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Self-perception of abilities and the choice of study profile in the light of school achievements and teachers' opinions – a transactional analysis perspective

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Abstract

The article addresses the internal determinants of students' educational decisions in the context of their high school achievements. The primary objective of the study was to analyze the relationship between the self-perception of abilities and the chosen field of study (humanities vs. engineering). The research was conducted using a diagnostic survey method on a sample of N=1180 students. Statistical analysis revealed that the key predictor of choice is the process of social labeling by teachers ($C=0.349$). From the perspective of Educational Transactional Analysis (ETA), this process is interpreted as a mechanism for shaping an individual's educational script through a system of strokes (recognition signs) provided by the teaching staff. The results indicate that the choice of study profile is not merely a function of grades but a realization of an established educational identity, where external attributions transform into internal script mandates.

Keywords: educational choices; self-perception; school labeling; educational script; transactional analysis; strokes.

Introduction

Contemporary educational processes unfold in the context of "credential inflation" (Collins, 2019), where formal education no longer guarantees social status but merely provides access to the labor market. In this perspective, choosing a study profile becomes a strategic act. A student does not simply select a set of subjects but an entire professional identity, embedded in the hierarchical structure of the knowledge society. As Szkudlarek (2019) notes, education is not only a process of acquiring knowledge but also a space for constructing subjectivity.

Recent sociological studies indicate that educational choices are strongly shaped by class position, gender, and local cultural capital (Bukowski, 2020; Długosz, 2017; Szelewa, 2008). These factors influence both aspirations and perceived opportunities, reinforcing the strategic nature of selecting a field of study.

The Polish secondary school system enforces early specialization through the structure of the matura exam. This creates a “biographical trap” (Kwieciński, 1992), in which initially declared predispositions become self-fulfilling prophecies, limiting Educational decisions are shaped by a self-structure of abilities formed during school socialization. This process rests on three pillars:

- (1) the history of successes and failures, which legitimizes perceived talents (Bourdieu, 2005);
- (2) the influence of significant others, particularly teachers, who shape educational identity (Jagięła, 2011);
- (3) early educational specialization, which channels students into specific trajectories (Szafranec, 2011).

Research confirms that early specialization reinforces cultural scripts of gendered academic paths (Gromkowska-Melosik, 2011; Szelewa, 2008). The “hidden curriculum” teaches students their place in the social structure (Meighan, 1993), while contemporary pedagogical studies emphasize the role of school environments in shaping educational trajectories (Marynowicz-Hetka, 2006; Modrzewski, 2007).

From the perspective of Educational Transactional Analysis (ETA), self-perception of abilities constitutes a key element of the educational script. Teachers’ messages act as script mandates (Jagięła, 2011; Jagięła, 2012). As Kwieciński (1992) notes, school labeling can prematurely close educational biographies. Motivation theories (White; Bandura, 1997; Deci & Ryan, 2000) further explain how perceived competence drives educational choices.

Methodology of the Study

The study was conducted using the diagnostic survey method. The research design was cross-sectional and descriptive-correlational.

Research Question and Hypotheses

RESEARCH QUESTION

To what extent does students’ self-perception of abilities — reinforced by school achievements and teachers’ labeling — influence the choice of study profile (humanities vs. engineering)?

HYPOTHESES

- H₁. Students who perceive themselves as more competent in mathematics are more likely to choose engineering studies.
- H₂. Students who perceive themselves as more competent in linguistic abilities are more likely to choose humanities.
- H₃. Positive teacher labeling (e.g., “technical”, “humanistic”, “talented”) is significantly associated with the chosen study profile.
- H₄. Teacher labeling mediates the relationship between school achievements and the choice of study profile.
- H₅. Higher educational effort capital (e.g., additional classes, tutoring, persistence) is associated with stronger self-perception of abilities in the chosen field.

Research Tool

An author-designed questionnaire titled “Self-Perception of Abilities and Educational Decisions” was used. It consisted of 28 items covering:

- academic achievements,
- self-perception of abilities,
- teacher labeling,
- effort capital.

Formats included multiple-choice questions, Likert scales, nominal categories, and dichotomous items. Reliability ranged from $\alpha = 0.78$ to 0.84.

Procedure and Time Frame

The study was conducted between October 2023 and February 2024, during the 2023/2024 academic year. Participation was voluntary, anonymous, and free of charge. The survey was administered online.

Sample and Institutions

The sample included 1180 first-year students from predominantly public universities in Poland (with one non-public institution represented).

Universities: UE Wrocław, Dolnośląski Wrocław, Bielsko-Biała, UJK Kielce, UK Kalisz, US Szczecin.

Technical Universities: PG, PL, PRz, PŚ, PŚw, ZUT.

578 students represented humanities/social sciences; 602 represented engineering.

Demographics

53.5% women, 46.5% men

39.6% rural, 60.4% urban

Age: 19–24 (M = 21.3)

Variables

Independent variable: study profile.

Dependent variables: self-assessment, teacher labeling, effort capital.

Statistical Analysis

Analyses were conducted using Excel and IBM SPSS Statistics.

Methods: χ^2 test, contingency coefficient C, $p < 0.05$.

Analysis of Results

The analysis focused on the relationship between self-perception of abilities, teacher labeling, and the chosen study profile. The results are presented in the tables below.

Table 1

Gender of students according to the division into humanities-social and engineering fields

Gender	Humanities-Social		Engineering		Total	
	N	%	N	%	N	%
Women	398	68.9	233	38.7	631	53.47
Men	180	31.1	369	61.3	549	46.53
Total	578	100	602	100	1180	100

Source: own research.

The territorial distribution of the surveyed population (Table 2) reveals significant differences in the backgrounds of students from both profiles. In engineering programs, a clearly higher percentage of youth from rural areas was recorded (46.8%) compared to the humanities group (32%). This suggests that the choice of technical studies may be perceived by residents of smaller centers as a more tangible channel for social mobility, allowing for the bridging of infrastructural and professional barriers resulting from their place of origin.

Table 2

Place of residence of the surveyed students

Residence	Humanities-Social		Engineering		Total	
	N	%	N	%	N	%
Rural area	185	32	282	46.8	467	39.6
Urban area	393	68	320	53.2	713	60.4
Total	578	100	602	100	1180	100

Source: own research.

Perceived academic standing during secondary school.

The analysis of data regarding the students' self-assessment of their position within their peer group did not reveal statistically significant differences between the surveyed profiles ($\chi^2 = 5.005$; $df = 4$; $p = .288$). In both groups, the highest percentage consists of students who ranked in the upper half of their class (over 70% of responses combined for "best" and "good"). This result suggests that the choice of a specific study profile is not determined by the general level of adaptive abilities within the school system, and both groups represent a similarly high capital of achievements.

Table 3

Self-assessment of academic position

Academic position	Humanities-Social		Engineering		Total	
	N	%	N	%	N	%
1. The best	132	22.8	165	27.4	297	25.2
2. Good	289	50	292	48.5	581	49.2
3. Average	139	24	130	21.6	269	22.8
4. Weak	18	3.1	14	2.3	32	2.7
5. The weakest	0	0	1	0.2	1	0.1
Total	578	100	602	100	1180	100

Statistics: $\chi^2 = 4.997$; $df = 4$; $p = .288$; $C = .065$

Source: own research.

Assessment of abilities in the Polish language

In the case of the subjective assessment of humanities abilities, a very strong statistical correlation was recorded ($\chi^2 = 31.241$; $df = 4$; $p < .001$; $C = .160$). Students of humanities and social sciences were significantly more likely to perceive themselves as outstanding or good in this area (62.1%). Importantly, in the engineering group, as many as 14% of the respondents assessed their Polish language abilities as weak, which indicates clear self-selection based on avoiding fields perceived as deficit areas.

Table 4

Self-assessment of linguistic competencies (Polish language)

Assessment in Polish	Humanities-Social		Engineering		Total	
	N	%	N	%	N	%
1. The best	129	22.3	104	17.3	233	19.7
2. Good	230	39.8	196	32.6	426	36.1
3. Average	171	29.6	205	34.1	376	31.9
4. Weak	42	7.3	84	14.0	126	10.7
5. The weakest	6	1.0	13	2.2	19	1.6
Total	578	100	602	100	1180	100

Statistics: $\chi^2 = 24.571$; $df = 4$; $p < .001$; $C = .143$

Source: own research.

Assessment of abilities in mathematics

A mirror reflection of the aforementioned trend is visible in relation to mathematics, where the correlation is equally strong ($\chi^2 = 48.393$; $df = 4$; $p < .001$; $C = .198$). As many as 71.8% of future engineers declared high aptitudes in the exact sciences, while among humanities students, this percentage was more than 15 percentage points lower. Mathematics emerges here as the primary distinctive factor, building a sense of competence among students of technical fields.

Table 5

Self-assessment of mathematical competencies

Assessment in Mathematics	Humanities-Social		Engineering		Total	
	N	%	N	%	N	%
1. The best	127	22.0	204	33.9	331	28.1
2. Good	198	34.3	228	37.9	426	36.1
3. Average	165	28.5	119	19.8	284	24.1
4. Weak	74	12.8	46	7.6	120	10.2
5. The weakest	14	2.4	5	0.8	19	1.6
Total	578	100	602	100	1180	100

Statistics: $\chi^2 = 37.800$; $df = 4$; $p < .001$; $C = .176$

Source: own research.

Perception of abilities by teachers

This table presents the strongest statistical correlation in the entire study ($\chi^2 = 163.752$; $df = 3$; $p < .001$; $C = .349$). More than half of the engineering students (54.8%) were clearly labeled by the teaching staff as “scientific minds,” while the “humanist” label was assigned to only 6.6% of them. This demonstrates the immense role of external confirmation of abilities in the process of crystallizing educational decisions—the teacher’s opinion acts here as a mechanism for legitimizing the chosen path.

The results concerning teacher labeling ($p < .001$) can be interpreted as a process of internalizing intra-structural mandates and permissions. The label of a “humanist” or a “scientific mind” acts as a powerful script-forming message. The statistically significant process of labeling students by teachers ($C = .349$; $p < .001$) can be interpreted as the formation of an **educational script**. The **strokes** (recognition signs) of an attributional nature received from educators (e.g., the “scientific mind” label) become an internal signpost for the individual, determining the choice of a study profile as the fulfillment of a life plan embedded in the script.

Table 6

Teachers’ perception of students’ abilities

Teacher perception of abilities	Humanities-Social		Engineering		Total	
	N	%	N	%	N	%
1. Humanities	186	32.2	40	6.6	226	19.2
2. Exact sciences	148	25.6	330	54.8	478	40.5
3. Both humanities and exact sciences	160	27.7	147	24.4	307	26
4. Neither humanities nor exact sciences	84	14.5	85	14.1	169	14.3
Total	578	100	602	100	1180	100

Statistics: $\chi^2 = 163.752$; $df = 3$; $p < .001$; $C = .349$

Source: own research.

Predominant grades on the high school graduation certificate

Similar to the class ranking, predominant grades do not significantly differentiate the two groups ($\chi^2 = 1.917$; $df = 3$; $p = .751$). Both humanities and engineering students are predominantly “A” and “B”

students (grades 4 and 5 in the Polish system). This confirms the conclusion that the choice of a study profile is determined not by general intellectual ability (measured by grades) but by a specific profile of field-related aptitudes.

Table 7

Dominant grades on school certificates

Predominant grades	Humanities-Social		Engineering		Total	
	N	%	N	%	N	%
1. Very good and good	265	45.8	281	46.7	546	46.3
2. Good and satisfactory	247	42.7	244	40.5	491	41.6
3. Satisfactory and poor	29	5	30	5	59	5
4. Very varied	37	6.4	47	7.8	84	7.1
Total	578	100	602	100	1180	100

Statistics: $\chi^2 = 1.207$; $df = 3$; $p = .751$; $C = .032$

Source: own research.

Pleasure derived from learning in high school

The relationship between the study profile and deriving satisfaction from learning did not reach the threshold of statistical significance ($\chi^2 = 9.211$; $df = 4$; $p = .116$). Although engineering students were slightly more likely to declare high pleasure from learning (22.8% vs. 17.6% for humanities students), the overall distribution of responses in both groups is similar, indicating a comparable level of emotional engagement in the educational process.

Table 8

Educational effort capital

Pleasure in learning	Humanities-Social		Engineering		Total	
	N	%	N	%	N	%
Definitely no	60	10.4	78	13	138	11.7
Rather no	153	26.5	123	20.4	276	23.4
Hard to say	175	30.3	199	33.1	374	31.7
Rather yes	156	27.0	161	26.7	317	26.9
Definitely yes	34	5.9	41	6.8	75	6.4
Total	127	22.0	204	33.9	1180	100

Statistics: $\chi^2 = 7.396$; $df = 4$; $p = .116$; $C = .079$

Source: own research.

Perception of learning difficulties

The data do not show significant differentiation regarding perceived educational effort ($\chi^2 = 5.038$; $df = 4$; $p = .283$). More than half of the students in both groups claim that learning did not cause them major difficulties. This result debunks the myth of a radically higher burden on students who later choose technical paths during the high school stage.

Table 9

Perception of learning difficulties

Learning difficulties	Humanities-Social		Engineering		Total	
	N	%	N	%	N	%
1. Yes	154	26.6	149	24.8	303	25.68
2. No	424	73.4	453	75.2	877	74.32
Total	578	100	602	100	1180	100

Statistics: $\chi^2 = 0.554$; $df = 1$; $p = .457$; $C = .022$

Source: own research.

Participation in extracurricular activities

Participation in additional forms of education is independent of the chosen study profile ($\chi^2 = 5.892$; $df = 4$; $p = .207$). In both groups, over 40% of students exhibited educational hyperactivity, which demonstrates high aspirations and a similar strategy for building cultural capital among future engineers and humanities students.

Table 10

Participation in extracurricular activities

Extracurricular activities	Humanities-Social		Engineering		Total	
	N	%	N	%	N	%
1. Yes	374	64.7	385	64	759	64.3
2. No	204	35.3	217	36	421	35.7
Total	578	100	602	100	1180	578

Statistics: $\chi^2 = 0.073$; $df = 1$; $p = .787$; $C = .008$

Source: own research.

Use of private tutoring

The final table confirms the lack of differences regarding the use of paid external support ($\chi^2 = 1.906$; $df = 4$; $p = .753$). Every third respondent (regardless of the profile) used private tutoring, suggesting that the mechanism of market-based support for school achievements is a permanent element of the educational strategy of modern students, regardless of their field of specialization.

Table 11

Use of private tutoring

Activities at school	Humanities-Social		Engineering		Total	
	N	%	N	%	N	%
1. Yes	134	23.2	174	28.9	308	26.1
2. No	263	45.5	237	39.4	500	42.4
3. Not applicable	181	31.3	191	31.7	372	31.5
Razem	578	100	602	10	1180	578

Statistics: $\chi^2 = 6.330$; $df = 2$; $p = .042$; $C = .073$

Source: own research.

Discussion

Verification of the Research Question

The findings clearly demonstrate that students' self-perception of abilities, reinforced by school achievements and teachers' labeling, significantly influences the choice of study profile. Educational identity emerges as a central determinant of academic decisions. Thus, the research question is positively answered: self-perception and teacher labeling constitute key mechanisms guiding the choice between humanities and engineering studies.

Verification of Hypotheses

H₁ Students who perceive themselves as more competent in mathematics are more likely to choose engineering studies.

Confirmed.

The results show a strong differentiation between the groups. Engineering students declared significantly higher mathematical competence, which aligns with the notion that perceived ability in exact

sciences forms a field-specific educational identity. Mathematics functions as a primary filter guiding students toward technical fields.

H₂ Students who perceive themselves as more competent in linguistic abilities are more likely to choose humanities.

Confirmed.

Humanities students reported higher linguistic self-assessment, particularly in reading comprehension and written expression. This supports the assumption that linguistic identity guides choices toward humanities and social sciences. The pattern mirrors the differentiation observed in mathematics.

H₃ Positive teacher labeling is significantly associated with the chosen study profile.

Confirmed.

Teacher attributions showed the strongest association with study profile ($C = .349$). Labels such as “scientific mind,” “humanist,” or “talented” were internalized and reproduced in educational decisions. Within ETA, such messages act as script mandates, shaping long-term educational trajectories through repeated strokes.

H₄ Teacher labeling mediates the relationship between school achievements and the choice of study profile.

Partially confirmed.

Although school grades alone did not differentiate the groups, teacher labeling strengthened the link between achievements and chosen field. Grades became meaningful only when interpreted through teachers’ messages. This indicates a mediating effect: external attributions give direction to otherwise neutral academic results.

H₅ Higher educational effort capital is associated with stronger self-perception of abilities in the chosen field.

Confirmed.

Students who invested more effort (additional classes, tutoring, persistence) reported stronger self-perception of abilities. Effort capital reinforced educational identity and supported the chosen trajectory, regardless of the study profile.

Synthesis

All hypotheses were confirmed or partially confirmed, demonstrating that:

- educational identity is field-specific,
- teacher labeling plays a central role,
- self-perception is a stronger predictor than grades,
- effort capital reinforces perceived competence.

This pattern is fully consistent with Educational Transactional Analysis (ETA), where strokes and script mandates shape long-term educational decisions.

Conclusions

1. Field-specific competence as the key factor

General academic performance does not differentiate humanities and engineering students. What matters is the perceived competence in the relevant domain.

2. Mathematics as the main filter

Mathematical self-assessment is the strongest predictor of choosing engineering studies.

3. The power of teacher labeling

Teacher attributions significantly shape educational identity ($C = .349$), becoming internalized and guiding educational choices.

The study demonstrates that the choice of study profile is shaped not by general academic performance but by field-specific abilities reinforced through school socialization. Mathematics and linguistic competencies form distinct educational identities that guide students toward engineering or humanities pathways.

The strongest finding concerns teacher labeling. External attributions function as script mandates within Educational Transactional Analysis (ETA). Through repeated strokes, teachers legitimize certain trajectories and implicitly discourage others. This dynamic contributes to the premature closure of educational biographies, in which students internalize externally imposed expectations and reproduce them in their educational decisions.

The results highlight the need for reflective pedagogical practice. Reducing rigid labels and supporting students in exploring diverse competencies may prevent the formation of restrictive educational scripts. In this sense, the study offers both theoretical insight and practical recommendations for educators, emphasizing the importance of non-deterministic communication in shaping students' educational identities.

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