Norway

Supplemental data for this article can be accessed online at https://doi.org/10.1080/14616696.2023.2197988.

learning trajectories in single subjects and allow advanced students to take classes and exams in single subjects at a higher grade level than their current one. Even in the US, where accelerated learning has a much longer history, the research focus has been on the *effects* of acceleration rather than on *recruitment* into accelerated tracks (Wells *et al.* 2009). This research consistently find that accelerated students outperform their non-accelerated peers (see, e.g. McClarty 2015). A meta-analysis of 'one hundred years of research' in the US found that acceleration has positive effects on students' academic achievement (Steenbergen-Hu *et al.* 2016). It is not evident that the results from the US are relevant for other types of educational systems and national contexts. In Scandinavian societies, for example, fast tracks are new and set up in a different way than in the US. The Norwegian educational system has always emphasized egalitarian values. However, a recent study has found similarly positive effects on the part of accelerated learning in Norway (Wiborg *et al.* 2022). Accelerated learning, thus, seems to be a learning-enhancing measure, and its distribution based on student background characteristics may amplify existing educational inequalities. Social class, gender, and ethnicity are arguably the core axis of educational stratification,[1] and our study of the classed, gendered, and ethnic selection into this, by Norwegian standards, elitist educational measure, thus adds to the literature on inequalities in education.

Here, we focus on accelerated learning in mathematics, which is considered one of the essential school subjects. Mathematical thinking is an integral part of several fields of study, e.g. natural science and engineering, and essential to many other educational fields, e.g. medicine, nursing, and social science. International organizations such as OECD and IEA regard the population's mathematical competence as decisive for economic growth and conduct periodic tests such as TIMMS, PISA, and PIAAC to monitor such skills. Advanced mathematical skills are also an asset at the individual level, and a necessary requirement for admission into prestigious educational fields such as medicine and graduate engineering. It is also the subject in which Norwegian pupils most often accelerate their learning by following the fast track (NOU 2016, 14). Even though mathematics is the most common subject to accelerate learning, no more than 1.4 per cent did so in our observation period.

[1]In a rare study of recruitment into accelerated learning tracks in the US, Wells, Lohman, and Marron (2009) found that, other things being equal, female students were accelerated more often than male students, high-SES students had a higher probability of being accelerated, and Asian American students were accelerated more often than other students.

Participation in accelerated learning normally presupposes good grades, and the choice of accelerated learning in mathematics is ambitious both because it entails extra effort and because the rewards are of a long-term kind. The effects of the background factors may in other words be expressed as what Boudon (1974) labeled *primary* and *secondary* effects. Primary effects are caused by differences in academic ability between social classes, which, in turn, affect educational attainment. Secondary effects are caused by systematic differences in choice based on varying costs and benefits of educational choices for different social classes.

Both the expected primary and secondary effects of social origin lead us to expect that pupils with high social class backgrounds more often will choose the accelerated track as compared to their peers. People with high social backgrounds tend to choose longer and more prestigious educations than those originating from the working class, both internationally (e.g. Breen and Jonsson 2005; Burgess *et al.* 2018), in the Nordic countries (Thomsen *et al.* 2017), and in Norway (Helland and Wiborg 2019). They also tend to receive better grades and drop out less often from both secondary and tertiary education (for Norwegian studies, see e.g. Andersen and Hansen 2011; Støren and Helland 2010; Hansen and Mastekaasa 2006; for an international study see e.g. Li and Carroll 2020).

The situation for immigrants and their descendants is more ambiguous because the expected primary and secondary effects lead to opposite expectations. On the one hand, immigrants and their descendants tend to make more ambitious educational choices (secondary effects) and, on the other hand, tend to perform below average in terms of grades and dropout rates from upper secondary school (primary effects) (Birkelund and Mastekaasa 2009 (Norway); Birkelund 2020 (Denmark)).

In terms of gender, our expectations are also less straight forward. Girls receive better school grades than boys in all subjects but physical education (Statistics Norway 2022), which would suggest that they will more often choose to follow the fast track (primary effects). Women also complete a tertiary education more often than men do, with the notable exception of STEM fields. One suggested explanation for this exception has been women's low confidence and low assessment of their own skills in STEM education and occupations (Hackett 1995) and STEM-relevant abilities, such as math (Correll 2001). Such a gender difference in self-assessment may result in girls choosing the accelerated track less often than their male peers (secondary effect).

We analyze rich Norwegian administrative register data covering all secondary students attending a school offering a fast-track program for at least one year from 2010 to 2014. The Norwegian setting represents a comparatively egalitarian climate, in which any particular concern for 'gifted' students is generally not encouraged. Knowledge about these fast-track programs is especially interesting because their elitism contradicts the generally egalitarian stance of the Norwegian school system. In this paper, we ask whether this measure may increase educational inequalities as an unintended side effect and compare the social backgrounds, gender ratios, and immigration backgrounds of participating and non-participating students at similar achievement levels.

Fast-tracking in egalitarian Norway

Conceptualizations and the political prioritization of schooling for gifted children vary greatly between countries (Brown and Wishney 2017). In most countries, there is a political tension between equity and excellence, and which of the two that is given priority is shaped by the dominant 'values, cultures, and politics of countries' (Brown and Wishney 2017, 31). In Norway, equity has been prioritized. Overall, Norwegian culture has been described as placing a strong emphasis on equality defined as sameness (Gullestad 1992), and Norwegians consider their country to be comparatively egalitarian, even more so than the inhabitants of other Scandinavian countries (Hjellbrekke *et al.* 2015). A literary, somewhat satirical formulation of this emphasis on equality defined as sameness is 'the law of Jante' (Sandemose 1936 [1933]), which is a norm of conformity that makes expressions of personal ambition and success and elevating oneself above one's peers unwanted.[2]

An important aspect of this egalitarianism has been the Norwegian tradition of a 'school for all' (Imsen and Volckmar 2014). In Norway, political measures to counteract persistent social inequalities in educational outcomes have largely been intended to make the available schooling as uniform as possible. All pupils within a geographical area, with their different abilities and class backgrounds, attend the same municipal school (Imsen and Volckmar 2014). A heterogeneous student population is also found within classrooms, and in Norwegian schools, there is normally no organizational differentiation based on pupils' abilities. In fact, the Education Act § 8–2 states that 'pupils shall not

[2]See, e.g., https://en.wikipedia.org/wiki/Law_of_Jante; https://www.peopleareculture.com/law-of-jante.

normally be organized according to their level of ability, gender or ethnic affiliation'. This tradition has also implied curtailing competition between schools, there is a strict cap on tuition fees for private schools that receive public support, and running such schools for profit is prohibited. In fact, private alternatives are only tolerated if they offer an alternative religious doctrine or an alternative pedagogy, i.e. Waldorf and Montessorri.

In recent years, however, international tests, such as PISA, have revealed generally mediocre performance, along with few students at the highest levels, in Norway (OECD 2016), fueling concern about the most 'gifted' students (Official Norwegian Reports NOU 2016, 14; Kjærnsli and Jensen 2016). The worry is that students with high academic potential are not offered a satisfactory learning environment. One response to these concerns has been to organize accelerated learning by placing 'gifted' students into classes in higher grades for specific subjects (Norwegian Ministry of Education and Research 2008–2009), an initiative that, in many ways, stands in contrast with previous policy.

The possible rewards of choosing accelerated learning in Norway are of a long-term kind. It may increase the student's mathematical skills, which may increase one's grades in upper secondary school, which then in turn may increase the student's probability of entering prestigious fields of higher education. Increased mathematical skills may of course also be advantageous in the completion of several fields of higher education. The choice does not, however, entail any important short-term advantages in lower secondary school. There is no retention in Norwegian lower secondary school, and everyone passes, regardless of attendance and results. Upon completion of lower secondary school, every youngster has a statutory right to admission to one out of three preferred educational programs in upper secondary (Helland *et al.* 2008). The choice does however imply some costs in the form of a larger workload, going to another school for lessons in the accelerated subject in some cases, and potential social sanctions for breaking with the egalitarian norms formulated in 'the law of Jante'. In this respect it may be seen as a version of what Schneider and Lysgaard (1953) labeled the *deferred gratification pattern*.

There are several forms of acceleration, and the one available for Norwegian students (living in municipalities that offer acceleration) is the form Kanevsky and Clelland (2013) label 'Concurrent or Dual Enrolment', which they describe as:

> The student is enrolled in one level but takes a course or courses at a higher level. Examples include taking calculus at the university level and receiving university credit for it upon successful completion while still enrolled in high school, or taking a high school course in chemistry while still enrolled in junior high school. (Kanevsky and Clelland 2013, 234)

It is the local school authorities, i.e. the municipality, who decide whether accelerated tracks are to be offered. This decision relies largely on convenience and available resources, together with initiatives from individual enthusiasts among teachers and/or administrators. Schools may offer fast-tracking to their students if a student is competent and wishes to enroll and their parents agree to the enrolment. There is no legal threshold for entering the accelerated track in Norway. The teacher must assess whether the student has met the learning objectives at his or her current level before the student may accelerate, but the student is not required to be a top performer, even though a large majority of the students who wish to follow the accelerated track are. The teacher's role thus is not that of a gatekeeper in any strict sense.

The underlying conception of giftedness is that it is not necessarily a general excellence but, rather, may well be confined to a single cognitive domain, and it is mainly math and English courses that are fast-tracked. Heuser *et al.* (2017) distinguish between giftedness understood as aptitude, e.g. as measured with IQ tests, and giftedness understood as achievement on curriculum-based standardized tests. The conception implicit in the Norwegian fast-tracking, with no legal threshold, is, strictly speaking, neither, but it is closer to the achievement conceptualization.

How students are recruited into accelerated tracks may affect the inequalities involved in recruitment. A US study of the consequences of a change in the Wake County Public Schools' assignment of middle school students to accelerated math and eighth-grade algebra showed that, when the county began basing these assignments on a defined prior achievement metric, it reduced 'the relationship between course assignment and student characteristics such as income and race/ethnicity, while increasing its relationship to academic skill' (Dougherty *et al.* 2015, 80). Because the recruitment into accelerated tracks in Norway is voluntary and based on student motivation, we may expect larger inequalities than in a more achievement-based system. The growth and proliferation of these programs in Norwegian lower and upper secondary schools has greatly increased since they were implemented in 2009. A recent study indicates that participation in such fast-tracking in mathematics has a positive effect on students

learning outcomes. Fast-track students get better grades in mathematics; both because they are better at math in the first place and because they learn more by attending the fast-track (Wiborg *et al.* 2022). The question of which students have taken advantage of this strange bird in the comparatively egalitarian Norwegian school system will be examined below.

How can the choice of accelerated learning be explained?

The decision to enroll in the fast-track in mathematics is completely voluntary in Norway and likely a joint result of several factors. First, the municipality and school must offer their students the opportunity. This can be controlled for in our analyses. Second, we expect the probability to follow accelerated learning in mathematics to vary with student characteristics. Based on the above description of accelerated learning in Norwegian lower secondary school, we assume that students who choose it are relatively *high performers*, that they have *higher long-term educational ambitions*, and that they *value and appreciate learning* and schoolwork more than peers who do not make the same choice. This may be seen as what Boudon (1974) labeled primary and secondary effects of social origin. Primary effects are caused by differences in academic ability between social classes, which, in turn, affect educational attainment. Secondary effects are caused by differences in choice based on varying costs and benefits of educational choices for different social classes. For students at this age, educational choices are often made together with or even by parents, thus reflecting, to some degree at least, the parents' ambitions on their children's behalf.

Even though the short-term rewards are small, to follow the accelerated track does seem to improve the students' performance in mathematics (e.g. Wiborg *et al.* 2022), so the long-term rewards are substantial. If the recruitment into accelerated learning varies with social class background, ethnicity, and gender, this may increase existing educational inequalities. There are no well-established theory covering these three dimensions of educational inequality, so we draw on several theories concerning these three background characteristics, and discuss how the average levels of school performance, educational ambitions and valuation of learning may vary along these three dimensions of inequality. Below, we discuss what expectations may be drawn from these potential explanations regarding differences based on ethnicity, sex, and social class origin.

Potential vertical and horizontal social class inequality

Regarding social background, it seems likely that this choice will be more common among students with upper- and middle-class social backgrounds than among their working-class peers. Both the expected primary and secondary effects point in this direction. On average, students with highly educated parents perform considerably better in school than their peers with parents without a tertiary education (Wiborg *et al.* 2022), which makes the pool of students considering accelerated learning larger. Even compared to working-class students at the same achievement level, middle-class students tend to make more ambitious educational choices. The theory of relative risk aversion (RRA) explains this by asserting that children make educational choices in order to avoid social demotion and downward social mobility relative to their parents (Breen and Goldthorpe 1997). Students with upper- and middle-class parents require more education in order to reach this goal than working-class students, and participation in accelerated tracks may be seen as part of a strategy to secure this goal. If so, we may expect that students of high social origins will be overrepresented among those who choose to participate in accelerated learning. Lucas's (2001) theory of effectively maintained inequality (EMI) points in the same direction. The theory describes a process in which middle-class families attempt to keep their children ahead in the school system. When a specific level of schooling becomes universal, middle-class parents secure their children's positions by sending them to the most prestigious academic tracks. Good grades in mathematics increase the chances of entering prestigious programs in higher education (like graduate engineering and medicine), and since accelerated learning in mathematics seem to improve mathematical achievement levels, we expect considerable middle-class over-representation in the accelerated mathematics program.

The theories of RRA and EMI do not say anything about horizontal differences between fractions within the upper and middle class with different compositions of cultural and economic capital, but the cultural reproduction theory of Bourdieu (e.g. Bourdieu and Passeron 1990) does. Such differences are not unlikely, and several previous studies of educational outcomes have found considerable horizontal differences within the middle class between fractions with different compositions of economic and cultural capital.[3] Both the expected primary and

[3]E.g., parents' involvement in their children's schooling (Strømme and Helland 2020), grades (Helland 2007; Andersen and Hansen 2011), and choice of educational field (Helland and Wiborg 2019).

secondary effects lead us to anticipate that students with a capital composition dominated by cultural capital will choose accelerated learning more often than their counterparts with more economic than cultural capital. First, students from fractions rich in economic capital are outperformed in school by students with more cultural than economic capital (Hansen and Mastekaasa 2006; Andersen and Hansen 2011). This suggests that the cultured middle-class fractions will be those with the largest shares in accelerated tracks. Because the accelerated tracks are entirely voluntary, it is possible that there are additional effects beyond differences in average grades. The relatively high social positions of parents in fractions with more cultural than economic capital are often based on educational credentials, and they tend to value learning and education particularly high. This may result in an even larger difference than the difference in average grades would suggest.

Recent research by Aarseth (2017) and Strømme and Helland (2020) has shown that students from backgrounds with more economic than cultural capital are more instrumental and goal-oriented in the short term, with pressure and strict rules about homework and grades. Parents from the class fraction with more cultural than economic capital, on the other hand, are more concerned with their children's pursuit of their own personal interests (Aarseth 2017), and parents' cultural resources are more positively correlated with the valuation of their children's pursuit of a higher education, than parents' economic resources are. In other word, the parents in the cultured fraction of the middle class put greater value on education and long-term educational goals. Such differences may result in students from the culturally prosperous fractions of the upper and middle classes choosing fast-tracks more often than students from the economically prosperous fractions given similar grades.

Potential differences between the ethnic majority and minority groups

Students with an immigrant origin or immigrant descent do certainly not constitute a homogenous group. They are truly diverse both in their cultural and economic resources and in their reasons for migration. But on average they differ from the majority when it comes to school adaptation. Particularly immigrants and the children of immigrants who come from 'less-developed non-European origins tend to have substantially lower educational attainment or

qualifications than do their respective majority groups' (Heath *et al.* 2008, 216). Often such origins are operationalized as non-Western countries, even though the heterogeneity is great within this group as well (Fekjær 2007; Heath *et al.* 2008). Students with origins in a Western country tend to be more similar to the majority, both in terms of average grades and choice ambitiousness. As we have touched upon above, another often used distinction is between students who have migrated from another country themselves and native-born children to such immigrants. Migrants tend to be at a greater disadvantage in school than their descendants of several reasons, e.g. because the process of migration itself may have been disruptive and they often lack fluency in the majority language.

Based on previous research on such students of non-Western immigrant origin or descent, the anticipated primary and secondary effects point in opposite directions. The average grade performance level of students with immigrant background are lower than that of the ethnic majority, which gives reasons to expect that non-Western minority students will choose accelerated learning more seldom than the majority (*primary effects*). However, even though ethnic minority students, on average, receive poorer grades than their ethnic majority classmates, they tend to make more ambitious choices in the educational system when students at the same achievement level are compared (*secondary effects*). Students with non-western immigrant backgrounds are particularly ambitious in their educational choices (Birkelund and Mastekaasa 2009, 223; Birkelund 2020). In tertiary education, ethnic minorities are overrepresented in elite professions such as medicine, dentistry, and science and underrepresented in less prestigious professions such as nursing, pre-school teaching, and social work (Støren 2009, 2011). This process begins in upper secondary school, when such students choose programs that qualify for tertiary education (Schou 2009). Such high ambitions are often seen as an expression of a stronger school performance drive. This stronger drive may be due to strong pro-education norms in tight ethnic networks, what Modood (2004) labeled ethnic capital. It may also be due to students' parents being positively selected from their countries of origin (Feliciano 2020; Feliciano and Lanuza 2017), or due to a feeling of gratitude toward one's parents and an understanding of school success and obtaining a prestigious higher education as a way of paying back one's parents (Leirvik 2014). Fast-track programs may, therefore, disproportionally attract students with non-Western

immigrant backgrounds, even though their average performance level is somewhat below the majority average. Particularly descendants of non-Western immigrants may be expected to be overrepresented in the accelerated track.

Potential gender inequality

Regarding gender differences, average grades (primary effects) and levels of ambitions (secondary effects) may lead to different expectations. Girls outperform boys in most subjects[4], which could lead us to expect them to choose the accelerated tracks more often than boys. Regarding mathematical ambitions, on the other hand, we might expect the opposite. According to Correll (2001, 2004), widely shared cultural beliefs about boys being better at math than girls affect the perceptions individuals have of their own mathematical ability, and boys tend to overestimate their mathematical ability, while girls underestimate theirs. In turn, such gender differences in self-assessment result in girls reducing their interest and effort in mathematical activities. Correll thus concludes that 'boys do not pursue mathematical activities at a higher rate than girls do because they are better at mathematics. They do so, at least partially, because they think they are better' (Correll 2001, 1724). Such differences in perceived mathematical ability may result in boys more often making the choice to follow the fast-track.

Analytical approach

Our analyses rely on linear probability models (LPM) with robust standard errors. The analytical setup follows the control variable method strategy. First, we assess the bivariate relationships between the central explanatory variables (class, parental education, gender, and ethnicity) and the outcome (choosing the fast-track or not). Then, we extend the model by including all of the main explanatory variables in the same model. Next, we include school-level fixed effects to account for all (observable and unobservable) differences between schools. Schools may differ on the composition of students, parents, and teachers, relevant sources making it attractive to attend the fast-tracks. Schools may also differ respect to whether and the extent they allow their students to attend fast-track. These decisions may intersect with socio-economic

[4]https://www.ssb.no/en/utdanning/grunnskoler/statistikk/karakterer-ved-avsluttet-grunnskole.

characteristics of parents, neighborhoods, and geographical locations. Finally, we include variables representing prior achievements on a standardized national test in mathematics. We control for 8th grade national tests on math since potential social origin effects on educational choice (*secondary effect*) may be due to differences in prior performance in math (*primary effect*). Demonstrated ability and performance have a strong social gradient. This is also shown for fast-track students in Norway (Wiborg *et al.* 2022). Our analyses then shed light on how much class origin, gender differences, and ethnicity influence the choice to enter accelerated tracks after accounting for prior performance levels in mathematics.[5] As is well known, the conventional control variable strategy may of course induce problems of endogeneity and collider problems (Elwert and Winship 2014). We have therefore also limited the number of control variables.

Data and variables

Our analyses rely on Norwegian administrative register data covering all lower secondary students from 2010 to 2014. Although the reform was implemented in 2008, very few schools opted for the fast tracks before 2010 (See Table A1). We only include schools offering a fast-track program for at least one year in this period. The data comprise 130,268 students, of whom 1884 students enrolled in the fast-track in mathematics.

Dependent variable: whether students participate in accelerated fast-tracks in mathematics

Our focus is on students who accelerate their learning in lower secondary school (grades 8–10). We operationalize fast-track students as students who participate in particular mathematics classes on an upper-secondary level for at least one year before leaving lower secondary schools. Most of these students are in the 9th grade, and only a few attend in 8th grade. Our dependent variable is dichotomized and indicates whether a student attends a fast-track in mathematics or not. Table 1 provides descriptive summary statistics of the dependent variable and the independent variables.

[5]We have also estimated interactions between the explanatory variables and prior achievements in mathematics, as well as between the explanatory variables and enrolment year. The estimated interaction effects were negligible and mostly insignificant.

Table 1. Descriptive statistics for all students and fast-track students in fast-track schools.

	All students			Fast track students		
Variable	Obs	Mean	S.D.	Obs	Mean	S.D.
Fast-tracked mathematics	130,268	.01	.12	1884	1	0
National Test Math (raw)	121,926	34.4	13.3	1823	49.14	8.1
National Test Math (z-scores)	121,926	.083	1.01	1823	1.41	.60
Cultural upper class	130,034	.051		1880	.12	
Professional upper class	130,034	.11		1880	.21	
Economic upper class	130,034	.11		1880	.13	
Cultural upper-middle class	130,034	.09		1880	.11	
Professional upper-middle class	130,034	.20		1880	.20	
Economic upper-middle class	130,034	.12		1880	.08	
Cultural lower-middle class	130,034	.02		1880	.01	
Professional lower-middle class	130,034	.09		1880	.04	
Economic lower-middle class	130,034	.05		1880	.03	
Skilled workers	130,034	.10		1880	.05	
Unskilled and semi-skilled workers	130,034	.05		1880	.02	
Farmers, fishermen, foresters	130,034	0.00		1880	.00	
Welfare, transference	130,034	.019		1880	.00	
Girls	130,268	.51		1884	.53	
Boys	130,268	.49		1884	.48	
Native	130,268	.69		1884	.66	
West (immigrant)	130,268	.11		1884	.12	
Non-west(immigrant)	130,268	.06		1884	.04	
West (descendant)	130,268	.07		1884	.10	
Non-west(descendant)	130,268	.08		1884	.09	

Independent variables: class origin, ethnicity, and gender

Our central explanatory variables are social class origin, gender, and immigrant background. Immigrant background and social class origin need to be described in more detail. Since we are interested in horizontal differences within the middle class between fractions with different compositions of economic and cultural capital, we measure social class origin with the Oslo Register Data Class Scheme (ORDC; Hansen *et al.* 2009). This class measure is constructed by combining register information on parents' occupation, income, and education. Like the more widely used EGP schema it captures vertical class differences, between upper-, middle-, and working-class students, but unlike EGP it also captures horizontal differences within the middle and upper classes between class fractions with different composition of cultural and economic capital. This provides three distinct categories: cultural, professional (with equal amounts of cultural and economic capital), and economic class fractions. We use the parents' highest achieved class position in the period 2003–2014 and choose the class position of the parent with the highest class-position (the dominance approach). The original scheme consists of 13 class

locations, but in our analyses below, we have simplified the scheme and distinguished between the 'cultural upper- and upper middle class', 'professional upper- and upper middle class', 'economic upper- and upper middle class', 'lower middle class', and 'working class and welfare dependents'. Appendix Figure 1 illustrates the class scheme with some example occupations. By using this variable, we more clearly distinguish groups with different capital compositions, than we would have done if we had used parents' education and income as separate variables. In robustness checks, we used the parents' highest achieved educational degree as a measure of family background, with quite similar results.[6]

For immigrant background, we distinguish between descendants and immigrants because we expect that immigrants meet larger obstacles in Norwegian schools. Because the number of students with origin in other countries than Norway is quite limited, we only distinguish between students of western and of non-western origins. The former consists of students who originate from Western Europe, North America, Australia and New Zealand, while the non-Western category consists of descendants and immigrants from Asia, Africa, and Latin America. The Eastern European countries are classified as Western if they are part of the European Union, and as non-Western if they are not. So, Poland and Hungary are classified as Western, whereas Moldova and Belarus are classified as Non-Western.

We include a national mathematics test for all students in the 8th grade. These test scores indicate the students' prior mathematics skill level and represent the most critical variable driving the selection into fast-tracks. Fast-track students are top achievers on these tests, as shown in Figure 1. We have standardized these scores within each school year because the potential maximum and minimum scores vary from test to test.

Results[7]

Our descriptive statistics (Table 1 and Figure 1) demonstrate that fast-track students are quite few (only 1.4%) and highly selected. Unsurprisingly, prior achievement in mathematics dominates. Figure 1 shows not only that the fast-track students performed much better, on average, than

[6]In Appendix Table 2.
[7]A replication package for the analyses is uploaded to Zenodo (doi:10.5281/zenodo.7760289).

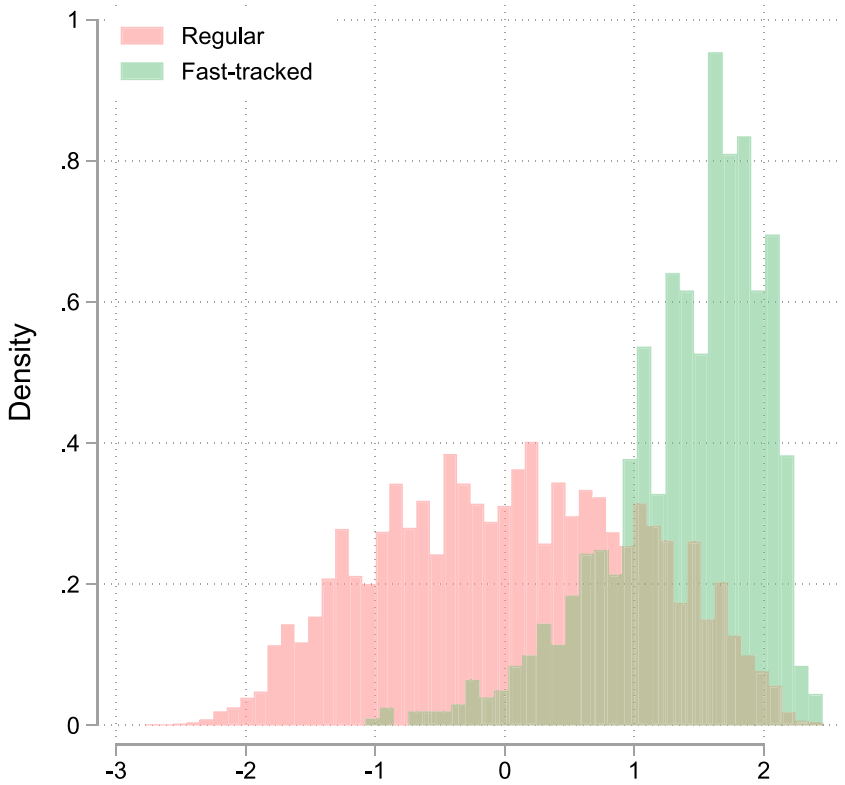

Figure 1. Density plot of results on 8th grade national tests in mathematics (z-scores) among fast-tracked students and all other students.

regular students but also that their distribution is denser around the mean than the distribution of regular students. Only a few fast-track students perform below the mean on the national mathematics tests, and nearly no fast-track students perform more than two standard deviations below the mean performance. However, the scores of regular students are normally distributed around the mean, and they range typically between two standard deviations below and above the mean.

The roles played by class origin, ethnicity, and gender

According to Table 1, students with high social class origins are overrepresented among the fast-track students. We also see that girls and descendants are slightly overrepresented. In Table 2, below, we test whether these bivariate associations are confounded or suppressed by including control variables. In Model 1, we include the three background variables

Table 2. Probability of fast-track participation in math dependent on student background controlling for national tests (NT) in math, reading and English.

	(1) LPM		(2) FE(schools)		(3) FE(schools)+NT	
Class						
Cultural upper	0.020***	(0.002)	0.020***	(0.001)	0.005***	(0.001)
Professional upper	0.015***	(0.001)	0.015***	(0.001)	0.002	(0.001)
Economic upper	0.008***	(0.001)	0.007***	(0.001)	−0.003*	(0.001)
Lower middle	0.002**	(0.001)	0.002	(0.001)	−0.003*	(0.001)
Working class/welfare	*Ref.*		*Ref.*		*Ref.*	
Gender						
Girls	*Ref.*		*Ref.*		*Ref.*	
Boys	−0.001	(0.001)	−0.001	(0.001)	0.002***	(0.001)
Immigrant						
Native	*Ref.*		*Ref.*		*Ref.*	
West (immigrant)	0.003**	(0.001)	0.002*	(0.001)	0.002	(0.001)
Non-west(immigrant)	−0.001	(0.001)	−0.002	(0.001)	0.005***	(0.002)
West (descendant)	0.006***	(0.002)	0.005***	(0.001)	0.005***	(0.001)
Non-west(descendant)	0.007**	(0.002)	0.007***	(0.001)	0.010***	(0.001)
Year						
2010	−0.025***	(0.002)	−0.025***	(0.001)	−0.025***	(0.001)
2011	−0.022***	(0.002)	−0.021***	(0.001)	−0.021***	(0.001)
2012	−0.019***	(0.002)	−0.019***	(0.001)	−0.019***	(0.001)
2013	−0.013***	(0.002)	−0.013***	(0.001)	−0.012***	(0.001)
2014	*Ref.*		*Ref.*		*Ref.*	
National Test Math (*z*-score)					0.020***	(0.000)
Constant	0.019***	(0.002)	0.020***	(0.001)	0.026***	(0.001)
N Students	130,034		130,034		121,855	
N Schools			295		295	

Schools offering fast-tracks. Linear probability models (LPM) and LPM with Fixed effects on School-level (FEschools).
Robust standard errors clustered on the school level in parentheses.
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

(sex, immigrant status, and social class background) and year of enrolment. In Model 2, we also include fixed effects on the part of schools, and in Model 3, we also include results from the national mathematics test.

The table shows highly significant effects. The share of accelerated students in the cultural fraction of the upper- and upper-middle classes is twice as high as the share of students from the working class. We also see that school characteristics do not seem to matter for the correlations between the background characteristics and the probability of choosing the fast-track (Model 2). Previous achievement in mathematics, on the other hand, seems to affect the other coefficients considerably (Model 3). In Figures 2–4 below, we compare the estimated shares of different groups in the fast-track in mathematics in models that do not control for results on national tests (Model 2, in Table 2) with the same estimates from models that include such controls (Model 3, in Table 2). Figure 2 shows how these estimates vary by social class origin.

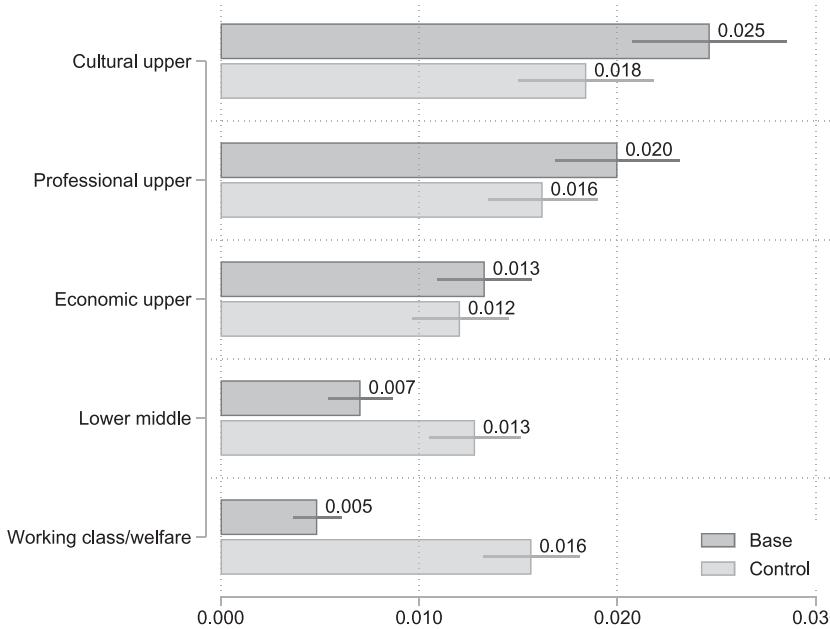

Figure 2. Estimated shares in fast-track in mathematics by social class origin, with and without control for results on national tests.

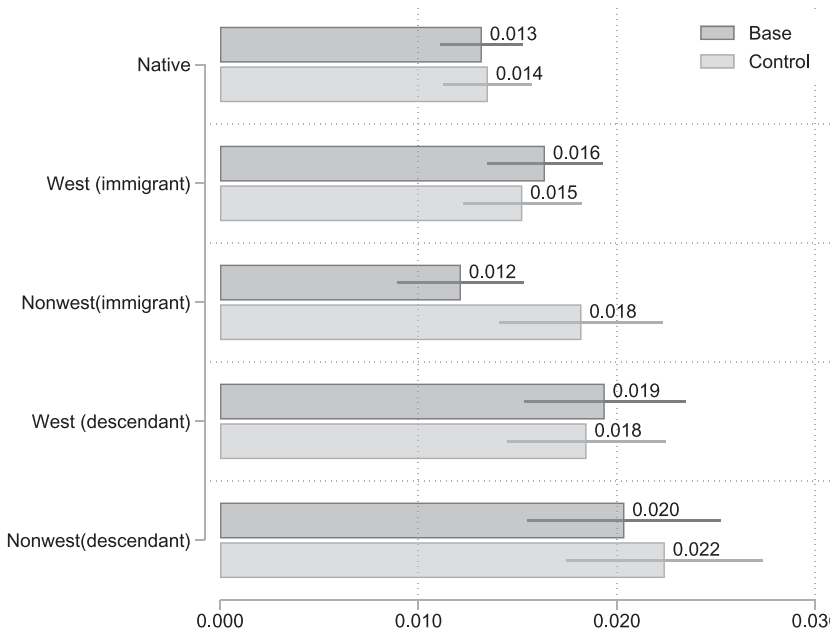

Figure 3. Estimated shares in fast-track in mathematics by immigrant status, with and without control for results on national tests.

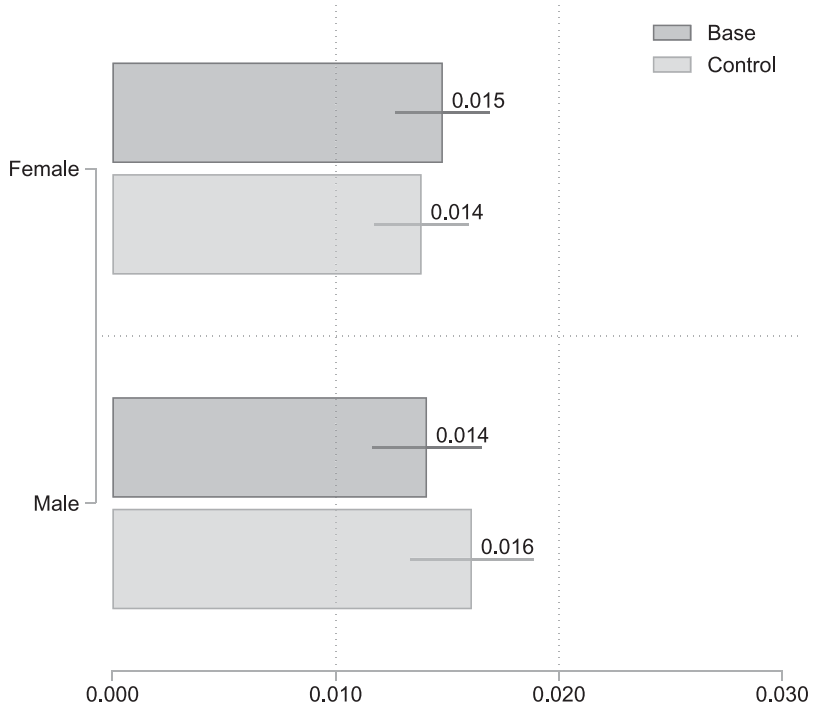

Figure 4. Estimated shares in fast-track in mathematics by sex, with and without control for results on national tests.

In the upper panel of Figure 2, we see considerable social differences in the propensity to choose accelerated learning in mathematics. Without controlling for achievement level, the students originating in the upper middle class have a considerably higher probability of enrolling in the accelerated track in mathematics than their working-class peers. This is particularly evident among students originating in the cultured fraction of the upper-middle class. After controlling for results on the national tests in the lower panel, however, the vertical social differences disappear. Some of the coefficients (in Model 3, Table 2) are still statistically significant, but they are very close to zero, and the differences they signify are without much practical significance. In the model controlling for prior achievement, the difference between the cultural and economic fractions of the upper-middle class is, in fact, larger than the difference between the cultural fraction and the working-class. When we compare students with the same previous achievement level, those originating from the economic upper-middle class are least likely to manifest the kind of educational ambition that the choice of accelerated learning would

indicate. In Figure 3, below, we show how similar estimated shares vary by immigrant background.

The analyses show that immigrant backgrounds matter for choosing to enter a fast-track in mathematics. Students who are descended from immigrants, particularly descendants of immigrants from non-western countries, i.e. mainly Asia and Africa, have a higher probability of choosing fast-tracks in mathematics than students without immigrant backgrounds. Controlling for prior achievement in mathematics only strengthens this pattern. Figure 4 shows the shares of boys and girls who choose the fast track, with and without controlling for previous achievement.

Contrary to our expectations, we do not find any noteworthy difference between girls and boys. To be sure, Figure 4 shows a slight difference when we control for previous ability, but it is very small and within the confidence interval.

Discussion and conclusion

A decision to enroll in the fast-track in mathematics is likely the joint result of (a) whether the municipality and school offer their students the opportunity, (b) the students' achievement level, and (c) the students' and their parents' levels of educational ambition. In our analyses, we have controlled for the first and second of these potential explanations, and we saw that students' achievement levels were an important driver of social class differences in the probability of choosing the fast-track. We are not able to identify any causal effects in our analyses, but in the following, we will discuss how these potential explanatory factors may contribute to the patterns we observe.

Whether or not the municipalities and schools offer their students the pursuit of accelerated learning is, of course, a necessary condition, but school characteristics do not seem to matter regarding our correlations of interest. By that we mean that the differences between the coefficients in the model with school fixed effects and the models without are negligible. One objection to such an interpretation could be that schools with a fast-track option may differ from schools without one in terms of student intake (due to self-selection processes). We cannot rule out such a possibility but find it quite unlikely. The number of students choosing accelerated learning is quite low even in the schools that offer it, and the fact that all pupils within a geographical area attend the same municipal school (Imsen and Volckmar 2014), implies that students who want to get into a fast track but who live in municipalities without a fast-track

option need to move to another municipality. In our opinion many people would probably consider this as a too heavy investment in something with small short-term returns.

At the individual level, a high level of achievement is also an important condition, and this seems to matter to different degrees for different groups. In the analyses above, we have found that the fast track in mathematics is a more common choice among students with an upper- or upper-middle-class background with more cultural than economic capital than among students of other social origins. This is probably, to a large extent, due to cultural middle-class students receiving better grades. When we compare students at similar achievement levels, social differences are considerably reduced, which implies that the social difference in propensity to enroll in the fast-track program operates through social differences in academic results (i.e. primary effects). Inasmuch as following the fast track in mathematics increase the student's mathematical skills (Wiborg *et al.* 2022), this social difference in representation will probably increase the already considerable social differences in average school performance.

In previous research, students with middle-class background have been found to perform better than their working-class peers and to make more ambitious educational choices. The former is clear in our analyses as well, but there are few traces of what Boudon (1974) labeled a secondary effect of social background (net of grades) on this particular educational choice. The Bourdieusian perspective is perhaps a better fit to our data. This perspective describes processes in which the school expects and rewards cultural capital, resulting in middle-class students receiving better grades. These better grades, in turn, result in middle-class students making more ambitious choices, such as choosing the fast-track of accelerated learning in mathematics.

The Bourdieusian perspective also suggests that we should expect horizontal differences within the middle class, and we find that, after controlling for prior achievement, the difference between the cultural and the economic fractions of the upper-middle class is, in fact, larger than the difference between the cultural fraction and the working class. When we compare students with the same previous achievement levels, those originating from the economic upper-middle class are least likely to manifest the kind of educational ambition that the choice of accelerated learning may indicate.

Previous research has described parents in the economic fraction as more instrumental and goal-oriented than parents from the cultural

fraction of the middle class (Aarseth 2017). Applied to the choice of accelerated learning in mathematics, such parental instrumentalism may imply a weighing of costs and benefits resulting in the conclusion that accelerated learning is too costly a choice with small short-term rewards. Parents from the cultural upper- and upper-middle classes, on the other hand, may be more oriented toward a general valuation of knowledge and schooling, resulting in a wish that their children learn as much as possible and their encouraging the choice of accelerated learning in mathematics. The education system is an important institution for the production of cultural capital. The cultural fraction of the middle class performs better at school and is also more dependent of the education system to get ahead in life, whereas the economic fraction may, in addition, rely on economic capital.

Above, we also found that the fast track in mathematics is a more common choice among students who are descendants of non-western immigrants than those of Western or majority origins. Unlike the social differences discussed above, this is probably not due to differences in achievement levels; since the difference is strengthened rather than weakened after controlling for achievement level. If more descendants of non-Western immigrants improve their achievement levels through participating in accelerated learning, it may imply that whereas the social differences discussed above may increase existing social differences, the overrepresentation of descendants of non-western immigrants in the fast track may have an equalizing effect because this group has lower average grades than their majority peers. The students with background from a Western country, are more similar to the majority students and their probability is between that of the non-Western descendants and the majority.

Previous research has established patterns indicating particularly high levels of educational ambition among students with non-Western immigrant backgrounds, or secondary (choice) effects (e.g. Birkelund 2020), and this is probably a part of the explanation. This stronger immigrant drive in the education system has been explained with reference to effective pro-education norms in tight ethnic networks, what Modood (2004) labels ethnic capital. Another potential explanation is that the immigrants' parents are positively selected from their country of origin (Feliciano 2020; Feliciano and Lanuza 2017). A third potential explanation, which is related to the first, is that school success is a way to pay back and express gratitude toward one's parents (Leirvik 2014). All three mechanisms may result in fast-track programs being

disproportionally attractive to students with non-Western immigrant backgrounds, even though their average performance on national tests is at a lower level.

Unlike social class and ethnicity, we do not find significant differences between girls and boys in their probability of following the fast-track in mathematics. This lack of any notable sex differences was at odds with our expectations of an overrepresentation of boys. This expectation was based both on the fact that boys, to a greater extent than girls, choose to pursue careers in mathematics and natural sciences (STEM) and on Correll's (2001, 2004) finding that widely shared cultural beliefs result in boys overestimating their mathematical ability and girls underestimating theirs. One possible interpretation of this equality between boys and girls may be that cultural beliefs about boys being better than girls in mathematics are less widely shared in Norway than in the United States, where Correll did her research. Norwegian culture is comparatively egalitarian, and in the Global Gender Gap Index 2020, created by the World Economic Forum (2020), Norway is ranked second, whereas the United States is ranked 53rd.

This study's setting in Norway, with its egalitarian cultural sentiments, will likely affect the results in other respects as well. Inasmuch as such anti-elitist norms are upheld, they will likely make accelerated learning less attractive, and it is quite likely that social inequalities would have been larger in less egalitarian settings.

Disclosure statement

No potential conflict of interest was reported by the author(s).

Funding

This work was supported by Norges Forskningsråd [grant number 287132].

Notes on contributors

Håvard Helland is professor at the center for the study of professions at Oslo Metropolitan University. His main research interests are social inequalities in education and the labour market. Recent articles have appeared in *British Journal of Sociology*, *Work & Occupations* and *British Journal of Sociology of Education*.

Øyvind Wiborg is Professor of Sociology at the University of Oslo. Important fields of research are social inequality in education and wealth, and quantitative methods.

Recent articles have appeared in *European Sociological Review*, *American Behavioral Scientist* and *Research in Social Stratification and Mobility*.

Karl Ingar Kittelsen Røberg is a Senior Researcher at Oslo Metropolitan University. His main research interests are labour market returns to higher education, welfare and Labour Research. Recent articles have appeared in Teaching and Teacher Education and Journal of Education and Work.

ORCID

Håvard Helland http://orcid.org/0000-0002-1231-1434
Øyvind Wiborg http://orcid.org/0000-0001-6826-609X
Karl Ingar Kittelsen Røberg http://orcid.org/0000-0002-8734-6527

References

Aarseth, H. (2017) 'Fear of falling – fear of fading: the emotional dynamics of positional and personalised individualism', *Sociology* 52(2): 1087–102.

Andersen, P. and Hansen, M. N. (2011) 'Class and cultural capital: the case of class inequality in educational performance', *European Sociological Review* 28(5): 607–21.

Birkelund, J. F. (2020) 'Aiming high and missing the mark? Educational choice, dropout risk, and achievement in upper secondary education among children of immigrants in Denmark', *European Sociological Review* 36(3): 395–412. doi:10.1093/esr/jcz064.

Birkelund, G. E. and Mastekaasa, A. (eds.). (2009). *Integrert? Innvandrere og barn av innvandrere i utdanning og arbeidsliv*, Oslo: Abstrakt forlag.

Boudon, R. (1974) *Education, Opportunity and Social Inequality*, New York: John Wiley & sons.

Bourdieu, P. and Passeron, J. C. (1990) *Reproduction in Education, Society and Culture*, London: Sage.

Breen, R. and Goldthorpe, J. H. (1997) 'Explaining educational differentials – towards a formal rational action theory', *Rationality and Society* 9: 275–305.

Breen, R. and Jonsson, J. O. (2005) 'Inequality of opportunity in comparative perspective: recent research on educational attainment and social mobility', *Annual Review of Sociology* 31: 233–43.

Brown, E. F. and Wishney, L. R. (2017) 'Equity and excellence: political forces in the education of gifted students in The United States and abroad', *Global Education Review* 4(1): 22–33.

Burgess, S., Crawford, C. and Macmillan, L. (2018) 'Access to grammar schools by socio-economic status', *Environment and Planning A: Economy and Space* 50(7): 1381–5. doi:10.1177/0308518X18787820.

Correll, S. J. (2001) 'Gender and the career choice process: The role of biased self-assessments', *American Journal of Sociology* 106(6): 1691–730.

Correll, S. J. (2004) 'Constraints into preferences: gender, status, and emerging career aspirations', *American Sociological Review* 69(1): 93–113.

Dougherty, S. M., Goodman, J. S., Hill, D. V., Litke, E. G. and Page, L. C. (2015) 'Middle school math acceleration and equitable access to eighth-grade algebra:

evidence from the Wake County Public School System', *Educational Evaluation and Policy Analysis* 37(1S): 80S–101S.

Elwert, F. and Winship, C. (2014) 'Endogenous selection bias: the problem of conditioning on a collider variable', *Annual Review of Sociology* 40(1): 31–53. doi:10.1146/annurev-soc-071913-043455.

Fekjær, S. N. (2007) 'New differences, old explanations. Can educational differences between ethnic groups in Norway be explained by social background?', *Ethnicities* 73(3): 367–89.

Feliciano, C. (2020) 'Immigrant selectivity effects on health, labor market, and educational outcomes', *Annual Review of Sociology* 46: 315–34.

Feliciano, C. and Lanuza, Y. R. (2017) 'An immigrant paradox? Contextual attainment and intergenerational educational mobility', *American Sociological Review* 82(1): 211–41.

Gullestad, M. (1992) *The Art of Social Relations: Essays on Culture, Social Action and Everyday Life in Modern Norway*, Oslo: Scandinavian University Press.

Hackett, G. (1995) *Self-Efficacy in Career Choice and Development*, Cambridge: Cambridge University Press.

Hansen, M. N., Flemmen, M. and Andersen, P. L. (2009) *The Oslo Register Data Class Scheme (ORDC)*, Oslo: Department of Sociology and Human Geography, University of Oslo.

Hansen, M. N. and Mastekaasa, A. (2006) 'Social origins and academic performance at university', *European Sociological Review* 22(3): 277–91. doi:10.1093/esr/jci057.

Heath, A. F., Rothon, C. and Kilpi, E. (2008) 'The second generation in Western Europe: education, unemployment, and occupational attainment', *The Annual Review of Sociology* 34: 211–35.

Helland, H. (2007) 'How does social background affect the grades and grade careers of Norwegian economics students?', *British Journal of Sociology of Education* 28 (4): 489–504. doi:10.1080/01425690701369582.

Helland, H., Lødding, B., Markussen, E., Sandberg, N. and Aasen, P. (2008) 'Education and training of 15-20 year olds in Norway', *Formazione & Insegnamento* VI(1/2): 137–62.

Helland, H. and Wiborg, Ø (2019) 'How do parents' educational fields affect the choice of educational field?', *British Journal of Sociology* 70(2): 481–501.

Heuser, B. L., Wang, K. and Shahid, S. (2017) 'Global dimensions of gifted and talented education: the influence of national perceptions on policies and practices', *Global Education Review* 4(1): 4–21.

Hjellbrekke, J., Jarness, V. and Korsnes, O. (2015) 'Cultural distinctions in an "egalitarian" society', in P. Coulangeon and J. Duval (eds.), *The Routledge Companion to Bourdieu's Distinction*. Abingdon: Routledge, pp. 187–206.

Imsen, G. and Volckmar, N. (2014) 'The Norwegian school for all: historical emergence and neoliberal confrontation', in U. Blossing, G. Imsen and L. Moos (eds.), *The Nordic Education Model*. Springer Netherlands, pp. 35–55. doi:10.1007/978-94-007-7125-3_3

Kanevsky, L. S. and Clelland, D. (2013) 'Accelerating gifted students in Canada: policies and possibilities', *Canadian Journal of Education* 36(3): 229–71.

Kjærnsli, M. and Jensen, F. (eds.). (2016). *Stø kurs. Norske elevers kompetanse i naturfag, matematikk og lesing i PISA 2015 [A Steady Course. Norwegian Students'*

Competence in Science, Mathematics and Reading in PISA 2015], Oslo: Universitetsforlaget.

Leirvik, M. S. (2014) *Mer enn klasse: betydningen av "etnisk kapital" og "subkulturell kapital" for utdanningsatferd blant etterkommere av innvandrere*, Oslo: Doktoravhandlinger forsvart ved Det samfunnsvitenskapelige fakultet, Universitetet i Oslo. No. 444.

Li, W. and Carroll, D. R. (2020) 'Factors influencing dropout and academic performance: an Australian higher education equity perspective', *Journal of Higher Education Policy and Management* 42(1): 14–30. doi:10.1080/1360080X.2019.1649993.

Lucas, S. R. (2001) 'Effectively maintained inequality: education transitions, track mobility, and social background effects', *American Journal of Sociology* 106(6): 1642–90. doi:10.1086/321300.

McClarty, K. L. (2015) 'Life in the fast lane: effects of early grade acceleration on high school and college outcomes', *Gifted Child Quarterly* 59(1): 3–13.

Modood, T. (2004) 'Capitals, ethnic identity and educational qualifications', *Cultural Trends* 13(50): 87–105.

Norwegian Ministry of Education and Research (2008–2009) *Education Strategy*. Report No. 44 (2008–2009) to the Storting.

NOU (2016) *More to Gain: Better Learning for Students with Higher Learning Potential* (Official Norwegian Reports NOU 2016: 14). Ministry of Education and Research. https://www.regjeringen.no/en/dokumenter/nou-2016-14/id2511246/.

OECD (2016) *PISA 2015 Results (Volume I): Excellence and Equity in Education*, Paris: OECD Publishing. doi:10.1787/9789264266490-en

Sandemose, A. (1936 [1933]) *A Fugitive Crosses his Tracks*, New York: A.A. Knopf.

Schneider, L. and Lysgaard, S. (1953) 'The Deferred Gratification Pattern. A Preliminary Study', *American Sociological Review* 18(2): 142–149.

Schou, L. (2009) 'Mot en etnisk arbeidsdeling i høyere utdanning?', in G. E. Birkelund and A. Mastekaasa (eds.), *Integrert? innvandrere og barn av innvandrere i utdanning og arbeidsliv*, Oslo: Abstrakt forlag, pp. 109-124.

Statistics Norway (2022) *Marks and national tests, lower secondary school*. Available from: https://www.ssb.no/en/utdanning/grunnskoler/statistikk/karakterer-ved-avsluttet-grunnskole [Accessed 24 Jan 2023].

Steenbergen-Hu, S., Makel, M. C. and Olszewski-Kubilius, P. (2016) 'What one hundred years of research says about the effects of ability grouping and acceleration on K-12 students' academic achievement: findings of two second-order meta-analyses', *Review of Educational Research* 86(4): 849–99.

Støren, L. A. (2009) *Choice of study and persistence in higher education by immigrant background, gender, and social background*. NIFU STEP rapport, 2009-43, Oslo: NIFU STEP.

Støren, L. A. (2011) 'Pursuing educational ambitions? Higher education enrolment and the choice of study programmes among immigrant and non-immigrant youth in Norway', *Irish Educational Studies* 30(2): 159–77. doi:10.1080/03323315.2011.569138.

Støren, L. A. and Helland, H. (2010) 'Ethnicity differences in the completion rates of upper secondary education: how do the effects of gender and social background

variables interplay?', *European Sociological Review* 26(5): 585–601. doi:10.1093/esr/jcp041.

Strømme, T. B. and Helland, H. (2020) 'Parents' educational involvement: types of resources and forms of involvement in four countries', *British Educational Research Journal* 46(5): 993–1011. doi:10.1002/berj.3609.

Thomsen, J.-P., Bertilsson, E., Dalberg, T., Hedman, J. and Helland, H. (2017) 'Higher education participation in the Nordic countries 1985–2010 – a comparative perspective', *European Sociological Review* 33(1): 98–111. doi:10.1093/esr/jcw051.

Wells, R., Lohman, D. and Marron, M. (2009) 'What factors are associated with grade acceleration? An analysis and comparison of two U.S. databases', *Journal of Advanced Academics* 20: 248–73.

Wiborg, ØN, Helland, H. and Røberg, K. I. (2022) Accelerated learning in mathematics: improved learning or teacher bias? doi:10.31235/osf.io/9wc4d.

World Economic Forum (2020) *Global Gender Gap. Insight Report*, Report 2020. Available from: https://www3.weforum.org/docs/WEF_GGGR_2020.pdf [Accessed 10 Aug 2022].