RESEARCH ARTICLE

Differences in aspirations and educational trajectories of Russian schoolchildren

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Abstract

The article is devoted to the study of the educational trajectories of Russian schoolchildren based on the longitudinal study «Trajectories in Education and Careers (TrEC)», conducted since 2011. Special attention is paid to the decision-making process related to advancing to the 10th grade and pursuing higher education after graduation. While many studies focus on the actual transition of schoolchildren to the next stage of education, our research examines students' intentions and their demand for various educational trajectories even before the transition occurs. The study revealed significant differences in preferences for choosing an educational path among students with similar academic abilities but differing socio-economic statuses of their families. The results of logistic regressions indicate that one crucial predictor of students' intentions is the education level of their parents, particularly that of the mother. This may suggest the presence of social immobility in Russia, highlighting that inequality of opportunity is reinforced by inequality of aspirations.

Keywords

inequality, individual preferences, educational trajectories, social immobility, socio-economic status of the family, educational achievements

JEL codes: I21, I24, J24

Introduction

The level and quality of education received constitute one of the primary components of human capital. Investments in education increase the rate of return associated with income (Mincer 1958; Johnson & Hebein 1974). Simultaneously, the return on investments in general education and specialized training is comparable to the return on investments in productive capital (Becker 1994). At the macro level, the augmentation of human capital,

as one of the factors of production, is both a cause and a consequence of economic growth (Mincer 1984). Recent studies highlight the growing role of human capital development in shaping sustainable, inclusive economic growth (World Bank 2019). Nevertheless, the rate of return from obtaining secondary (full) general education, on average, stands at about 9% (Psacharopoulos & Patrinos 2018).

The expansion of access to education contributes to equalizing educational opportunities for the population, potentially mitigating social immobility among low-income groups. However, this approach may not fully consider the aspiration factor, which could limit the choices in further educational trajectories. Low aspirations might lead to a misalignment between students' academic abilities and their chosen educational levels. In the context of Russia, the absence of high aspirations, combined with high levels of income inequality, as well as territorial disparities, can play a key role in choosing an educational trajectory.

The concept of aspiration, or aspirations, differs from hope by the presence of conscious free will, as hope implies unsupported desires (Lybbert & Wydick 2018). Simultaneously, aspiration is not yet a clearly defined goal or a definitively chosen object of ambition; rather, it is a preliminary sense of self and a part of a life plan. In turn, a life plan, or life strategy, implies the selection of a life trajectory – a sequence of key events in an individual's life that extends over time and leads to changes in social roles and experiences (Abbott 1983).

While aspirations imply certain personal attitudes and adherence to them, there is a distinction between aspirations and the locus of control, which implies the belief that an individual controls their own life. (Heckman & Kautz 2012). Appadurai (2004) argues that the ability to strive is the 'navigational ability' for exploring opportunities, and Ray (2006) introduces the concept of a 'window of aspiration' as a collective term for ways to form ideas through communication with people, visiting new places, and so on.

Underestimated aspirations can lead to a 'poverty trap,' while optimistic aspirations can provide an opportunity to escape it (Duflo 2012). In their work, Dalton and his co-authors (Dalton et al. 2016) demonstrated that the primary reason for the poverty trap is that, at the initial level of aspirations, economically disadvantaged individuals exert less effort compared to their wealthier counterparts. This phenomenon arises from the complementarity of effort and capital: financial constraints reduce the effectiveness of efforts to acquire skills. In the subsequent stage, due to low efforts and consequently poor outcomes, the aspirations of the economically disadvantaged decrease. Consequently, these two mechanisms contribute to a diminishing marginal benefit of efforts for those in poverty compared to the affluent. Breaking the vicious circle of this 'self-fulfilling' prophecy requires an external shift in expectations, independent of individual decisions (Jussim & Harber 2005).

The first educational 'fork' explored in this paper occurs after the 9th grade and the completion of the OGE (the main state exam). Secondary school graduates can either continue their studies in high school in grades 10-11 or enroll in institutions of primary or secondary vocational education (PVE and SPE, respectively). In recent years, in Russia, almost half of the schoolchildren enter PVE or SPE institutions after completing grade 9 (Maltseva & Shabalin 2021). For those who choose to study in grades 10-11 and, consequently, receive secondary (full) general education after passing the Unified State Exam, there is a choice between further study at a university (higher educational institution) or at PVE and SPE institutions, as well as entering the labour market. At this stage, the proportion of schoolchildren opting for enrollment in PVE and SPE is less than 20% (Maltseva & Shabalin 2021).

Although obtaining a PVE or SVE provides professional skills and does not hinder further admission to higher education institutions, only a small proportion of PVE and SVE graduates

independently prepare for the Unified State Exam and enter universities. Graduates from these educational institutions experience a lower salary increase compared to university graduates, at around 20-30%. In Russia, the premium for higher education is approximately 100%, meaning the salary of university graduates is about twice as high as that of those without higher education (Kapeliushnikov 2021). Despite this, some students, whose academic results allow them to choose university education in the future, still prefer to study at colleges and technical schools.

In this paper, we investigate whether the aspirations of Russian schoolchildren align with their potential and actual educational trajectories. In this context, 'potential' refers to the educational trajectory and its quality, which a child can choose based on their abilities assessed in the 8th grade. The primary objective of the paper is to examine how the socio-economic status of the family (SES) influences the level of education chosen by children. The concept of SES typically includes the parents' education, their workplace, and income, and less frequently, the number of children (Jeynes 2002). In our study, we primarily focus on the mother's education but also consider other SES characteristics. Alongside addressing the main research question, we explore which personal qualities of adolescents are associated with the decision to choose a particular educational trajectory.

Research indicates that the low socio-economic status of a family can hinder a child's educational potential (Heckman & Landersø 2021). One of the factors influencing a child's educational choices is the level of education of their parents. Therefore, applicants whose mothers have higher education are more likely to choose to enter a higher education institution (La Ferrara 2019). The findings from studying the educational trajectories of Russian schoolchildren align with general patterns. The probability of continuing education at school for adolescents with a high family SES is 1.5 times higher compared to students from families with a low socio-economic status (Havenson & Chirkina 2019).

Unlike other studies based on Russian data, we focus on the aspirations of schoolchildren even before they take action in making a choice (i.e., before undergoing an actual educational transition). This allows us to identify the net influence of SES on the intentions of students. According to the study results, it becomes evident that the direct effect of parents' education on the educational aspirations of their children in earlier studies is underestimated. When controlling for academic abilities and other essential predictors of educational decisions, the probability that a student intends to continue studying at school after grade 9 increases by an average of 4.7 percentage points with an increase in the mother's education by one educational level. The aspirations of schoolchildren to graduate from university also vary among groups with different levels of SES. The probability that a student wants to pursue higher education increases, on average, by 3.6 percentage points with an increase in the mother's education by one educational level. With the inclusion of data on the non-cognitive abilities of schoolchildren, self-evaluated, we can determine which personal characteristics are associated with the decision to undergo an educational transition.

I Choosing an educational path: literature review

The choice of an educational trajectory depends on both the aspirations and decisions of the student, who selects specific educational programs, and on educational institutions. According to the classical decision-making model, students choose an educational trajectory that maximizes their private and, consequently, (in this context) public returns (Campbell et al. 2022). However, the incompleteness of information, credit constraints, and other limitations result in

distortions and, consequently, suboptimal choices (Dillon & Smith 2017). For instance, one of the primary barriers to selecting a higher education institution is the geographical remoteness of the place of residence, leading to a lack of awareness and increased costs (Gibbons & Vignoles 2012). Nevertheless, inequality of opportunities and other imperfections in the education «market»[1] are not the sole factors contributing to a misalignment between a student's abilities and the chosen educational path (a set of educational trajectories), in terms of the educational institution's rating as well as future income. Failures that depend on the student, rather than on educational institutions, occur when a student, in the absence of external restrictions, declines the next stage of education or selects an educational institution that does not align with their academic results. In our paper, we focus on this factor of discrepancy between abilities and the desired educational trajectory.

The socio-economic status of a family is a crucial predictor of a child's educational choices. The intergenerational immobility of income and education prevents children from families with low socio-economic status from accessing all the opportunities available to children from more affluent families (Heckman & Landersø 2021). R. Boudon identified two effects of family SES on a child's educational transition: primary and secondary (Boudon 1974).

The primary effect is that the educational capital and the high economic status of the family positively influence the abilities and achievements of children. Consequently, students with higher academic success are more likely to continue their studies and enroll in prestigious educational institutions. Multiple channels contribute to the influence of family SES on educational achievements. On the one hand, more educated parents transfer their knowledge and create a conducive learning environment (Harris et al. 1999). Additionally, parents with high SES harbor greater expectations for their children's success, which is reflected in the academic performance of students (Fan & Chen 2001). Family income also correlates positively with academic results, such as in mathematics and reading (Desimone 1999; Dahl & Lochner 2005). On one hand, parents can afford additional classes for their children; on the other hand, more educated parents are more likely to receive higher incomes. Consequently, children from families with high socio-economic status often outperform academically compared to children from middle-class families, providing them with more opportunities when progressing to the next educational level (Stull 2013). The primary effect of SES generates inequality in education but does not diminish the effectiveness of the educational market in terms of aligning academic abilities with the quality of the educational institution (in terms of rating and future income), unlike the secondary effect.

The secondary Boudon effect is that, in addition to the impact of the social and economic characteristics of the family on the academic performance of schoolchildren and students, parents with high SES are more likely to motivate their children to pursue education and instill in them appropriate norms and values. In families with a lower socio-economic position, such goals are less frequently emphasized. Consequently, a disparity may arise between the capabilities and the actual educational trajectories of schoolchildren. For instance, in the United States, students from middle-class families with high graduation rates are more likely, compared to students from wealthier families, to «drop out» and choose not to attend prestigious colleges (Chetty et al. 2020). Particularly, students whose parents have not received higher education tend to opt for less prestigious colleges when alternatives are available (Smith et al. 2013). In this way, parents can directly or indirectly contribute to the

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1   In this case, by "education market," we mean the system of economic relations between the supply side of education (educational institutions) and the demand side for education (applicants).

formation of underestimated aspirations regarding the educational path. The purpose of this paper is to disentangle these two effects as much as possible and assess the secondary effect, specifically, the influence of parental education on a child's inclination to continue studying in high school and enroll in higher education institutions, based on Russian data.

Failures in aspirations represent internal limitations frequently encountered when choosing an educational trajectory. Aspirations are shaped by parents, teachers, peers, and the students themselves. Desires and expectations related to achieving a certain level of education serve as indirect indicators of aspirations (La Ferrara 2019). The author of this article establishes a connection between the aspiration to graduate from university, poverty, and inequality coefficients at the country level. At the individual level, aspirations are influenced by the higher education of both the father and mother, as well as the child's proficiency in mathematics and reading. Based on Australian data, the study results indicate that while socio-economic status (SES) plays a role in shaping the aspirations of schoolchildren regarding their professional path (certainty in choosing a profession and its prestige), its impact is more indirect through academic results (Gore et al. 2015). An intriguing finding is that, all else being equal, children from higher SES families are more likely to choose prestigious professions, while schoolchildren from lower SES families exhibit more pronounced desires for specific professions. In the context of educational aspirations, our objective is not only to determine the direct role of SES in shaping the educational trajectory of Russian schoolchildren but also to compare it with the role of students' academic abilities.

Studies based on Russian data regarding the impact of family socio-economic status on continued education align with findings from foreign studies. Bessudnov and Malik (2016) demonstrate that with equal academic performance, higher income and parental higher education increase the likelihood of progressing to the 10th grade. Chirkina and Havenson (2019) confirm in their work that Russian schoolchildren from more educated and affluent families, all other factors being equal, are more likely to continue their studies at school after the 9th grade, enroll in universities, and choose more prestigious ones. However, existing literature on the educational transitions of Russian schoolchildren focuses on the actual continuation of education and does not delve into the decisions and aspirations of schoolchildren before exam results, which significantly influence the educational trajectory. Thus, our task is to assess how early aspirations of schoolchildren align with their actual educational trajectories and then evaluate the impact of SES on them. In our paper, we thoroughly examine the aspirations of Russian schoolchildren in the field of education and the factors influencing their desired educational trajectory. The primary research question is the role played by the family's socio-economic status, particularly the mother's education, in shaping the aspirations of Russian schoolchildren.

II Statistical review of data

Data

Our study uses data from the longitudinal project «Trajectories in Education and Career»[1] (hereinafter referred to as TrEC), implemented by the National Research University Higher School of Economics (NRU HSE) Institute of Education. The project, initiated in 2011, is

still ongoing. The panel data comprises information on nearly 5,000 schoolchildren and their parents. Conducting annual surveys on the same sample enables the tracking of students' educational trajectories and their career paths. Data collection involves questionnaires, telephone interviews, and online surveys. The sample is representative of schoolchildren studying in the Russian Federation. For a majority of respondents from this sample, data from the TIMSS[1] and PISA[2] projects also exist, expanding the study's possibilities. The first wave of TrEC was conducted in 2011, surveying 8th-grade students. Currently, the 10th wave of the study is available, conducted in the autumn of 2021, when the majority of respondents have entered the labor market. The uniqueness of TrEC data lies in the fact that schoolchildren's responses enable the assessment of not only academic performance and other objective characteristics but also the study of their self-perception, future plans, attitude toward learning, etc. Moreover, the panel data provides an opportunity to track how the goals and aspirations of schoolchildren have evolved over the years. In addition to the students themselves, one of the parents (mother, father, or a person replacing them) answered individual questions. The questionnaires contained inquiries about the socio-economic characteristics of the family, the quality of home conditions for successful schooling, etc.

In addition to the results of the TrEC surveys, we refer to the international database TIMSS 2011. It includes data on the academic performance of 8th-grade students, teachers, and schools of respondents from 42 countries. The research aims to assess the quality of mathematical and natural science education and includes test results in these disciplines. The TrEC surveys were conducted mostly on a sample of TIMSS 2011. For the main empirical part, we combine the results of the 2011 TIMSS and the first two waves of the TrEC study, and then include only those respondents who participated in all three studies. There were 3,377 such individuals. The resulting panel is not balanced, so later, when evaluating the effects, the sample size will slightly decrease. To analyze the actual educational trajectories after grades 9 and 11 and their alignment with early intentions, we separately combine the 1-2 waves and 3-4 waves. This approach enables us to preserve more observations in the samples. Table 1 illustrates a diagram of the data used.

The chosen indicator to gauge the aspirations of 9th-grade schoolchildren is their expressed intentions regarding further education options (10th grade, vocational education, PVE, etc.). Students provided their responses to the question about educational intentions during the 1st wave of the TrEC, corresponding to the middle of the school year in the 9th grade. As this occurred before the State Final Attestation (SFA), considered here as an earlier analogue of the main state exam (OGE), the exam results could not have influenced the decision to move on to the 10th grade. However, it is essential to note that these intentions may have been influenced by expectations regarding potential examination scores. A total of 415 respondents, constituting 12.3% of the initial sample of 3,377 individuals, had not yet decided to continue their education at the time of the study.

Table 2 illustrates the distribution of intentions among schoolchildren after the 9th grade. Among students who have already made decisions about continuing their education, the majority (64.6%) plan to progress to the 10th grade, while approximately a third (34.5%) intend to enroll in Secondary Vocational Education (SVE), which includes colleges and technical schools, as well as Primary Vocational Education (PVE), encompassing colleges and lyceums.

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1   Trends in International Mathematics and Science Study - https://timssandpirls.bc.edu/
2   Programme for International Student Assessment - https://www.oecd.org/pisa/

Table 1. Information about the data

	Data	Class	Time	Number of respondents
1	TIMSS	8	2011	4893
2	TrEC 1st Wave	9	2011–2012	3827
3	TrEC 2nd Wave	11, SVE/PVE	2013–2014	4893
4	TrEC 3d Wave	11, SVE/PVE	2014	4239
5	TrEC 4th Wave	University, SVE	2015	3618

Source: compiled by the author

Note: the table provides an overview of the data sources utilized in this study, detailing the educational level of the respondents at the time of data collection, the corresponding number of participants, and the timing of the research. The TrEC surveys were conducted during the 11th grade, with two sessions held: one in the middle of the school year (winter 2013-2014) and another in the spring of 2014 before exams. Educational levels are categorized as follows: SVE (Secondary Vocational Education) includes colleges and technical schools; PVE (Primary Vocational Education) includes colleges and lyceums; University represents higher educational institutions.

Table 2. The intentions of the 9th grade students regarding the trajectory of further education

Intention	Number of people	Fraction	Fraction excluding the undecided
10th grade, same school	1781	52,7%	60,1%
10th grade, another school	132	3,9%	4,5%
PVE (college, lyceum)	558	16,5%	18,8%
SVE (college, technical school)	463	13,7%	15,6%
Evening School/ Work/ Other	28	0,8%	0,9%
Total undecided individuals:	**2962**	**87,7%**	**100%**
I haven't decided yet	415	12,3%	
Total:	**3377**	**100%**	

Source: compiled by the author according to the 1st wave of TrEC

Although there were two waves of TrEC surveys in the 11th grade, we have chosen the earlier one to examine the intentions of students after graduation from school/SVE/PVE. This decision is made to the extent possible, ensuring that choices are not influenced by expectations of the results of the Unified State Exam. Consequently, the evaluation of aspirations aims to minimize potential constraints compared to aspirations on the eve of exams. In the survey during the 2nd wave of TrEC, students were required to indicate the maximum level of education they plan to pursue. In total, 83.4% of those who have decided on their educational trajectory plan to pursue higher education (to Table 3).

The results of testing students in mathematics and natural sciences are sourced from the TIMSS database 2011. Students in the 8th grade participated in the study without any specific preparation for the tests, allowing an assessment of their academic success free from the effects of unequal opportunities in exam preparation. Students' knowledge in each subject was evaluated on a 1000-point scale. In mathematics, Russian students achieved an average score of 539 points, ranking sixth among 42 countries; for natural

sciences, the average result of Russian students was 542 points, corresponding to the seventh place internationally. The average international value on the TIMSS scale for each subject is 500 points.

Table 3. Maximum planned level of education

Intention	Number of people	Fraction	Fraction excluding the undecided
9 graders	11	0,3%	0,4%
11 graders	93	2,8%	3,3%
PVE	85	2,5%	3,0%
SVE	277	8,2%	9,8%
Bachelor course	173	5,1%	6,1%
Specialist degree	225	6,7%	8,0%
Masters degree	202	6,0%	7,2%
Higher education (I don't know exactly what degree)	1423	42,1%	50,6%
Two or more higher educations	280	8,3%	9,9%
Postgraduate studies and scientific degree	46	1,4%	1,6%
Total undecided individuals:	**2815**	**83,4%**	**100,0%**
I find it difficult to answer	176	5,2%	
No answer	386	11,4%	
Total:	**3377**	**100,0%**	

Source: compiled by the author according to the data of the 2nd wave of TrEC

According to the distribution of the average arithmetic result of TIMSS in mathematics and natural sciences in Figure 1, it is noticeable that the average result of schoolchildren attending grade 10 significantly exceeds the result of those who attend SVE/PVE. A similar gap is also visible among students who plan to receive higher education, compared with those who do not intend to receive it (Figure 2).

Actual educational trajectories

Although the intentions of most schoolchildren align with their actual educational trajectories, approximately 24% of students, after completing grade 9, deviate from the plans outlined the day before. Figure 3 illustrates the real educational trajectories of schoolchildren after grade 9. The majority proceeded to the 10th grade (58%). Among those whose actual educational path matched their intentions, more than two-thirds continued their studies at school, while less than a third of students whose aspirations did not materialize entered the 10th grade. Interestingly, there is an uneven trajectory between the two groups: those who answered the question of intentions in the 9th grade (66% went to the 10th grade) and those who, at that time, had not yet decided on a place for further education (47% went to the 10th grade).

It was possible to track the second educational transition after graduation for 3,429 individuals by adding the 3rd and 4th waves of the TrEC survey to the main sample. Figure 4 illustrates their actual educational transitions. It is evident that those who enrolled in Secondary Vocational Education (SVE) and Primary Vocational Education (PVE) were individuals who did not initially plan to do so, in contrast to those who entered universities.
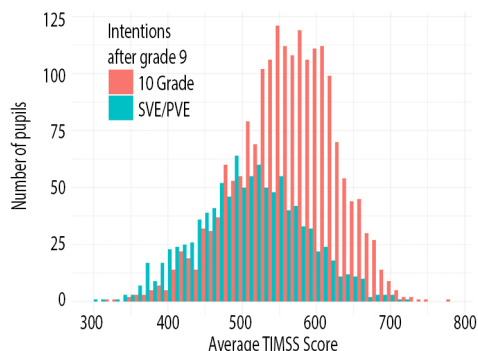
Figure 1. Average TIMSS score. Differences in intentions after Grade 9. *Source:* compiled by the author based on data from the 1st wave of TrEC and TIMSS. *Note*: the distribution of the average TIMSS result in mathematics and natural sciences is analyzed based on students' intentions regarding further education after grade 9.SVE – secondary vocational education, PVE – primary vocational education.
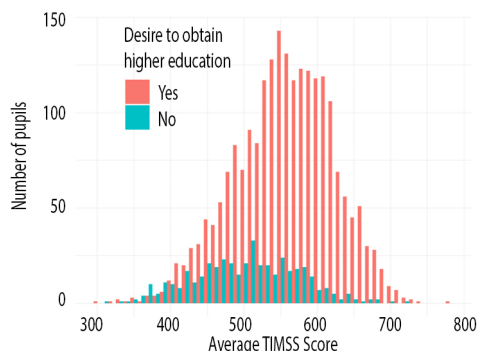

Figure 2. Average TIMSS score. Differences in the desire to obtain higher education. *Source:* compiled by the author based on data from the 2st wave of TrEC and TIMSS. *Note*: the distribution of the average TIMSS result in mathematics and natural sciences according to the desire to obtain higher education after graduation from school/ SVE/PVE. SVE – secondary vocational education, PVE – primary vocational education.
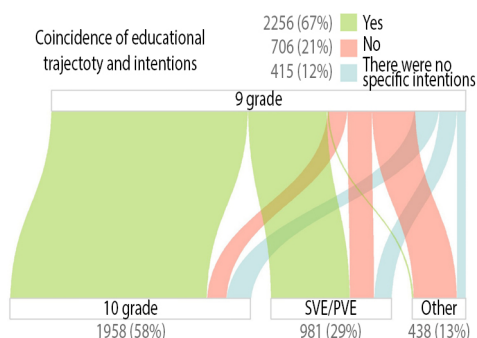

Figure 3. Educational trajectories of Russian schoolchildren after the 9th grade. *Source*: compiled by the author based on data of the 1st and 2nd waves of TrEC. *Note:* the sample comprises a total of 3,377 respondents. In the visual representation, green indicates flows where intentions in grade 9 aligned with the actual trajectory a year later. Individuals who ended up at a different level of education from their desired one are highlighted in red. The blue color represents the flow of students who were undecided about their future place of study at the time of the survey. SVE – secondary vocational education, and PVE – primary vocational education. The width of each flow is proportional to its quantitative size.
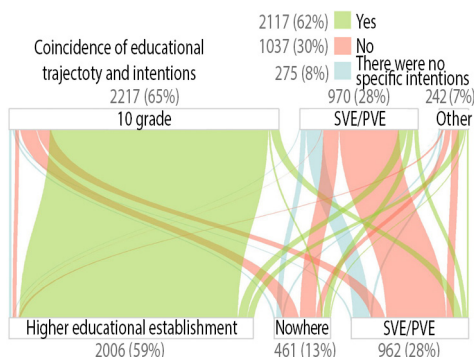
Figure 4. Educational trajectories after 11th grade/SVE/PVE. *Source*: compiled by the author based on data fro the 3d and 4th waves of TrEC. *Note:* the figure depicts the actual educational trajectories of Russian schoolchildren and students in SVE/PVE, with a total of 3,429 respondents in the sample. Green indicates flows where intentions in grade 11 aligned with the actual trajectory a year later. Individuals who ended up at a different level of education than desired are highlighted in red. The blue color represents the flow of students who were undecided about their future place of study at the time of the survey. SVE – secondary vocational education, PVE – primary vocational education. The width of each flow is proportional to its quantitative size.

Moreover, the trajectory often did not align with the intentions of students in SVE and PVE. Despite the option to pursue higher education after completing secondary and primary vocational education, only a small portion chooses this path. Although 83% of respondents express a preference for higher education, only 59% take the step towards university after graduating from grade 11/SVE/PVE. The Appendix (Figure 9) shows two combined educational transitions.

Data on the socio-economic situation were extracted from the 1st wave of TrEC, where one of the parents or guardians completed a questionnaire regarding the education of both the mother and father, as well as family income. In our study, we designate the level of education of the mother as an indicator of SES, in line with the approach in (Havenson & Chirkina 2019). The variable for the mother's education is categorical, taking integer values from 1 to 7. A higher value corresponds to a higher level of education. The variable is set to 1 for completion of grade 9 and 7 for an academic degree or two higher educations. A detailed description of each level of education is provided in the Appendix (Table A1).

Mother's education

To address the research question, we retained respondents in the samples who provided information about their mother's education and had expressed intentions regarding their educational path at the time of the survey. To investigate the impact of mother's education on aspirations in the 9th grade, we included only those students who indicated a desire to continue their studies in the 10th grade or pursue SVE/PVE the following year. Only 28 people chose alternative options (including terminating education), and we deemed it more appropriate to compare individuals with a desire to continue studying in one format or another.

Table 4 presents descriptive statistics of maternal education in two groups of students with different aspirations during the period of graduating from the 9th grade. The average value of the mother's education index among schoolchildren planning to enter the 10th grade is one educational step higher than the corresponding indicator among schoolchildren intending to enroll in vocational SVE/PVE.

An even more significant gap is observed in the average level of education among mothers whose children harbor different aspirations during their final year of school/college. Table 5 provides descriptive statistics on the education of mothers of respondents with varying desires regarding the maximum level of education they wish to attain. Among the mothers of students intending to graduate from university, the 1st quartile corresponds to secondary vocational education, indicating that 75% have a higher level of education. Conversely, for mothers whose children do not plan to pursue higher education, this level falls only within the 3rd quartile, indicating that 75% have an education level below this threshold.

Before delving into an empirical strategy, it was insightful to compare the proportion of individuals wishing to proceed to grade 10 and pursue higher education across different decile groups of the average TIMSS score, contingent on the mother's education. This fundamental nonparametric assessment revealed that, for each decile of the average TIMSS score, students whose mothers attained higher education are more inclined to continue in high school compared to those whose mothers graduated from a lower educational level. The disparity between these groups ranges from 8.5 percentage points in the 3rd decile to 22.6 percentage points in the 2nd decile, averaging 17.4 percentage points. Figure 5 illustrates the values for each decile group. Consequently, across all segments of the distribution of assessed academic abilities, students with lower SES exhibit underestimated aspirations.

Table 4. Descriptive statistics of the mother's education. Intentions after the 9th grade

Intention	Number	1st quartile	Median	Average	3d quartile
10th grade	1816	4.00	4.00	4.63	6.00
SVE/PVE	952	2.00	4.00	3.62	4.00
Total	**2768**	**3.00**	**4.00**	**4.28**	**6.00**

Source: compiled by the author based on data of the 1st wave of TrEC

Note: a description of the significance of each education level is available in the Appendix (Table A1).

Table 5. Descriptive statistics of the mother's education. Maximum planned level of education

Intention	Number	1st quartile	Median	Average	3d quartile
Higher education	2215	4.00	4.00	4.53	6.00
Other	431	2.00	3.00	3.38	4.00
Total	**2646**	**3.00**	**4.00**	**4.34**	**6.00**

Source: compiled by the author based on data of the 2nd wave of TrEC

Note: a description of the significance of each education level is available in the Appendix (Table A1).
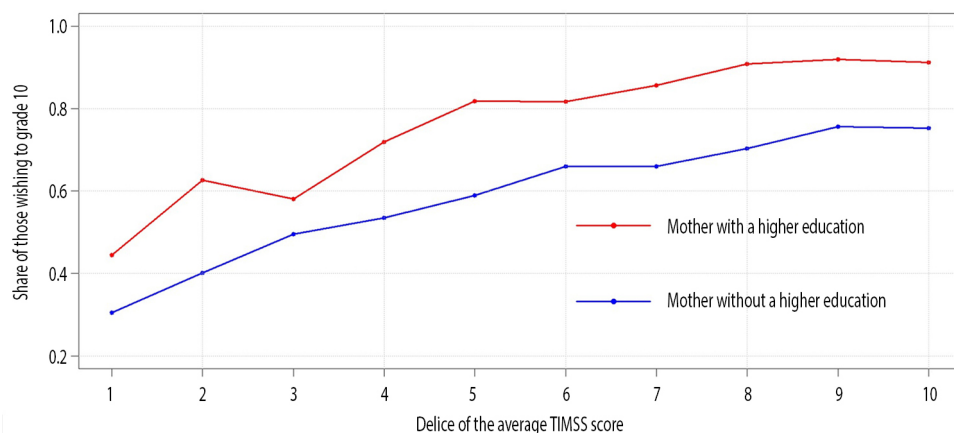

Figure 5. The proportion of students wishing to continue to the 10th grade for each decile of the average TIMSS score, categorized by the level of education of the mother. *Source*: compiled by the author based on data of the 1st wave of TrEC. *Note*: the figure illustrates the percentage of students who, at the commencement of the 9th grade, indicated their intention to pursue further studies in the coming academic year.

We conducted analogous calculations to evaluate how the proportion of individuals aspiring to attain higher education varies based on the decile group of the average TIMSS score and the maternal attainment of higher education. Figure 6 illustrates the values for each such group of students. Similar to the desire to continue studying in the 10th grade, the proportion of those aspiring to higher education is higher in each group for individuals whose mothers have achieved higher education. On average, the difference is 10.4 percentage

points, with the smallest gap observed in the 9th decile group at 7.1 percentage points and the largest in the 2nd decile group at 16.4 percentage points. Therefore, without controlling for any parameters other than TIMSS results, we observe underestimated aspirations for higher education in children from families with lower SES. However, the gap in this aspiration is generally smaller for the 6th and subsequent decile groups of the average TIMSS score compared to the 1st to the 5th. This might indicate that the connection between such aspirations and maternal education is weaker for students with high academic abilities. To address this question more precisely, the empirical section of the work will explore other potential indicators that could potentially influence educational aspirations.
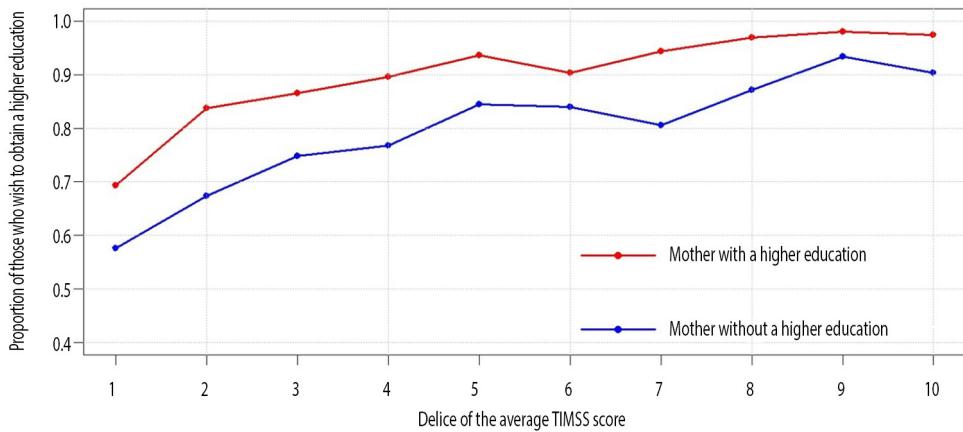

Figure 6. The proportion of students wishing to obtain higher education in each decile of the average TIMSS score, categorized by the level of education of the mother. *Source*: compiled by the author based on data of the 2nd wave of TrEC. *Note*: the figure represents the proportion of students who expressed a desire to receive higher education at the beginning of the 9th grade

III Empirical strategy

Based on the results of previous studies and descriptive statistics presented in the previous chapter, we posit the following hypotheses:

Hypothesis (1) After completing the 9th grade, students from families with low socio-economic status, other things being equal, are less likely to continue their education at school.

Hypothesis (2) Students from families with low socio-economic status, other things being equal, are less likely to plan for higher education after graduating from school/SVE/PVE.

To test Hypotheses 1 and 2, we employ the same empirical strategy, utilizing a logit model to assess the impact of various factors on the decision to progress to the 10th grade and pursue higher education. The focal variable of interest is the level of education of the mother. While we also consider specifications accounting for the father's education, due to numerous omissions in the sample for this parameter, we emphasize a model where only the education of one parent, the mother, serves as an indicator of SES. The dependent variable for testing Hypothesis 1 is a binary variable, taking the value of 1 if the student plans to continue schooling after the 9th grade, and 0 if they intend to enroll in SVE/PVE. For Hypothesis 2,

the dependent variable is coded as 1 if the participant expresses a desire for higher education, and 0 otherwise.

The control variables, including gender, academic abilities (TIMSS results), school characteristics, and indicators of the 'school life' image, are regressors utilized in the analysis by Havenson and Chirkina (2019). Additionally, we introduced variables that might influence decisions regarding further education, such as time spent on homework, work experience, household responsibilities, and others.

Figure 7 provides a schematic representation of the causal relationship between the influence of the mother's education and the choice of an educational trajectory. Two channels of influence are identified, following the framework of R. Boudon: the primary and secondary effects of SES. The primary effect denotes the indirect influence of the mother's education on the student's decision to progress to the next educational level through academic success. The positive impact of the mother's education on educational achievements is associated with an increased likelihood of continuing studies at school after the 10th grade and pursuing higher education in the future. This relationship is cross-validated. In the application of the logit model, academic achievements are monitored, ensuring the effect is cleared of indirect influence through academic results. Thus, if Hypotheses 1 and 2 are confirmed, the resulting effect represents the lower bound of the overall impact of the mother's education.
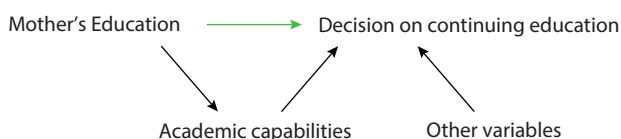

Figure 7. Graph of causal relationships. *Source:* compiled by the author. *Note:* the secondary effect of SES is highlighted in green. The primary effect is the indirect influence of the mother's education through academic ability.

IV Assessment of the impact of SES on the choice of educational trajectory

Table 6 presents the results of logistic regressions for estimating the probability of deciding to progress to grade 10. The explanation of all variables can be found in the Appendix (Table A1), and descriptive statistics are provided in the Appendix (Table A2). Model (2) differs from Model (1) in the absence of variables related to the father's education and the number of books in the house. These two models are assessed separately due to the strong correlation between the education of the mother and father (correlation coefficient = 0.5), as well as the correlation with the number of books in the house (correlation with the education of the mother = 0.3). Additionally, these variables include a total of 589 omissions. Robust errors resistant to heteroscedasticity were applied to all logistic regressions.

Although the truncated Model (2) is considered inferior by the Akaike criterion, it incorporates a larger number of observations, making it the preferred baseline. Model (1) correctly predicts outcomes in 74% of cases (the proportion of observations when the selected value is above 0.5 if the dependent variable is 1, and below 0.5 if the dependent variable is 0).

Model (2) achieves correct predictions in 73% of cases. In addition to coefficient estimates, average marginal effects are provided, representing the average value of the marginal effects for each respondent.

Table 6. Assessment of the probability of a decision to continue studying in the 10th grade

	(1)		(2)	
	Logit	**Average marginal effect**	**Logit**	**Average marginal effect**
Gender (f.)	-0.559***	-0.097	-0.545***	-0.098
	(0.124)		(0.104)	
Average TIMSS score	0.008***	0.001	0.008**	0.001
	(0.001)		(0.001)	
Quality of the school	0.124	0.021	0.165*	0.023
	(0.114)		(0.097)	
Presence of specialization at school	0.100	0.017	0.093	0.017
	(0.114)		(0.097)	
Mother's education	0.184***	0.031	0.261***	0.047
	(0.043)		(0.032)	
Father's education	0.138***	0.024		
	(0.042)			
Number of books at home	0.051	0.009		
	(0.052)			
Family income	0.173***	0.030	0.215***	0.038
	(0.060)		(0.050)	
Number of children in the family	0.022	0.004	-0.008	-0.001
	(0.060)		(0.041)	
Attending additional classes	0.571***	0.099	0.557***	0.101
	(0.121)		(0.103)	
Homework completion time	0.050	0.009	0.070*	0.012
	(0.044)		(0.038)	
Homework checking by parents	0.066	0.011	0.053	0.10
	(0.119)		(0.100)	
Household duties	0.078	0.0133	0.054	0.10
	(0.126)		(0.106)	
Work experience	-0.303***	-0.052	-0.421***	-0.075
	(0.117)		(0.100)	
Interest in various professions	0.060*	0.010	0.056**	0.010
	(0.030)		(0.026)	
Trust in parents when choosing an education	-0.014	-0.002	-0.003	-0.001
	(0.030)		(0.026)	
Constant	-5.556***		-5.574***	
	(0.615)		(0.518)	

	(1)		(2)	
	Logit	**Average marginal effect**	**Logit**	**Average marginal effect**
Number of observations	1.845		2.434	
Logarithm of likelihood	-950.409			-1,296.545
Akaike Criterion		1,934.818		2,623.090
Note:		*p<0.1; **p<0.05; ***p<0.01		

Source: compiled by the author based on data from the 1st wave of TrEC and TIMSS

Note: the table displays the outcomes of two logistic regression models, wherein the latent variable is the inclination to decide on continuing education after grade 9 in school. Robust errors, resistant to heteroscedasticity, are presented in parentheses beneath the estimated coefficients. Further details about the variables can be found in the Appendix. (Table A1).

Both the father's and mother's education significantly and positively influence the child's decision to continue education at school after completing grade 9 at a 1% significance level. In Model (1), an increase in the categorical variable representing the mother's education by one level (e.g., the mother transitioning from primary vocational education to secondary general education) results in, on average, a 3.1 percentage point increase in the probability of choosing to move to grade 10. In Model (2), this effect increases to 4.7 percentage points. Similarly, a one-level increase in the father's education raises the respondent's probability of choosing between school and SVE/PVE in favor of grade 10 by 2.4 percentage points.

In both models, an increase in the average TIMSS score in mathematics and natural sciences, at a 1% significance level, positively influences the desire to move to the 10th grade. According to the results of Model (1), on average, all else being equal, a student's probability of deciding to continue studying at school increases by 1.0 percentage points for each 10-point increase in their TIMSS score. This underscores the positive impact of academic abilities on the choice of an educational path, specifically transitioning to the 10th grade.

It is reasonable to expect that the marginal effect of maternal education varies for different levels of maternal education, as well as for the TIMSS score. To assess this difference, we calculated the predicted probability, as per Model (2), of wanting to continue education in grade 10 for an 'average' student with different levels of maternal education and TIMSS scores. In other words, we estimated the predicted value of this probability while fixing the values of all control variables at the average level for the sample, only altering the level of maternal education and the TIMSS score. The results are presented in Table 7.

The results indicate that, for an «average» student with a TIMSS score falling within any quartile, an escalation in the categorical variable representing the mother's education augments the probability of desiring to pursue further studies at school after completing grade 9. For instance, in the case of an «average» student with a median TIMSS score, altering the categorical variable of the mother's education from 1 to 2 elevates this probability by 7 percentage points, transitioning from 50% to 57%. Nevertheless, this effect diminishes as the mother's education level increases. In other words, for the same student, modifying the mother's education variable from 6 to 7 only increases the predicted probability by 4 percentage points. This pattern holds true for each quartile of the TIMSS score. It is noteworthy that the same change in the value of the mother's education variable affects the probability of

Table 7. Assessment of the probability of a decision to continue studying in the 10th grade

Average TIMSS score	Mother's level of education						
	1	2	3	4	5	6	7
1st quartile	0.39	0.46	0.52	0.59	0.65	0.71	0.76
2nd quartile	0.50	0.57	0.63	0.69	0.74	0.79	0.83
3d quartile	0.60	0.66	0.72	0.77	0.81	0.85	0.88

Source: compiled by the author based on data from the 1st wave of TrEC

Note: the table displays predicted values, generated through Model (2), indicating the probability of a student's inclination to pursue further studies at school after completing grade 9. These predictions are based on average values for all control variables in the sample, with variations introduced in the education of the mother and the TIMSS score. Further details regarding the interpretation of each level of education are available in the Appendix (Table A1).

wanting to continue studies in the 10th grade to varying degrees, contingent on the TIMSS score. For instance, altering the mother's education from secondary general education to higher education for a student with a TIMSS score corresponding to the 1st quartile raises the probability by 19 percentage points, by 16 percentage points for the 2nd quartile, and by 13 percentage points for the 3rd quartile.

Additionally, at the 1% significance level, higher family income and a student's participation in additional classes significantly amplify the likelihood of deciding to continue studies at school rather than enrolling in colleges or other educational institutions. Notably, attendance of additional classes may be endogenous, influenced by the child's decision on the place of further education and vice versa. On the other hand, work experience diminishes this probability by an average of 5.2–7.5 percentage points, although this assessment of the average marginal effect may not be entirely accurate, given that work experience is represented as a binary variable indicating its presence or absence. Similarly, at a 1% significance level, girls are less inclined to wish to continue their studies at school and more likely to prefer studying at a SPE/PVE, assuming no other significant variables not homogenous by gender were omitted.

Certain school characteristics, such as the presence of Olympiad-winning students and the special specialization of the educational institution, turned out to be insignificant. If such an effect exists, it is likely embedded in the average TIMSS result. Moreover, factors like time spent on homework, parental checking of homework, household responsibilities, trust in parents regarding their educational path, and the number of children in the family exhibit no discernible effect. However, interest in various professions, as indicated by the results of evaluating Model (1) at a 10% significance level, enhances the likelihood of deciding to continue studies at school.

The results of logistic regressions for predicting the desire to obtain higher education demonstrate similar trends. There are fewer control variables of the school in these models since many people changed their place of study after grade 9, and it would be methodologically incorrect to control the characteristics of the school where the respondent studied 2 years ago. Additionally, the 2nd wave of TrEC, unlike the 1st, does not have such rich data on the respondent's lifestyle. Model (1) predicts 85% of cases correctly but describes worse cases when a student does not want to receive higher education. This may be due to the small proportion of students in the sample who do not want to receive higher education.

Model (2) differs from (1) in the absence of two control variables: the father's education and the number of books at home. Assuming that the model predicts that a student would like to receive higher education if the predicted probability by the model is higher than 0.75, Model (2) predicts correctly in 55% of cases when a student does not really plan to receive higher education and in 83% of cases when he does.

Table 8 presents estimates of the coefficients of two logit models predicting the desire in grade 11/SVE/PVE to receive higher education in the future; descriptive statistics on the variables used are contained in the Appendix (Table A3). At a significance level of 1%, the education levels of both the mother and father positively influence the desire to graduate from a higher educational institution. On average, increasing the mother's education by one educational level increases the likelihood of her child's desire to receive at least one higher education by 2.5–3.6 percentage points. A similar positive effect – an increase in probability by 1.5 percentage points – is provided by the father's education in the model (1).

Table 8. Assessment of the probability of a desire to obtain higher education

	(1)		(2)	
	Logit	**Average marginal effect**	**Logit**	**Average marginal effect**
Gender (f.)	-0.950***	-0.099	-1.031***	-0.120
	(0.146)		(0.121)	
Average TIMSS score	0.010***	0.001	0.010***	0.001
	(0.001)		(0.001)	
Mother's education	0.242***	0.025	0.312***	0.036
	(0.053)		(0.039)	
Father's education	0.149***	0.015		
	(0.054)			
Number of books at home	0.207***	0.021		
	(0.066)			
Family income	0.219***	0.023	0.312***	0.036
	(0.077)		(0.064)	
Number of children in the family	-0.018	-0.002	-0.016	-0.002
	(0.068)		(0.056)	
Constant	-5.436***		-4.703***	
	(0.586)		(0.477)	
Number of observations	1.940		2.517	
Logarithm of likelihood		-652.2493		-935.0260
Akaike Criterion		1,320.4990		1,882.052
Note:		*p<0.1; **p<0.05; ***p<0.01		

Source: compiled by the author based on data from the 2nd wave of TrEC and TIMSS

Note: the table displays the results of two logit models, with the latent variable being the inclination to pursue higher education. Robust errors, resistant to heteroscedasticity, are denoted in parentheses beneath the estimated coefficients. The explanation of the variables is provided in the Appendix (Table A1).

The increase in the average TIMSS score, serving as an indicator of academic achievement, reliably predicts the desire to graduate from a Higher Educational Establishment, even 4 years after the exam, as measured in the 11th grade. The average marginal effect of increasing the result by 10 points is an increase in this probability by 1 percentage point. The number of books at home and family income also significantly increase the likelihood of wanting to get a higher education. As in assessing the likelihood of wanting to continue studying in the 10th grade, girls are much less likely to seek higher education, all other things being equal. This may be attributed to the presence of a «glass ceiling»[1], established norms and values in the family, and other factors.

Since the impact of the mother's education varies across different levels of education and TIMSS scores, we computed the predicted probability, using model (2), of a desire to pursue higher education for an 'average' student with different levels of maternal education and TIMSS scores. The results are presented in Table 9.

Table 9. Estimated probability of a desire for higher education

| Average TIMSS score | Mother's level of education | | | | | | |
	1	2	3	4	5	6	7
1st quartile	0.63	0.70	0.76	0.81	0.86	0.89	0.92
2nd quartile	0.74	0.80	0.84	0.88	0.91	0.94	0.95
3d quartile	0.82	0.86	0.89	0.92	0.94	0.96	0.97

Source: compiled by the author based on data from the 2nd wave of TrEC

Note: the table displays the predicted values of the probability of a desire for higher education for a student, utilizing model (2) with the average values of all control variables in the sample, in addition to the mother's education and the TIMSS score. A description of the significance of each education level is provided in the Appendix (Table A1).

Once again, we observe that as the mother's education level increases, the effect decreases for each recorded value of the TIMSS score. For an 'average' student with a median TIMSS grade point average, changing the mother's education from grades 9 and below to primary vocational education increases the probability of desiring higher education by 6 percentage points, from 74% to 80%. Changing this variable from secondary vocational education to incomplete higher education increases the probability by only 3 percentage points. The effect is also more pronounced for students with lower TIMSS scores.

V Personal qualities and connection with educational choice

To understand which qualities of students may be associated with their intentions, we conducted additional calculations considering the personal qualities of the respondents. Utilizing data from the first wave of the TrEC survey, particularly from the section 'Your

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1   The "glass ceiling" is an invisible and non-formally existing barrier that prevents women and members of minorities from obtaining education and moving up the career ladder.

self-image,' we created several 'composite' variables subjectively characterizing individuals. Respondents indicated their level of agreement with various statements, from which variables reflecting individual characteristics were derived. The creation of these variables is described in the Appendix (Table A4) contains a description of the creation of variables, and their average values across the sample are presented in Table A5. The correlation matrix illustrating the relationships among these characteristics and with other significant variables mentioned earlier is depicted in Figure 8.

Interestingly, among all the characteristics, the mother's education is positively (albeit weakly) correlated only with determination and the ability to achieve goals (correlation coefficient = 0.1). Simultaneously, there is no discernible connection between the mother's education and an interest in various professions and training options—a factor shown, through logistic regression in the main body of the work, to positively influence the decision to progress to the 10th grade. This particular indicator, along with the variable measuring the desire to discuss life plans (correlation coefficient = 0.4), may reflect the student's 'windows of aspiration.' The results also indicate that this variable is unrelated to academic achievement but positively correlates with the desire to continue studying at school after the 9th grade.

The presence of a well-defined life scenario (an understanding of one's life path) is positively associated with purposefulness and the ability to achieve goals, indicating a certain level of "navigational ability." Moreover, the certainty of a life path shows a positive correlation with diligence and 'navigational ability' as well. These results vividly exemplify the proverb, "he who seeks finds.»
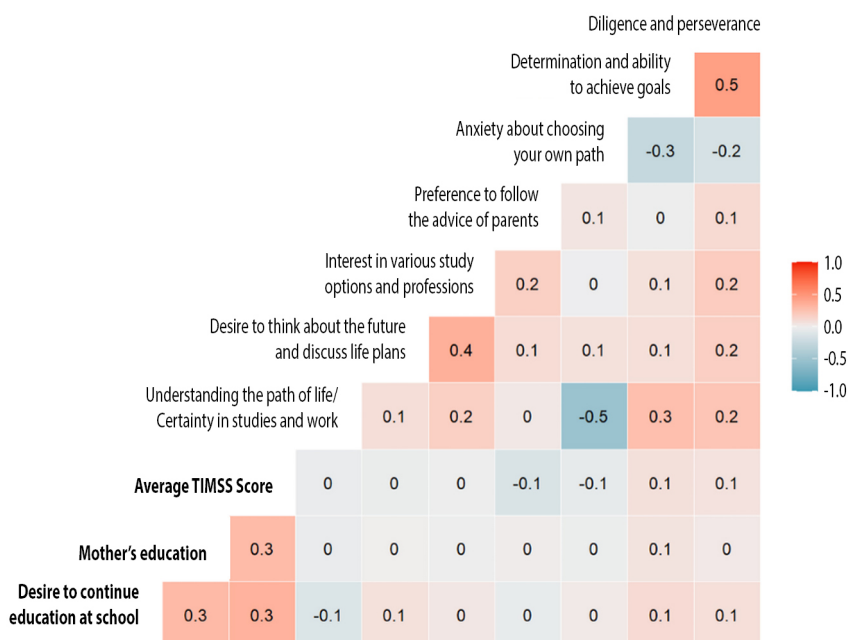

Figure 8. Correlation matrix of individual characteristics of schoolchildren. *Source:* compiled by the author based on data from the 1st wave of TrEC and TIMSS. *Note:* The relationship between the individual characteristics of schoolchildren and their mother's education, academic results, and the desire to progress to the 10th grade after school.

Indeed, certainty in plans regarding education and work may result from obtaining sufficient information about opportunities, which becomes available to students only if they actively seek it. In addition, determination and perseverance are positively correlated with the decision to advance to the 10th grade and academic achievements. Therefore, it is impossible to isolate the 'pure effect' of the influence of these individual qualities on the decision to continue education in school after the 9th grade at this level of analysis.

Simultaneously, the presence of a well-formed life scenario is negatively associated with the desire to pursue higher education (correlation coefficient = -0.1). This may be a consequence of the fact that colleges and technical schools prepare students for specific professions with a predefined set of necessary skills. Consequently, those who have already chosen a future profession may prefer Secondary Vocational Education/Primary Vocational Education (SVE/PVE) over high school, where the curriculum involves studying 10-12 subjects spanning various scientific fields.

The Appendix (Figure 10) includes similar calculations on a sample to examine the desire to pursue higher education after graduation. The patterns of connections with personal characteristics are almost identical, as the samples nearly completely overlap. However, it's noteworthy that a preference for following parental advice regarding the choice of study and work location is negatively correlated with the desire to obtain higher education. In other words, respondents who rely less on parental advice are more inclined to aspire to graduate from a higher education institution. In this case, causation cannot be determined, but there is a correlation.

In addition to the correlation analysis, we also conducted logistic regressions as part of the main empirical strategy, examining certain personality characteristics. The Appendix (Table A6 and Table A7) presents a comparison of logit regressions with and without personal qualities. As a result, there was no observed effect of diligence and perseverance on plans to continue education, either during school or after graduation. Anxiety about choosing one's own path has a positive effect on the decision to stay in school after the 9th grade at a 1% significance level, but it is unrelated to the desire to pursue higher education. In this scenario, it can be assumed that students who have decided on a profession may not worry about their choice and are more likely to enroll in colleges and educational establishments with specific professional training. Simultaneously, dedicated students at a 1% significance level are more likely not to enroll in Secondary Vocational Education/Primary Vocational Education (SVE/PVE) and more often plan to pursue higher education.

Conclusion

Based on the results of the presented study, it can be concluded that there is a certain distortion in Russia in the selection of an educational trajectory by high school students. Schoolchildren from families with low socio-economic status, even with equal academic abilities compared to children from more educated families, are less likely to plan to continue their studies at school after graduating from grade 9. This effect remains consistent across various specifications of logistic regressions. There is a slightly smaller discrepancy in the aspirations of students to obtain higher education, including a bachelor's degree, master's degree, and beyond.

It should be noted that the accuracy of the assessment by the proposed method relies on the premise of the absence of network effects. However, students' intentions to continue

their education may actually depend on the decisions of their classmates and students from parallel classes. With only 210 unique schools in the sample of 3,377 respondents, there is a possibility that the premise of network effects may not be met, potentially impacting the validity of the results.

Among the personal characteristics we studied, dedication, as well as diligence and perseverance, are positively associated with the decision to continue studying in the 10th grade and to pursue higher education. The presence of certainty in the life scenario is typical for students who are interested in the possibilities of continuing their studies and exploring the various professions. While the majority of schoolchildren follow through with their education plans, about a quarter of respondents deviate from their initially stated trajectory. Most of those whose plans regarding the place of study have not materialized have transitioned to a lower educational level in terms of complexity.

The fact that a student, even when presented with alternative options, chooses a lower level of education may signal both limited information and a lack of motivation. Educational initiatives that inform students about the advantages of education and guide them through the admission process can diminish this discrepancy and potentially break the cycle of the 'aspiration trap' (McNally 2016). Moreover, a shift in aspirations has the potential to create new role models (Sachs 2005). The findings of this study suggest the presence of students in the Russian education market who, due to a lack of aspirations, fail to select educational institutions commensurate with their abilities. As a result, it becomes imperative in Russia not only to implement policies aimed at ensuring equal opportunities but also to engage in educational initiatives, particularly targeting students from socio-economically disadvantaged groups.

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World Bank (2019) World development report 2019: The changing nature of work. URL: https://www.worldbank.org/en/publication/wdr2019
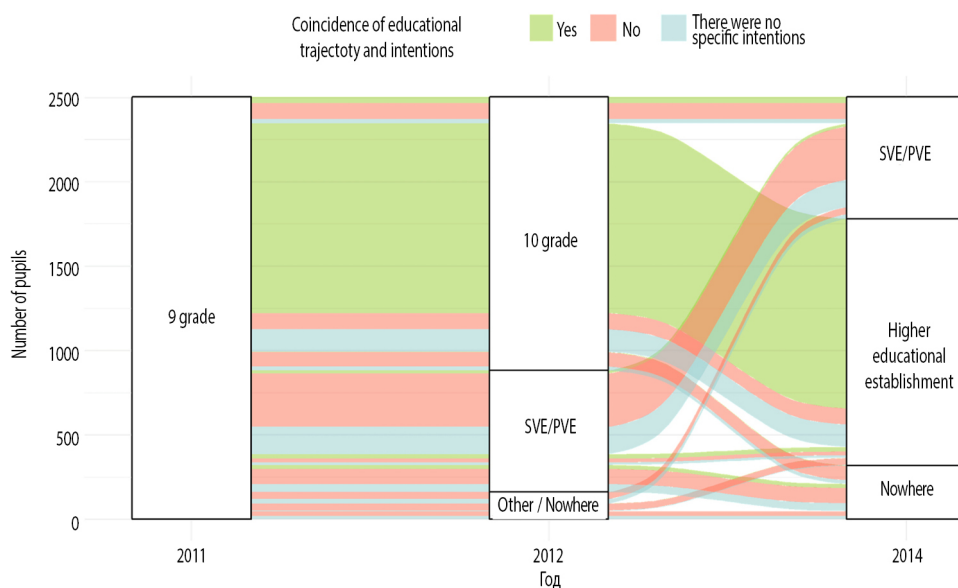
Appendix

Figure 9. Educational trajectories of schoolchildren. *Source*: compiled by the author based on data from the 1st, 2nd, 3rd and 4th waves of TrEC. *Note*: the figure illustrates the educational trajectories of 2,503 schoolchildren, depicting their actual educational transitions after grade 9 and after graduating from grade 11 or SVE/PVE. Students with consistent intentions and valid transitions at each stage are marked in green. Those whose intentions did not align with the actual transition on at least one occasion are highlighted in red. Students who, at least at one stage, did not have precise plans for further education are represented in blue. SVE – secondary vocational education, PVE – primary vocational education.

Table A1. Decoding variables

Gender (f.)	Gender of the respondent (1 is female, 0 is male)
Average TIMSS score	The arithmetic mean of TIMSS results in mathematics and natural sciences can range from 0 to 1000
Average TIMSS score (rounded).	The value of the TIMSS Average Score variable, rounded to the nearest tens
Quality of the school	The respondent's school quality indicator (1 – students are winners of international Olympiads/competitions, 0 – not)
The presence of specialization in school	The presence of a special specialization of the respondent's school (1 – yes, 0 – no)
Education of the mother/father	Education of the respondent's mother/father
	1 – 9 grades or less, 2 – Primary vocational education, 3 – Secondary general education, 4 – Secondary vocational education, 5 – Incomplete higher education, 6 – Higher education, 7 – Academic degree / 2 higher education
Number of books at home	The number of books in the respondent's family
	1– 0-10 books, 2 – 11-25 books, 3 – 26-100 books, 4 – 101-200 books, 5 – 201-500 books, 6 – more than 500 books
Family income	Family income (total)
	1 – less than 20 thousand rubles, 2 – from 20 to 29 thousand rubles, 3 – from 30 to 49 thousand rubles, 4 – from 50 to 79 thousand rubles, 5 – over 80 thousand rubles
Number of children in the family	Number of children in the respondent's family
Attending additional classes	Attending additional classes by the respondent (1 – yes, 0 – no)
Homework completion time	Time to complete h/w (hours per day)
Homework checking by parents	Do parents spend time checking h/w (1 – yes, 0 – no)
Household duties	Housework interferes with the respondent's studies (1 – yes, 0 – no)
Work experience	The respondent has work experience (1 – yes, 0 – no)
Interest in various professions	The respondent is interested in what people of some professions do. The variable accepts integer values in the range [-3, 3] except 0, where -3 – completely disagree, 3 – completely agree
Trust in parents when choosing an education	The respondent will prefer to follow their parents' advice about studying/working. The variable accepts integer values in the range [-3, 3] except 0, where -3 – completely disagree, 3 – completely agree

Source: compiled by the author based on the questionnaire of the 1st wave of TrEC (https://trec.hse.ru/anketa)

Table A2. The average value and standard deviation of the variables used in the logit model to assess the probability of a decision to continue studying in the 10th grade

	(1)	(2)
Desire to continue studying at school after the 9th grade	0.69 (0.46)	0.66 (0.47)
Gender (f.)	0.48 (0.50)	0.48 (0.50)
Average TIMSS score	545.74 (71.14)	543.17 (72.00)
Quality of the school	0.51 (0.50)	0.51 (0.50)
The presence of specialization in school	0.53 (0.50)	0.53 (0.50)
Mother's education	4.37 (1.58)	4.27 (1.62)
Father's education	4.13 (1.58)	
Number of books at home	3.28 (1.28)	
Family income	2.17 (1.11)	2.03 (1.10)
Number of children in the family	2.00 (0.97)	1.94 (0.98)
Attending additional classes	0.44 (0.50)	0.42 (0.49)
Homework completion time	2.60 (1.37)	2.59 (1.36)
Homework checking by parents	0.44 (0.50)	0.44 (0.50)
Household duties	2.82 (0.46)	2.82 (0.46)
Work experience	0.53 (0.50)	0.55 (0.50)
Interest in various professions	1.31 (1.88)	1.31 (1.88)
Trust in parents when choosing an education	0.58 (1.98)	0.53 (2.00)
Number of observations	1845	2434

Source: compiled by the author based on data from the 1st wave of TrEC

Note: the variable explanations are provided in the Appendix (Table A1).

Table A3. Average value and standard deviation for variables used in the logit model for estimating the probability of a desire to pursue higher education

	(1)	(2)
Desire to get a higher education	0.85 (0.36)	0.83 (0.37)
Gender (f.)	0.48 (0.50)	0.48 (0.50)
Average TIMSS score	547.78 (71.52)	545.78 (71.32)
Mother's education	4.39 (1.58)	4.31 (1.62)
Father's education	4.18 (1.57)	
Number of books at home	3.32 (1.30)	
Family income	2.19 (1.12)	2.06 (1.11)
Number of children in the family	2.00 (0.96)	1.94 (0.97)
Number of observations	1940	2517

Source: compiled by the author based on data from the 1st and 2nd waves of TrEC

Note: the variable explanations are provided in the Appendix (Table A1).

Table A4. Description of the created variables

Variables	Question numbers with a "+"	Question numbers with "-"
Diligence and perseverance	28_1, 28_3, 28_15	
Determination and ability to achieve goals	28_5, 28_11, 28_13	28_2, 28_4, 28_9
Anxiety about choosing your own path	24_12	24_15
Preference to follow the advice of parents	24_10	
Interest in various study options and professions	24_9, 24_19	
Desire to think about the future and discuss life plans	24_6, 24_17	24_3
Understanding the path of life/Certainty in studies and work	24_2, 24_5, 24_8, 24_14, 24_16	24_1

Source: compiled by the author based on the questionnaire of the 1st wave of TrEC (https://trec.hse.ru/anketa)

Note: the table presents descriptive statistics of variables derived from the responses to questions in the 'Your self-image' section of the 1st wave of TrEC. Each new variable represents the arithmetic mean of answers to specified questions in the 2nd and 3rd columns. The questions were categorized based on whether they were scored with a '+' or a '-'. For instance, in the 'determination' variable, agreement with the statement 'I achieved the goals I had long pursued' was considered with a '+' sign, while agreement with the statement 'Failures usually stop me' was considered with a '-'. All questions were framed as follows: 'Evaluate to what extent you agree with the statements.' For questions included in the 'diligence and perseverance' variable, the scale ranged from 1 for completely disagree to 5 for completely agree. For all other questions, the scale ranged from -3 for completely disagree to 3 for completely agree.

Table A5. Descriptive statistics of created variables

Variables	Min	Sample average for 9th grade	Sample average for 11th grade	Max
Diligence and perseverance	1	3.45	3.44	5
Determination and ability to achieve goals	-3	0.61	0.60	3
Anxiety about choosing your own path	-3	-0.59	-0.51	3
Preference to follow the advice of parents	-3	0.55	0.50	3
Interest in various study options and professions	-3	1.20	1.19	3
Desire to think about the future and discuss life plans	-3	0.28	0.27	3
Understanding the path of life/Certainty in studies and work	-3	0.89	0.79	3

Source: compiled by the author based on data from the 1st and 2nd waves of TrEC

Note: average values for variable individual characteristics of schoolchildren.
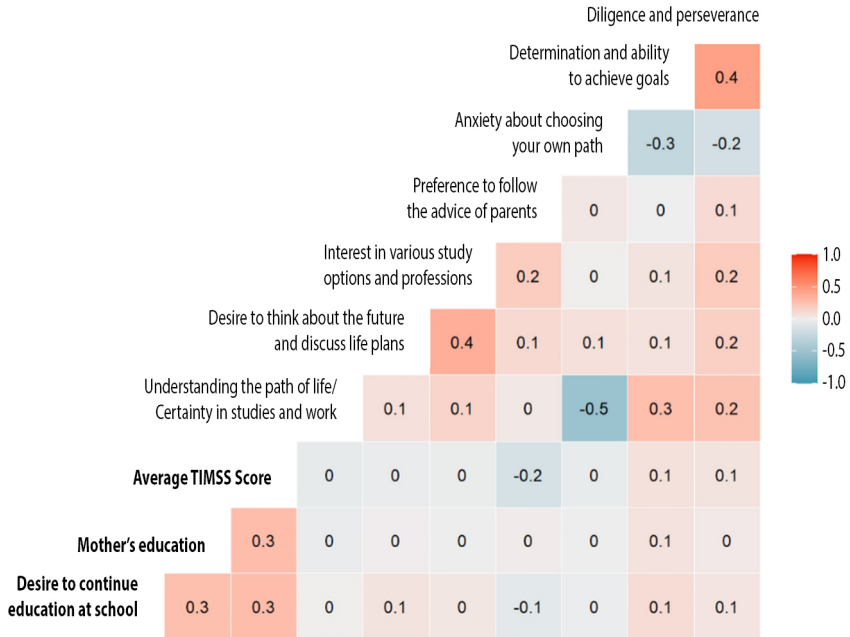
Figure 10. Correlation matrix. Sample of the 11th grade/SVE/PVE. *Source*: compiled by the author based on data from the 1st and 2nd waves of TrEC. *Note:* the correlation between individual characteristics of schoolchildren and their mother's education, academic results, and the desire to pursue higher education.

Table A6. The results of the logit regression analyzing the probability of a desire to continue studying in the 10th grade, considering personal qualities

	(1)		(2)	
	Logit	Average marginal effect	Logit	Average marginal effect
Gender (f.)	-0.512*** (0.107)	-0.096	-0.545*** (0.104)	-0.098
Average TIMSS score	0.008*** (0.001)	0.001	0.0084** (0.001)	0.001
Quality of the school	0.144 (0.099)	0.025	0.165* (0.097)	0.023
The presence of specialization in school	0.135 (0.099)	0.024	0.093 (0.097)	0.017
Mother's education	0.263*** (0.033)	0.046	0.262*** (0.032)	0.047
Family income	0.212*** (0.051)	0.037	0.214*** (0.050)	0.038

	(1)		(2)	
	Logit	Average marginal effect	Logit	Average marginal effect
Number of children in the family	0.003 (0.054)	0.000	-0.008 (0.041)	-0.001
Attending additional classes	0.540*** (0.106)	0.096	0.557*** (0.103)	0.101
Homework completion time	0.066* (0.040)	0.012	0.070* (0.038)	0.012
Homework checking by parents	0.063 (0.103)	0.011	0.051 (0.100)	0.10
Household duties	0.075 (0.110)	0.013	0.054 (0.106)	0.10
Work experience	-0.420*** (0.102)	-0.074	-0.421*** (0.100)	-0.075
Interest in various professions	0.049* (0.026)	0.009	0.056** (0.026)	0.010
Trust in parents when choosing an education	-0.006 (0.026)	-0.001	-0.003 (0.025)	-0.001
Anxiety about choosing your own path	0.141*** (0.030)	0.025		
Determination and ability to achieve goals	0.248*** (0.064)	0.043		
Diligence and perseverance	0.018 (0.074)	0.003		
Constant	-5.789*** (0.577)		-5.574*** (0.518)	
Number of observations	2.370		2.434	
Logarithm of likelihood		-1,242.347		-1,296.545
Akaike Criterion		2,520.693		2,623.090
Note:			*p<0.1; **p<0.05; ***p<0.10	

Source: compiled by the author based on data from the 1st and 2nd waves of TrEC.

Note: the table displays the results of two logit models, with the latent variable being the inclination to decide to continue studying after grade 9 at school. Robust errors, resistant to heteroscedasticity, are provided in parentheses under the estimated coefficients. The explanation of the variables is available in the Appendix (Table A1). Regression (1) distinguishes itself from regression (2) through the inclusion of personal characteristics as regressors.

Table A7. The results of the logit regression of the probability of a desire to obtain higher education, taking into account personal qualities

	(1)		(2)	
	Logit	Average marginal effect	Logit	Average marginal effect
Gender (f.)	-1.302*** (0.127)	-0.118	-1.031*** (0.121)	-0.120
Average TIMSS score	0.010*** (0.001)	0.001	0.010*** (0.001)	0.001
Mother's education	0.303*** (0.041)	0.034	0.312*** (0.039)	0.036
Family income	0.304*** (0.067)	0.034	0.312*** (0.064)	0.036
Number of children in the family	-0.008 (0.061)	-0.001	-0.016 (0.056)	-0.002
Anxiety about choosing your own path	0.006 (0.035)	0.001		
Determination and ability to achieve goals	0.323*** (0.079)	0.036		
Diligence and perseverance	-0.025 (0.094)	-0.003		
Number of observations	2.406		2.517	
Logarithm of likelihood	-874.201		-935.026	
Akaike Criterion		1,766.402		1,882.052
Note:		*p<0.1; **p<0.05; ***p<0.01		

Source: compiled by the author based on data from the 1st and 2nd waves of TrEC

Note: the table displays the results of two logit models, with the latent variable being the inclination to decide to continue studying after grade 9 at school. Robust errors, resistant to heteroscedasticity, are provided in parentheses under the estimated coefficients. The explanation of the variables is available in the Appendix (Table A1). Regression (1) distinguishes itself from regression (2) through the inclusion of personal characteristics as regressors.

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