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Roma students' academic self-assessment and educational aspirations in Hungarian primary schools

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ABSTRACT

Using a unique database from Hungarian primary schools, this study investigates whether academic self-assessment and educational aspirations differ between Roma minority and non-Roma majority students with similar cognitive skills and abilities. I find that Roma students have lower self-assessment, on average, than their non-Roma classmates with similar competences. In addition, although there are no ethnic differences in educational aspirations two years before secondary school application, Roma students are less likely to actually apply to a secondary school track that provides the possibility to enter tertiary education. Roma students' lower socioeconomic status can partly explain these differences. The analysis also shows that students' self-assessment is more strongly related to teacher-given grades than to blind standardised test scores. The study highlights important mechanisms that can contribute to educational inequalities between minority and majority students.

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Introduction

In many countries, a significant ethnic gap exists in academic achievement and educational attainment (Ammermueller 2007; Jonsson and Rudolphi 2011; Rangvid 2007). These educational outcomes are not only influenced by students' cognitive skills and abilities; they are also associated with noncognitive skills, including self-esteem and self-evaluation, and school-related traits such as academic self-concept, self-confidence, and self-perceptions of competence (Braithwaite and Corr 2016; Guay, Boivin, and Hodges 1999; Judge et al. 2002; Keller 2016, 2018; Li-Ya Wang, Fraser, and Burns 1999; Mendolia and Walker 2014; Pulford, Woodward, and Taylor 2018; Szabó-Morvai and Kiss 2020). If minority and majority students differ in these traits, it might contribute to the ethnic gap in achievement and attainment by influencing motivations, efforts, and aspirations (Elder and Zhou 2021; Szabó-Morvai and Kiss 2022).

This study investigates whether academic self-assessment and educational aspirations differ between Roma minority and non-Roma majority students with similar cognitive

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skills and abilities. The Roma constitute one of the largest ethnic minorities in Europe (O'Nions 2016). In many countries, Roma minorities face multiple disadvantages due to strong economic and social exclusion (Ciaian and Kancs 2016; Kertesi and Kézdi 2011), prejudice, and discrimination (Brüggemann and D'Arcy 2017; FRA 2019; Milcher and Fischer 2011; Váradi 2014; Watson and Downe 2017). Residential and school segregation of the Roma is also widespread (Arabadjieva 2016; Araújo 2016; Kemény and Janky 2006; Kertesi and Kézdi 2012). Due to lower socioeconomic and health conditions (Janevic et al. 2017; Kertesi and Kézdi 2011), many Roma children already accumulate cognitive disadvantages by the time they enter primary school. During primary and secondary education, Roma students often attend segregated schools with lower-quality education and are more likely than majority students to be assigned to low-ability tracks (Cashman 2017; Messing 2017). These processes contribute to persistent educational inequalities (FRA 2018): Roma students' mean standardised test scores substantially lag behind those of non-Roma students (Hajdu, Kertesi, and Kézdi 2019; Kertesi and Kézdi 2011).

Although a growing number of studies shows that educational inequalities do not necessarily lead to lower academic self-confidence and aspirations among children of immigrants (Engzell 2019; Jonsson and Rudolphi 2011; Salikutluk 2016), I argue that the widespread experience of segregation, stereotypes, prejudice, and discrimination might result in lower academic self-assessment and aspirations among students from nonimmigrant minority groups. Children of immigrants are a positively selected group on education: they usually rank high in the educational distribution in their country of origin (Engzell 2019; Feliciano and Lanuza 2017). This educational selectivity leads to a high level of motivation, aspirations, and resilience in immigrant families, which might help them overcome difficulties and experiences of discrimination in their host country. It might also explain their ambitious educational choices and their high rates of succession to the academic tracks (Engzell 2019). In contrast to immigrant groups, nonimmigrant minority groups such as the Roma in Europe or African Americans in the United States have been facing educational and labour market discrimination for multiple generations (Fordham and Ogbu 1986; Ogbu 1978, 2004). Due to persistent experiences of limited social and economic opportunities, these minority groups might have lost the motivation and other noncognitive skills that immigrant families still have in their host country. Therefore, I expect that besides their lower average academic achievement, Roma students also have lower academic self-assessment and educational aspirations, even if they have similar cognitive skills and abilities to majority students.

In this study, I use a unique database to investigate the academic self-assessments and educational aspirations of Roma students. Self-reported survey data collected among Hungarian Roma and non-Roma primary school students on self-assessment, aspirations, and secondary school track choice have been merged with administrative data on standardised achievement scores in reading and mathematics that were evaluated anonymously. In contrast to teacher-given school grades, which are often biased against minority students (Botelho, Madeira, and Rangel 2015; Burgess and Greaves 2013; Hinnerich, Höglin, and Johannesson 2015; Kisfalusi, Janky, and Takács 2021; Kiss 2013; Sprietsma 2013; Triventi 2020), blind standardised test scores provide a more objective measurement of cognitive skills and abilities. Therefore, I can compare the self-assessment and aspirations of Roma and non-Roma students who are equally competent. Furthermore, since the survey data cover entire classrooms, I can control for the effect of different class characteristics by comparing Roma students to their non-Roma classmates.

I find that Roma students have lower academic self-assessments, on average, than their non-Roma classmates with similar competences. The analysis also shows that students' self-assessment is more strongly related to teacher-given grades than to blind standardised test scores. In addition, although I do not find ethnic differences in educational aspirations two years before secondary school application controlling for test scores, Roma students are less likely to actually apply to a secondary school track that provides the possibility to enter tertiary education. Roma students' lower socioeconomic status can partly explain these differences.

The paper is structured as follows. The next section reviews the literature explaining ethnic differences in students' academic self-assessment and aspirations. Then, I briefly introduce the institutional background of the study. After the description of the data and methods, I present the results. The final section concludes the findings and speculates about the underlying mechanisms.

Explanations of ethnic differences in students' self-assessment and aspirations

Several mechanisms can explain why Roma students might have lower academic self-assessment and aspirations than equally competent non-Roma students. Most of these mechanisms are not specific to the case of Roma students; they might similarly operate in other social contexts.

First, teacher evaluations and expectations can influence students' academic self-confidence, motivations, and aspirations but are often biased against certain social groups (Boone and Van Houtte 2013; Caro et al. 2009; Gentrup et al. 2020; Jussim and Harber 2005; Timmermans et al. 2018). Previous research has shown that similar to many other ethnic minority groups (Botelho, Madeira, and Rangel 2015; Burgess and Greaves 2013; Hinnerich, Höglin, and Johannesson 2015; Kiss 2013; Sprietsma 2013; Triventi 2020), Roma students receive lower teacher-given grades (Kisfalusi, Janky, and Takács 2021) and track recommendations (Bruneau et al. 2020) than non-Roma students with similar cognitive skills. If minority students rely on biased teacher expectations and evaluations, their self-assessment and aspirations will be lower than that of equally competent majority students.

Second, by the age of adolescence, most children are already aware of broadly held stereotypes in society (McKown and Weinstein 2003). Many minority groups face the stereotypes that their school-related skills and abilities are lower than that of majority students (Devine and Elliot 1995; Fries-Britt and Griffin 2007; Ghavami and Peplau 2013; Steele 1997; Steele and Aronson 1995). Such negative stereotypes and prejudices are also widespread about the Roma, also among teachers of Roma students (Bordács 2001; Ligeti 2006). If minority students internalise these stereotpyes, it might have a negative effect on their self-assessment and aspirations.

Third, the cultural-ecological theory (Fordham and Ogbu 1986; Ogbu 1978, 2004) suggests that the persistent experience of segregation and discrimination undermines nonimmigrant minority students' academic self-assessment and aspirations. According to this theory, nonimmigrant minority groups, such as African Americans in the United States or the Roma in Europe, realise that due to widespread discrimination, their academic efforts are less rewarding than those of whites in terms of educational attainment and later employment opportunities. Therefore, they develop oppositional attitudes towards schooling, and behaviours like studying

hard or aiming for high educational attainment are labelled as 'acting white' (Fordham and Ogbu 1986; Fryer and Torelli 2010). The cultural-ecological theory has inspired many empirical studies with controversial findings. While some results were in line with the theory (e.g. Farkas, Lleras, and Maczuga 2002; Fordham 1988, 1996; Fordham and Ogbu 1986; Fryer and Torelli 2010; Kunjufu 1988; Mickelson 1990), others have shown that African Americans have similar or even more favourable attitudes towards school, have higher educational expectations, make similar efforts for school success, and perceive higher returns to education than whites (Ainsworth-Darnell and Downey 1998; Akom 2003; Cook and Ludwig 1997; Diamond and Huguley 2014; Downey, Ainsworth, and Qian 2009; Harris 2006, 2011; Tyson 2002; Tyson, Darity, and Castellino 2005). Less is known about the educational aspirations of the Roma, but a few previous studies have found them to be lower than that of the majority (Dimitrova, Ferrer-Wreder, and Ahlen 2018; Zelinsky, Gorard, and Siddiqui 2021).

Fourth, ethnic differences in educational aspirations can also be explained by differences in cost-benefit expectations. If, due to educational and labour market discrimination, minority students expect lower returns to education or a lower chance to succeed at an academically more demanding secondary school track, they might be less likely to aspire to these tracks (Breen and Goldthorpe 1997). The same happens if, due to a lack of information, minority students overestimate the admission requirements of the higher tracks or underestimate the job market opportunities related to these tracks (Borgna et al. 2022; Keller, Takács, and Elwert 2022).

Based on the suggested mechanisms, I formulate the following hypotheses:

Hypothesis 1: Roma students' academic self-assessment is lower than that of equally competent non-Roma students.

Hypothesis 2: Roma students' educational aspirations are lower than that of equally competent non-Roma students.

Institutional background

In Hungary, primary education encompasses grades 1–8 (from age 6–7 to 14–15). Education is compulsory until the age of 16. After Grade 8, students can choose from three different secondary school tracks: the academic track prepares students for tertiary education, the mixed track combines general education and vocational education with the possibility of entering tertiary education, and the vocational track provides mainly vocational education without direct access to tertiary education. Admission to a secondary school depends on an admission test in reading and mathematics and the teacher-given school grades from the last two academic years of primary education. While Roma students are almost as likely as non-Roma students to continue their studies after completing primary education, they are more likely to drop out of secondary school and less likely to obtain the final exam that is necessary to enter tertiary education (Hajdu, Kertesi, and Kézdi 2014).

Data and methods

Participants

The data stem from a six-wave long panel study conducted among Roma and non-Roma Hungarian primary school students. The study aimed to investigate students' peer relations

and educational outcomes. Participants were asked to fill out a self-administered tablet-based questionnaire during regular instruction time, in the presence of trained research assistants. All participating students and their parents gave their informed consent to take part of the study (96.9%). They also agreed to merge their survey responses with their standardised test scores. Students were assured that their answers were kept confidential and were used for research purposes exclusively. The Hungarian law and research institutes in Hungary did not require institutional review-board permission for this type of research at the start of data collection (2013).

Schools with a high share of Roma students were overrepresented in the sample. Initially, 63 classes from 35 schools participated in the first wave of the data collection, when participants started the fifth grade of primary education. Students were followed until Grade 8, the final year of primary education in Hungary. The schools were located in the central part of Hungary, including the capital city ($N=6$), other towns ($N=9$), and villages ($N=20$). The number of classes decreased over time because some of the classes dropped out of the study, while some have been merged due to small class sizes. A detailed description of the sampling procedure can be found in Kisfalusi (2018).

For the present analysis, the fourth and sixth waves of the study are used because standardised achievement scores are available for these time points. The fourth wave was registered in the spring semester of Grade 6, while the sixth wave was registered in the spring semester of Grade 8. The data from these two waves have been merged with data from the National Assessment of Basic Competences (NABC), a standardised achievement test similar to the PISA test administered among every sixth-, eight-, and tenth-grade student in the country. NABC measures students' competences in reading and mathematics. The test is evaluated centrally and anonymously; therefore, teachers and students are not aware of the results before the end of the school year.[1]

Classes and students with missing data on test scores were dropped from the analysis.[2] Furthermore, students with missing data on ethnicity were dropped as well. This resulted in a sample of 651 students from 39 classes in Grade 6 and 386 students from 30 classes in Grade 8. The number of students in the specific regression analyses can deviate from this number due to missing data in the dependent variables. Descriptive statistics about the Grade 6 and Grade 8 samples can be found in Table 1.

Variables

Academic self-assessment

In both Grades 6 and 8, students were asked the following question: 'On a test, your classmates would receive 70 points on average, how many points would you receive between 0 and 100?' Furthermore, in Grade 8, students were asked what they thought about their own academic achievement compared to that of their classmates on a 5-point scale (it is much better, better, average, worse, or much worse).

Educational aspirations

In Grade 6, students were asked in what type of secondary school track they wanted to continue their studies after finishing primary school (academic, mixed, or vocational track). Only one track could be chosen. A separate dummy variable was created for each track.

Table 1. Descriptive statistics of the sample.

	Grade 6	Grade 8
Number of students	651	386
Number of classes	39	30
Roma (%)	29.5	32.1
Female (%)	49.2	50.8
Mother's highest education (%)		
Primary or lower	18.9	17.9
Vocational	24.6	25.9
Upper secondary	16.0	27.5
Tertiary	28.4	23.8
Missing	12.1	4.9
Father's highest education (%)		
Primary or lower	16.3	15.3
Vocational	31.0	35.2
Upper secondary	14.6	24.9
Tertiary	23.2	16.8
Missing	14.9	7.8
Socioeconomically disadvantaged (%)	23.4	20.5
Age, mean (SD)	13.0 (0.8)	14.9 (0.6)

Secondary school choice

Grade-8 data were collected after students had to apply to secondary education. Therefore, students were asked whether they applied to the academic track, the mixed track, or the vocational track. Students could apply to more than one track. School choice is coded as separate dummy variables for these three options.

Ethnicity

In both Grades 6 and 8, students were asked whether they identified themselves as Hungarian, Roma, both Hungarian and Roma, or other. Students who identified as Roma or both Hungarian and Roma are coded as Roma; otherwise, they are coded as non-Roma.

Test scores

To compare Roma and non-Roma students with similar competences, I control for the standardised blind test scores in reading and mathematics. Test scores are standardised with a mean of 0 and a standard deviation of 1.

Grades

In some models, I control for the end-of-fall-semester grades students received from their own teachers in literature and mathematics. Grades range between 1 (fail) and 5 (excellent) and were collected from school registers.

Socioeconomic status

Students' socioeconomic status is captured by three variables: the mother's highest education, the father's highest education, and a variable indicating the socioeconomically disadvantaged status of the family. These variables are used as categorical variables, with a separate category for missing values.

Gender

Females are coded as 1.

Descriptive statistics of the educational variables and associations with ethnicity can be found in Table 2.

Analytical strategy

For each outcome, I estimate the following linear regression model:

$$Y = \beta_0 + \beta_1 \times Roma + \beta_2 \times test\ score + \beta_3 \times X + \theta_c + \epsilon \quad (1)$$

where Y is the outcome variable; *Roma* is a dummy variable for students' ethnicity; *test score* captures the standardised test scores in reading and mathematics; X is a vector of student-level control variables; and θ_c represents class fixed effects. By controlling for test scores and including class fixed effects, I compare Roma and non-Roma students with similar competences and attending the same class. β_1 is the coefficient of interest and represents the difference in the outcomes of Roma and non-Roma students. Since the sample of the study is not a random sample of schools, I focus on interpreting Cohen's d as the effect size of the Roma variable, and do not report t-tests. Cohen's d is calculated as the difference in group means (or the estimated coefficient in a regression model) divided by the pooled standard deviation. A value of around 0.2, 0.5, and 0.8 is usually regarded as a small, medium, and large effect, respectively.

Research transparency

The data and the analytic scripts have been archived on the project's page on the Open Science Framework: https://osf.io/xhpqk/.

Table 2. Descriptive statistics of the educational outcomes and associations with ethnicity.

	Roma		non-Roma			total		*N*
	Mean	SD	mean	SD	Cohen's *d*	Mean	SD	
Self-assessment: test points, Grade 6	61.1	20.6	71.4	18.0	0.53	68.4	19.4	631
Self-assessment: test points, Grade 8	59.6	20.3	69.8	15.5	0.57	66.5	17.8	378
Self-assessment: self-comparison, Grade 8	3.1	0.9	3.6	0.7	0.63	3.4	0.8	378
Educational aspirations, Grade 6								
Academic track	0.17	0.38	0.30	0.46	0.30	0.26	0.44	647
Mixed track	0.31	0.46	0.34	0.47	0.06	0.33	0.47	647
Vocational track	0.08	0.27	0.04	0.19	−0.18	0.05	0.22	647
Track choice, Grade 8								
Academic track	0.15	0.36	0.56	0.50	0.82	0.44	0.50	361
Mixed track	0.46	0.50	0.58	0.50	0.24	0.54	0.50	361
Vocational track	0.34	0.48	0.13	0.34	−0.53	0.20	0.40	361
Math score, Grade 6	−0.4	0.9	0.2	1.0	0.60	0.0	1.0	651
Math score, Grade 8	−0.6	0.9	0.3	0.9	0.90	0.0	1.0	386
Reading score, Grade 6	−0.6	0.8	0.2	1.0	0.80	0.0	1.0	651
Reading score, Grade 8	−0.7	0.9	0.4	0.9	1.10	0.0	1.0	386
Math grade, Grade 6	2.5	1.1	3.5	1.2	0.83	3.2	1.2	649
Math grade, Grade 8	2.7	1.1	3.6	1.2	0.75	3.3	1.2	385
Literature grade, Grade 6	2.6	1.1	3.7	1.1	0.92	3.4	1.2	650
Literature grade, Grade 8	3.0	1.0	4.0	0.9	0.91	3.7	1.1	385

Results

Bivariate associations between educational outcomes and ethnicity

Table 2 presents the raw ethnic differences in educational outcomes. Roma students have lower test scores, lower teacher-assigned grades, and lower self-assessments than non-Roma students in both Grades 6 and 8. Furthermore, Roma students are less likely to aspire to the academic track in Grade 6. They are also less likely to actually apply to the academic or the mixed track but more likely to apply to the vocational track in Grade 8. Do Roma students have lower academic self-assessment and educational aspirations because of their lower competences, or are there ethnic differences over and above the differences in school performance, as hypothesised? The following chapters investigate this question.

Academic self-assessment

First, to test Hypothesis 1, I investigate whether Roma students have lower academic self--assessment than non-Roma students with the same competences. The points the students indicated they would receive on a 0–100 points test are used as a dependent variable.

Table 3 presents the result. Models 1, 2 and 3 are estimated using the Grade 6 data, while Models 3, 4 and 5 are estimated using the Grade 8 data. Models 1 and 4 only control for

Table 3. Students' academic self-assessment in Grades 6 and 8.

	(1)	(2)	(3)	(4)	(5)	(6)
	Grade 6	Grade 6	Grade 6	Grade 8	Grade 8	Grade 8
Roma	−7.331	−5.244	−3.253	−7.851	−2.220	−1.618
Cohen's *d*	*−0.38*	*−0.27*	*−0.17*	*−0.44*	*−0.12*	*−0.09*
Math score	3.609	3.249	0.932	4.827	4.276	1.850
Reading score	5.801	5.980	3.474	5.726	5.559	3.261
Math grade			3.725			3.396
Literature grade			2.490			2.851
Female		−2.619	−4.846		−0.153	−2.030
Mother's highest education (ref. cat.: Primary or lower)						
Vocational		1.790	2.898		0.828	0.453
Upper secondary		5.122	5.298		5.911	5.125
Tertiary		3.853	3.442		8.544	7.076
Missing		2.679	2.783		0.037	1.442
Father's highest education (ref. cat.: Primary or lower)						
Vocational		1.744	0.033		−0.697	−1.092
Upper secondary		0.408	−1.945		0.738	0.220
Tertiary		2.963	1.411		5.196	5.239
Missing		1.717	0.136		4.345	2.701
Socioeconomically disadvantaged		1.768	3.912		−5.060	−2.630
Constant	70.527	66.568	47.542	68.834	63.088	42.700
Observations	631	631	630	378	378	378
R-squared	0.191	0.206	0.256	0.296	0.359	0.412
Number of classes	39	39	39	30	30	30

Notes: Regression estimates from linear regression models. The dependent variable is the answer to the question: 'On a test, your classmates would receive 70 points on average, how many points would you receive between 0 and 100?' All models include class fixed effects. Math score and reading score are standardized achievement scores with a mean of 0 and a standard deviation of 1.

test scores and class fixed effects, Models 2 and 5 add controls for gender and socioeconomic status, while Models 3 and 6 control for teacher-given grades in mathematics and literature as well.

In line with Hypothesis 1, the results suggest that Roma students have lower academic self-assessment than non-Roma students. In both Grades 6 and 8, Roma students indicated that they would receive lower points on a test than non-Roma students from the same class with similar competences. Effect sizes indicate a small effect (Grade 6: −7.3 points, Cohen's $d = -0.38$; Grade 8: −7.9 points, Cohen's $d = -0.44$). If I control for students' gender and socioeconomic status, the ethnic difference decreases but a small effect still remains in Grade 6 (−5.2 points; Cohen's $d = -0.27$). After controlling for teacher-given grades in mathematics and literature, the ethnic difference decreases further.

In Grade 8, students were also asked what they thought about their own academic achievement compared to that of their classmates on a 5-point scale (it is much better, better, average, worse, or much worse). Similar to the results presented above, Model 1 in Table 4 shows that Roma students' self-assessment of their academic achievement is lower than that of their non-Roma classmates with similar test scores (−0.3, Cohen's $d = -0.36$). However, as Model 2 shows, the ethnic difference decreases substantially if I control for gender and socioeconomic status. Furthermore, Model 3 shows that the teacher-given grades, especially literature grades, are more strongly associated with students' self-assessment than the standardised competence scores (Cohen's *d*: math score: 0.05; reading score: 0.07; math grade: 0.15; literature grade: 0.29).

Table 4. Students' self-comparison to their classmates' achievement in Grade 8.

	(1)	(2)	(3)
Roma	−0.291	−0.095	−0.037
Cohen's *d*	*−0.36*	*−0.12*	*−0.05*
Math score	0.219	0.222	0.054
Reading score	0.285	0.258	0.072
Math grade			0.184
Literature grade			0.314
Female		0.103	−0.059
Mother's highest education (ref. cat.: Primary or lower)			
Vocational		−0.067	−0.097
Upper secondary		0.133	0.079
Tertiary		0.187	0.083
Missing		−0.169	−0.060
Father's highest education (ref. cat.: Primary or lower)			
Vocational		0.189	0.135
Upper secondary		0.249	0.161
Tertiary		0.127	0.115
Missing		−0.012	−0.160
Socioeconomically disadvantaged		−0.195	0.016
Constant	3.518	3.237	1.597
Observations	378	378	378
R-squared	0.281	0.317	0.462
Number of classes	30	30	30

Notes: Regression estimates from linear regression models. The dependent variable is students' self-assessment of their own academic achievement compared to that of their classmates on a 5-point scale (it is much better, better, average, worse, or much worse). All models include class fixed effects. Math score and reading score are standardized achievement scores with a mean of 0 and a standard deviation of 1.

Educational aspirations and secondary school choice

In Grade 6, students were asked in what type of secondary school track they wanted to continue their studies after finishing primary school. Only one track could be chosen. I created three dummy variables for the three different tracks and estimated linear probability models predicting the probability of choosing the given track. The results are presented in Table 5. Models 1, 3, and 5 only control for students' test scores, while Models 2, 4, and 6 also control for gender and socioeconomic status.

The results show that controlling for test scores, there is no substantial difference in Roma and non-Roma students' educational aspirations in Grade 6. That is, Roma students are as likely to choose the academic, mixed, and vocational tracks as their non-Roma classmates with similar competences. This is in contrast to Hypothesis 2. The results are similar after controlling for socioeconomic status.

Despite the similar educational aspirations reported in Grade 6,[3] there is ethnic difference in the actual track choice in Grade 8. In Grade 8, students were asked whether they applied to the academic track, the mixed track, or the vocational track. Students could apply to more than one track. I created three dummy variables for the three different tracks and estimated linear probability models predicting the probability of applying to the given track. The results are presented in Table 6. Models 1, 3, and 5 only control for students' test scores, while Models 2, 4, and 6 also control for gender and socioeconomic status.

Table 5. Students' educational aspirations in Grade 6.

	(1)	(2)	(3)	(4)	(5)	(6)
	Academic track	Academic track	Mixed track	Mixed track	Vocational track	Vocational track
Roma	0.034	0.044	−0.016	−0.003	−0.001	−0.008
Cohen's *d*	*0.08*	*0.10*	*−0.03*	*−0.01*	*0.00*	*−0.04*
Math score	0.027	0.024	−0.014	−0.018	−0.035	−0.034
Reading score	0.086	0.071	0.016	0.012	0.012	0.019
Female		0.069		0.015		−0.027
Mother's highest education (ref. cat.: Primary or lower)						
Vocational		−0.016		0.132		−0.004
Upper secondary		0.019		0.099		−0.049
Tertiary		0.061		0.077		−0.060
Missing		−0.105		0.025		0.039
Father's highest education (ref. cat.: Primary or lower)						
Vocational		−0.039		−0.035		0.015
Upper secondary		0.022		0.034		0.023
Tertiary		0.029		−0.067		0.005
Missing		−0.000		−0.119		0.001
Socioeconomically disadvantaged		−0.012		0.039		−0.018
Constant	0.254	0.218	0.333	0.279	0.052	0.083
Observations	647	647	647	647	647	647
R-squared	0.041	0.064	0.001	0.023	0.011	0.032
Number of classes	39	39	39	39	39	39

Notes: Regression estimates from linear probability models. The dependent variables are dummy variables showing whether the students indicated the given track as the most desired secondary school track they wanted to apply for. All models include class fixed effects. Math score and reading score are standardized achievement scores with a mean of 0 and a standard deviation of 1.

Table 6. Students' track choice in Grade 8.

	(1)	(2)	(3)	(4)	(5)	(6)
	Academic track	Academic track	Mixed track	Mixed track	Vocational track	Vocational track
Roma	−0.132	−0.030	−0.130	−0.158	−0.016	0.012
Cohen's *d*	*−0.26*	*−0.06*	*−0.26*	*−0.32*	*−0.04*	*0.03*
Math score	0.074	0.098	−0.041	−0.043	0.037	0.012
Reading score	0.164	0.121	0.014	0.027	−0.103	−0.075
Female		0.209		−0.059		−0.155
Mother's highest education (ref. cat.: Primary or lower)						
Vocational		−0.096		0.197		−0.011
Upper secondary		−0.009		0.104		0.017
Tertiary		0.008		0.127		−0.031
Missing		−0.069		0.365		−0.061
Father's highest education (ref. cat.: Primary or lower)						
Vocational		0.125		−0.028		0.036
Upper secondary		0.177		−0.114		−0.022
Tertiary		0.241		−0.260		0.002
Missing		0.224		−0.423		−0.023
Socioeconomically disadvantaged		−0.095		0.002		−0.064
Constant	0.465	0.227	0.580	0.604	0.207	0.294
Observations	361	361	361	361	361	361
R-squared	0.209	0.281	0.010	0.076	0.038	0.083
Number of classes	30	30	30	30	30	30

Notes: Regression estimates from linear probability models. The dependent variables are dummy variables showing whether the students applied to the given track in Grade 8. All models include class fixed effects. Math score and reading score are standardized achievement scores with a mean of 0 and a standard deviation of 1.

Models 1 and 3 show that Roma students are 13 percentage points less likely to apply to the academic track and the mixed track than their equally competent non-Roma classmates (Cohen's d: −0.26 in both models). In the case of the academic track, the ethnic difference decreases substantially after controlling for gender and socioeconomic status. In contrast, Roma students are 16 percentage points less likely to apply to the mixed track than their equally competent non-Roma classmates, even after controlling for family background (Cohen's d: −0.32). Overall, the results show that Roma students are less likely than their equally competent non-Roma classmates to apply to a secondary school track that provides access to tertiary education.

Conclusion and discussion

This study examined whether academic self-assessment and educational aspirations differ between Roma minority and non-Roma Hungarian majority students with similar cognitive skills and abilities. Using a unique database combining self-reported survey data with administrative data on standardised test scores, I compared the self-assessment and aspirations of equally competent minority and majority classmates.

I have found that in both Grades 6 and 8, Roma students' self-assessment was lower than that of non-Roma students. The analysis suggests that teacher-given grades are more strongly associated with students' self-assessments than blind standardised test scores. Moreover, controlling for grades decreases the ethnic, socioeconomic, and gender

coefficients in the regression models. It has important implications because it has been shown, using the same dataset, that Roma, male, and low-status students receive lower grades from teachers than non-Roma, female, and high-status students with similar standardised test scores (Kisfalusi, Janky, and Takács 2021).

Although I was not able to identify causal effects in the analysis, I can speculate about the underlying mechanisms. Two potential explanations arise. First, teacher assessments might be biased against minority, male, and low-status students, and students might rely on these biased assessments when they evaluate themselves compared to their classmates. Second, besides subject-related competences, teachers might also evaluate student characteristics that are associated with students' self-assessments when assigning school grades. For instance, a lower self-assessment of Roma students might decrease their academic achievement through decreasing their self-confidence, motivation, or efforts. If teachers take into account these factors in their assessments, students' self-assessments will be correlated with school grades, controlling for test scores. Since grades are taken into account in secondary school admission, lower grades decrease the chance of a successful secondary school admission.

With regard to educational aspirations, I have not found an ethnic difference in Grade 6 after controlling for test scores. However, despite the similar aspirations reported two years before secondary school applications, I have found ethnic differences in the actual track choice in Grade 8. The results have shown that Roma students are less likely than their equally competent non-Roma classmates to apply to a secondary school track that provides access to tertiary education. A part of this difference is explained by Roma students' lower socioeconomic status.

Different mechanisms can explain these findings. First, the fact that equally competent Roma students have similar aspirations but apply to lower tracks than non-Roma students suggests that track choice might be influenced rather by cost-benefit expectations than an oppositional culture against schooling. It is possible that due to their lower self-assessment, Roma students expect a lower chance to succeed at an academically more demanding secondary school track (Breen and Goldthorpe 1997). Second, another potential explanation might be that due to a lack of information, Roma students overestimate the admission requirements of the higher tracks or underestimate the job market opportunities related to these tracks (Borgna et al. 2022; Keller, Takács, and Elwert 2022). A third potential mechanism is that Roma students might receive lower track recommendations from their teachers than equally competent non-Roma students (Bruneau et al. 2020).

The study is not without limitations. It is important to note that the student population of the study does not represent the entire Roma and non-Roma student population in Hungary. Schools with a high proportion of Roma students were overrepresented in the sample, and schools from the central part of Hungary were chosen to participate in the study. The characteristics of the Roma population living in other areas might be different from those of Roma students included in the sample (Kemény, Janky, and Lengyel 2004). Despite this limitation, this study highlighted important mechanisms that can contribute to educational inequalities between minority and majority students.

Notes

1. NABC tests are carried out in May and the evaluation takes several months. Those who know the unique identifier of the student (the student and the school) can access the test scores of the student after the evaluation is finished.
2. Some school principals did not agree to merge NABC test scores with the survey data. In these schools, test scores are missing for the entire class. Furthermore, individual students' test scores are missing if they were absent during the NABC test, or were not required to do the test (students with special educational needs).
3. There is no significant ethnic difference in Grade-6 educational aspirations, either if I restrict the sample to students participating in the Grade-8 data collection.

Data availability statement

The data and the analytic scripts have been archived on the project's page on the Open Science Framework: https://osf.io/xhpqk/

Disclosure statement

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