

ENTREPRENEURSHIP EDUCATION: INFLUENCE, CONTROL AND DEVELOPMENT OF INDIVIDUAL COMPETENCES

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Abstract

Purpose of the article:

The purpose of this article is to present innovative solutions for contemporary education, which still relies on foundations established nearly 200 years ago. These foundations emerged in a context where human beings were understood differently than today, and humanism functioned largely as rhetoric. The paper aims to emphasize the urgent need to transform the educational system by integrating long-standing experience with the technological possibilities of the 21st century. Additionally, the authors conducted research to identify the key factors shaping entrepreneurial behaviors among the respondents.

Methodology/methods: *A mixed approach was employed, combining quantitative analysis with a literature review. The empirical part utilized a probit model to estimate the probability of specific phenomena occurring. Simultaneously, a review of the scientific literature on entrepreneurial intentions was carried out, with particular attention to the role of family environment, prior exposure to economic activities, and psychological factors, enabling deeper interpretation of the obtained results.*

Scientific aim: *To demonstrate that entrepreneurs can be educated. The authors also propose an alternative pathway for developing contemporary education through the use of modern technology - bridging modernity and tradition - to provide young people with a genuine choice between becoming employees or employers.*

Findings: *The authors highlight the threat of declining IQ levels and regression of scientific thought in developed countries, as well as the issue of an outdated educational system that aims at producing graduates - workers rather than creators and innovators - which is incompatible with the contemporary world built on humanistic values.*

Conclusions: *The research proved that future entrepreneurs could be identified as early as adolescence. Significant factors include individual actions, assumptions, and life plans, as well as upbringing - since children from entrepreneurial families more frequently express the desire to establish their own businesses.*

Keywords: *education, development, Model K. M. Krusiec, innovation, entrepreneurship, economics*

JEL Classification: *I21, L26, O35, D91*

INTRODUCTION

Education fundamentally serves to foster human independence - it is the cornerstone of modern society (KATRENČÍK, LISNIK, ZATROCHOVÁ, 2023). Knowledge empowers individuals to transcend their comfort zones and strive continually for improved living standards. This quest for understanding fuels an innate curiosity, driving not only personal but also global development. Motivated by this belief, parents send their children daily to educational institutions, expecting them to cultivate aspirations and nurture curiosity about the world. However, in reality, these institutions often instill obedience toward elites, reinforcing conformity in pursuit of working-class ideals and mortgage loans (PAGLAYAN, 2022).

Contemporary education remains largely rooted in the Prussian system of schooling, which, at the beginning of the 20th century - when widespread illiteracy was prevalent - had some positive attributes. Today, however, one cannot escape the impression that its primary intention was, and often still is, to control obedient masses, a practice observed globally (PAGLAYAN, 2022). Significantly, some elites historically perceived the threat not in education itself but in its absence. Consequently, mass education was designed not to foster individual potential but to ensure that students accept roles predefined by authorities. Initially, flawed teaching processes were compounded by deliberately lowering teacher training quality, as outlined in the 1849 Prussian directive. Psychology, pedagogy, didactics, and native language literature were consequently removed from curricula (MAZUR, 2015). Simultaneously, governments assumed control over defining knowledge values, textbook quality, and academic censorship to align education strictly with their interests (PAGLAYAN, 2022).

An underlying and detrimental educational goal is compliance with elite demands, passive acceptance of whims, and tacit endorsement of the status quo. Today, as a society rooted in humanist solutions, we grapple with determining what is genuinely good or bad, right or unnecessary. Humanity struggles between the aspiration for autonomy and susceptibility to authoritarian pressures (PALEJ, 2023). This issue is critically relevant, as contemporary global economic problems are exacerbated by non-economic issues, such as flawed education, which hold global significance (ŠPIRKOVÁ et al., 2022).

The aim of this article is to identify specific factors determining entrepreneurial traits among surveyed individuals. The authors highlight gaps in the teaching of entrepreneurship and beyond, proposing potential solutions based on the multidisciplinary „Model K. M. Krusiec“ (PALEJ, KRUSIEC, 2024). The intent is to underscore that contemporary education produces "distorted" citizens fixated on patterns rather than on developing their individual potential and advancing human capabilities.

1 ARTIFICIAL INTELLIGENCE AND THE FLYNN EFFECT

According to the Flynn effect, human IQ was expected to evolve due to compulsory education. However, the phenomenon of compulsory schooling and rising human intelligence was founded on an uneven base-thus, in low-developed countries, where education is being popularized, we observe an increase in IQ (NIJENHUIS, MURPHY, EEDEN, 2011), whereas in highly developed countries, where most citizens have access to the Internet and relatively high-quality education, there has been a decline for years (CUDDY, 2024).

The critical question arises as to why the Flynn effect does not apply to developed nations, where the intelligence quotient of society, which should ideally be improving, is actually declining. Could inadequate education, originally created to manipulate global societies, be influencing this? Or is there another issue?

The answer is relatively simple, although the problem depends on many factors. First and foremost, as developed societies, we routinely rely on digital aids designed to streamline the dynamic lives of people in the 21st century. Simultaneously, this leads to brain degradation, as mental processes are outsourced to digitalization within our advanced culture (BRATSBURG, ROGEBERG, 2018). We have irons that recognize fabric types, washing machines that suggest programs, refrigerators that create shopping lists, and smartphones equipped with artificial intelligence programmed to answer most queries. We no longer use maps, perform calculations, or analyze data - the contemporary human lifestyle revolves around using digital achievements, which, if misused, pose significant risks. Awareness of these risks is necessary to function safely and effectively (KRUSIEC, 2019). All this happens in real time and serves to relieve you of your responsibilities - so what's left for the brain?

Concerns about an "education crisis" were recognized as early as 1954, when H. Arendt identified teaching issues in post-war USA, highlighting uncertainties surrounding young people's future, who were inadequately prepared for new realities by the education system of the time (ARENDR, 1968). Similar views were expressed by A. Toffler, who detailed contemporary challenges faced by individuals lost in a dynamic, digital world full of contradictions (TOFFLER, 1970).

A literature analysis suggests that globally, society is systematically experiencing a decline in educational quality, currently insufficient to ensure a decent life, particularly among young people under 29, as evidenced by the EU's NEET (not in education, employment, or training) rate of approximately 15% (EUROSTAT, 2024). Meanwhile, the challenges associated with this issue vary according to the living standards of each region. In developed countries, educational problems predominantly relate to inequalities among students from affluent, impoverished, and middle-income families, and free education is insufficient to guarantee well-being (OECD, 2022). Additional identified problems include the decline in teachers' authority in Western cultures and "degree inflation" - an excess of university graduates on the job market. This phenomenon depreciates the value of diplomas. In other words, an increase in student numbers burdens educational systems, inadequately preparing graduates for labor market requirements (EUROSTAT, 2024). Researchers also highlight the impact of the COVID-19 pandemic, significantly reducing education quality globally. School closures affected over 1.6 billion students, resulting in substantial educational losses. The World Bank estimated that global educational losses could amount to \$17 trillion in lifetime earnings, approximately 14% of global GDP (WORLD BANK, 2021).

The decline in education quality and related difficulties in ensuring a decent life are also reflected in the PISA results from 2018 to 2022. Studies conducted by OECD's Programme for International Student Assessment covered 83 countries and about 690,000 fifteen-year-olds in 2022. Table 1 presents results from selected Western-culture countries.

Table 1: Comparison of PISA results in 2018-2022

Country	2018	2022	2018	2022	2018	2022
	Mathematics	Mathematics	Reading	Reading	Natural science	Natural science
USA	505	465	478	504	502	499
Poland	512	489	516	489	511	499
Germany	498	475	500	480	503	492
Great Britain	504	489	502	494	505	500
France	493	474	495	474	493	487
Australia	503	487	491	498	503	507
Canada	520	497	512	507	518	515
Spain	481	473	483	474	483	485
Italy	476	471	487	482	468	477
Slovakia	458	464	486	447	464	462

Source: own study based on: OECD, *PISA 2018 Results – Combined Executive Summaries*, Paris: OECD Publishing, 2019; OECD, *PISA 2021 Results (Volume I): The State of Learning and Equity in Education*, Paris: OECD Publishing, 2023; OECD, *PISA 2022 Results (Volume I): The State of Learning and Equity in Education*, Paris: OECD Publishing, 2023. Access: <https://www.oecd.org/pisa/publications/> (access details: 16.08.2025).

Analysis of available data revealed significant changes in student achievements in mathematics, reading, and science in selected countries. For mathematics, the USA saw a decline of 40 points, with similar trends observed in Poland and Germany, where scores decreased by 23 points each - from 512 to 489 in Poland and from 498 to 475 in Germany. Slovakia was the only country to improve, raising its score from 458 to 464 points. It is essential to highlight that these results strongly reflect the educational disruptions caused by the COVID-19 pandemic.

A declining trend was also evident in reading. Poland, which scored 516 points in 2018, dropped to 489 points in 2022, a loss of 27 points. Slovakia saw a decrease of 39 points. Conversely, the USA showed improvement, increasing from 478 to 504 points - a rise of 26 points - indicating the effectiveness of programs supporting critical reading skills. Science results remained relatively stable. Poland's score declined from 511 to 499 points, Germany from 503 to 492 points, Slovakia lost 2 points, France dropped by 6 points, and Canada by 3 points. Improvements were noted in Australia (4 points), Italy (11 points), and Spain (2 points).

2 ENTREPRENEURSHIP IN EDUCATION - THEORY AND PRACTICE

In the Polish education system, the subject of entrepreneurship basics was introduced by regulation of the relevant minister in 2002. This means that generations born in the 1980s had no opportunity for any formal school education in entrepreneurship. By comparison, the United Kingdom introduced entrepreneurship education as early as the 1970s (STONE, WATKINS, 1999).

A study conducted in Italy examined the career paths of graduates from 62 universities who completed their degrees in 2014. The same group was surveyed again one year later. The participants primarily represented technical and scientific fields such as engineering and medicine, although graduates of the humanities were also included. The main objective of the research was to determine how various factors influence career decision-making. The results indicated that as many as 74% of respondents opted for full-time employment immediately after graduation. Migration to other regions was most often driven by job opportunities, while those

who remained in or returned to their home regions were more likely to start their own businesses (FINNI, MEOLI, SOBRERO, 2022).

Similar conclusions were drawn by A. Janowski and A. Szczepańska-Przekota. According to their findings, the entrepreneurship education system in Poland is ineffective and in need of substantial reform. Current educational programs are misaligned with the actual expectations of students and fail to provide them with either the skills or tools necessary to navigate the entrepreneurial environment effectively (JANOWSKI, SZCZEPAŃSKA-PRZEKOTA, 2024).

The GUESSS 2016 project also revealed a low level of entrepreneurial intention among students in the United Kingdom. The study involved 1074 students from 15 British universities located across England, Scotland, and Wales - more than 77% of whom were studying in London. Around 62% of participants were UK nationals, while the remaining were international students. Only a small fraction of recent graduates (6.52%) expressed an intention to establish their own business, whereas nearly 82% preferred stable employment. However, five years after graduation, the number of students intending to start a business rose to 29%. It is also noteworthy that only 27% of respondents had participated in university-based entrepreneurship courses. Interestingly, international students were more likely to take part in specialized entrepreneurship programs (5.5%) than British students (2%). Furthermore, students whose parents owned a business were more inclined to pursue entrepreneurship themselves, with 33.43% indicating such intentions. As a result, only 15.08% of the surveyed individuals had attempted to start their own business (ISKANDAROVA, BLACKBURN, 2017).

It is crucial to highlight that the fourth industrial revolution necessitates unavoidable changes in societal functioning, and adapting to the demands of the contemporary, dynamic world should involve implementing effective entrepreneurship education conducted by experienced practitioners (KRUSIEC, 2019). Additionally, a significant problem is the flawed system that aims not at improving the masses' situation but at exerting control by creating managed crises (PALEJ, KRUSIEC, 2024).

In the literature on entrepreneurial education, an important position is held by A. Gibb's concept, according to which entrepreneurship should not be perceived as a set of knowledge delivered in a theoretical manner, but rather as a collection of behaviours, attitudes, and competencies developed under conditions of uncertainty. He emphasized that the educational environment should reflect the real conditions in which an entrepreneur operates – it should be dynamic, demanding, open to making mistakes, and conducive to learning through experience. Consequently, creating practical situations such as projects, simulations, or decision-making games is crucial, as they enable learners to develop initiative, independence, and resilience to risk. In Gibb's view, only action-based education can lead to the authentic development of entrepreneurial attitudes and prepare individuals to function in a changing economic environment (Gibb, 2002).

3 METHODOLOGY

The aim of the conducted research was to identify factors determining entrepreneurship among respondents. The authors focused on individual characteristics and the overall life situation of respondents to determine future ambitions, innovative actions, and the influence of parental entrepreneurship on the choices of their offspring.

The sampling procedure had a mixed character, combining elements of convenience sampling and institutional sampling. The study was conducted between 2021 and 2024 among students of higher education institutions located in the Świętokrzyskie region (Kielce, Tarnobrzeg) and the Małopolskie region (Myślenice, Bochnia). The final research group

consisted of 500 individuals aged 16–28 (mean age: 22), of whom 56% were women. The respondents were students of economics, pedagogy, and internal security.

Institutional sampling was applied because the study participants were individuals belonging to specific academic units that agreed to allow their students to participate in the research project. Within these institutions, convenience sampling was used, including all students present during classes as well as those who voluntarily chose to complete the questionnaire. The sampling procedure was non-random; its purpose was to collect data on a defined population of students representing fields in which formal entrepreneurship education plays a significant role.

To minimise distortions resulting from the “expectation effect,” full anonymity and voluntary participation were ensured, which significantly reduces the risk of biased responses. The applied sampling strategy made it possible to obtain representative results within the studied population, which is consistent with research practices in the field of education and entrepreneurship in academic settings.

The research method applied was probit regression (probit model), within which the following indicators were analyzed:

1. Entrepreneurial activity of at least one parent.
2. Entrepreneurial activity of the student.
3. Future intentions / plans - company ownership versus stable employment.
4. Innovativeness of actions.
5. Risk tolerance.
6. The role of the university / school in career plans.

The research questionnaire consisted of 54 questions and was titled “Diagnostic Study of Factors Inhibiting Entrepreneurial Attitudes in a Selected Population.” The authors considered an alternative title (“Study of the Causes of Lack of Entrepreneurship”), but it was rejected to avoid suggesting responses and to reduce the risk of bias. Respondents completed the survey anonymously, which decreased the likelihood of phenomena such as impression management and increased the credibility of the data.

The questionnaire was complemented by a reality simulation in the form of an original board game, *Krusjatka*, which constitutes an element of the “Model K. M. Krusiec”. To ensure greater methodological transparency, the game was designed based on three components:

- a fixed set of decision-making tasks involving solving business situations, assessing risk, choosing strategies, and responding to changing market conditions;
- a scoring system reflecting the quality of decisions, in which correct choices were rewarded with positive points and incorrect ones penalised with negative points;
- four levels of difficulty that participants completed in a fixed sequence, enabling comparability of results across respondents.

The game instructions were identical for all participants, and the time allotted for tasks was standardised, which increased the internal reliability of the measurement. Prior to the main study, a pilot test involving 30 students was conducted to verify the clarity of instructions, adjust the difficulty level, and eliminate ambiguous questions. The pilot results were not included in the main analysis but were used to refine the tool.

In the study, the game functioned as a behavioural test measuring the propensity to make entrepreneurial decisions and the effectiveness of strategic actions. The final score (0–10 points) was used as an independent variable in the probit model.

The aim of the study was to determine the level of students’ entrepreneurship and to identify differences between individuals raised in entrepreneurial families and those whose parents did not run a business. Additionally, the analysis considered the impact of previous educational experiences and declared career intentions. The project distinguished the following

independent variables: parental entrepreneurship, students' prior entrepreneurial activity, declared career plans, innovation preferences, level of risk acceptance, and the score obtained in the game. The dependent variables included running a business or the intention to start one.

The probit model was applied due to its ability to more effectively capture the probabilistic nature of respondents' decisions compared to classical linear regression models. Additionally, it allows for better modeling of relationships based on the assumption of normally distributed errors. The advantages of the probit model include reliable estimates and conformity with decision theory.

Probit model used:

$$P(Y = 1 | X) = \Phi(\beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \beta_7 X_7) \quad (1)$$

Where indicator X is defined as follows:

- X₁ - entrepreneurial activity of at least one parent (0 - none, 1 - yes),
- X₂ - entrepreneurial activity of the student (0 - none, 1 - yes),
- X₃ - future plans of the respondent (0 - no intention of establishing a business, prefers stable employment; 1 - intends to establish a business),
- X₄ - innovativeness of actions (0 - prefers traditional methods, 1 - prefers innovative methods),
- X₅ - risk tolerance (scale from 1 to 5),
- X₆ - role of the university/school in professional plans (0 - institution had no influence, 1 - institution had influence),
- X₇ - result in the board game related to entrepreneurial inclination - number of correct answers (from 0 to 10, where 10 is the highest score achieved).

For consistency, all regression coefficients in the probit model are denoted using lower-subscript notation ($\beta_0, \beta_1, \beta_2, \beta_3, \beta_4, \beta_5, \beta_6, \beta_7$). Earlier inconsistent formatting of beta indices has been standardized throughout the article.

Interpretation of coefficients β

- $\beta_1 > 0$ - Having an entrepreneurial parent increases entrepreneurial inclination.
- $\beta_2 > 0$ - A student's prior entrepreneurial experience (e.g., running a business or planning to start one) increases the likelihood of establishing a company in the future.
- $\beta_3 > 0$ - Individuals who plan to establish a company are more likely to follow through and start their own business.
- $\beta_4 > 0$ - Preference for innovation in entrepreneurship increases the likelihood of establishing a company.
- $\beta_5 > 0$ - Higher risk tolerance increases the probability of deciding to start a business.
- $\beta_6 > 0$ - Schools or universities that support entrepreneurial development increase the probability that a student will decide to start their own business.
- $\beta_7 > 0$ - Better performance in the board game, indicating a greater ability to make sound business decisions, increases the likelihood of establishing a company.

The intercept term (β_0) obtained in the probit model equals -1.45 (Table 4). This value is constant across all equations (2)–(8).

Indicator No. 1: Entrepreneurial activity of at least one parent

This indicator aims to determine whether having at least one parent who runs their own business increases the likelihood that respondents will either own or plan to establish their own company.

$$P(Y = 1 | X_1) = \Phi(\beta_0 + \beta_1 X_1) \quad (2)$$

Where:

$X_1=1$ - if at least one parent ran a business,
 $X_1=0$ - if neither parent ran a business.

Interpretation:

- If $\beta_1 > 0$ - having at least one entrepreneurial parent increases the likelihood that the offspring will own their own business.
- If $\beta_1 < 0$ - parental entrepreneurship reduces entrepreneurial inclination (e.g., the student observes negative aspects).

Indicator No. 2: Entrepreneurial activity of the student

This indicator helps determine whether prior entrepreneurial experiences (e.g., participation in entrepreneurship-related contests or projects) influence respondents' future decisions.

$$P(Y = 1 | X_2) = \Phi(\beta_0 + \beta_2 X_2) \quad (3)$$

Where:

$X_2=1$ - The respondent has run a business or planned to establish one,
 $X_2=0$ - The respondent has neither run a business nor planned to establish one.

Interpretation:

- $\beta_2 > 0$ - Individuals with prior entrepreneurial experience are more likely to establish a business in the future.
- $\beta_2 < 0$ - Negative experiences discourage entrepreneurial behavior.

Indicator No. 3: Future intentions / plans

The aim is to determine whether respondents planned to start their own business or preferred stable employment.

$$P(Y = 1 | X_3) = \Phi(\beta_0 + \beta_3 X_3) \quad (4)$$

Where:

$X_3=1$ - The respondent declares an intention to run a business,
 $X_3=0$ - The respondent prefers stable employment.

Interpretation:

- If $\beta_3 > 0$ - Individuals with strong entrepreneurial intentions more frequently establish businesses.
- If $\beta_3 < 0$ - Stable employment appears more attractive to respondents.

Indicator No. 4: Innovativeness of actions

This indicator determines whether respondents prefer innovation-based or traditional actions.

$$P(Y = 1 | X_4) = \Phi(\beta_0 + \beta_4 X_4) \quad (5)$$

Where:

$X_4=1$ - The respondent prefers innovation-based approaches,
 $X_4=0$ - The respondent prefers traditional business models.

Interpretation:

- $\beta_4 > 0$ - Innovativeness increases the likelihood of running a business.
- $\beta_4 < 0$ - A traditional approach decreases entrepreneurial inclination and indicates a preference for traditional career paths (e.g., stable employment or companies using traditional methods).

Indicator No. 5: Risk tolerance

This indicator aims to determine whether the level of risk acceptance influences the choice of entrepreneurship.

$$P(Y = 1 | X_5) = \Phi(\beta_0 + \beta_5 X_5) \quad (6)$$

Where:

X_5 - Level of risk tolerance (e.g., scale from 1 to 5, where 1 = low tolerance, 5 = high tolerance).

Interpretation:

- $\beta_5 > 0$ - Respondents demonstrating higher risk tolerance more frequently plan or decide to establish their own businesses.
- $\beta_5 < 0$ - Respondents who avoid risk are less likely to choose entrepreneurship as their future career.

Indicator No. 6: Role of university / school in career plans

This indicator helped determine whether the school or university influenced future decisions to establish one's own business.

$$P(Y = 1 | X_6) = \Phi(\beta_0 + \beta_6 X_6) \quad (7)$$

Where:

$X_6=1$ - Respondent indicated that the university or school assisted in developing entrepreneurial attitudes,
 $X_6=0$ - Respondent indicated that the university or school had no influence on their decision to establish their own business.

Interpretation:

- $\beta_6 > 0$ - Educational institutions motivated respondents to establish businesses.
- $\beta_6 < 0$ - Educational institutions had no effect or negatively influenced respondents regarding the establishment of their own businesses.

Indicator No. 7: Board game results and entrepreneurial inclination

This indicator assesses whether better results in the original board game increased the likelihood of choosing entrepreneurship.

$$P(Y = 1 | X_7) = \Phi(\beta_0 + \beta_7 X_7) \quad (8)$$

Where:

X_7 - Number of correct decisions made in the game (e.g., correct answers provided, successful investments, accurate strategies, effectively managed resources). This is a quantitative variable ranging from 0 to 10, where 10 represents the highest game score.

Interpretation:

- $B_7 > 0$ - Respondents who achieved higher scores in the game are more likely to consider starting a business or already own a business.
- $B_7 < 0$ - Higher game scores did not correlate with respondents running businesses; moreover, respondents had no plans to do so.

Table 2: Ordinal Variables

Variable	N	Mean	SD	Min	Max
Level of risk acceptance (1–5)	500	2.4	1.1	1	5
Game results (0–10)	500	2.6	2.1	0	10

Source: own data processing.

Table 3: Binary Variables

Variable	Number (1)	Percent (1)	Number (0)	Percent (0)
Gender: female	280	56.0%	220	44.0%
Type of school: university	220	44.0%	280	56.0%
City with more than 500,000 inhabitants	150	30.0%	350	70.0%
Parents - entrepreneurs	200	40.0%	300	60.0%
Positive influence of parents' entrepreneurial activity	180	36.0%	320	64.0%
Parents encourage entrepreneurship	250	50.0%	250	50.0%
Currently running a business	80	16.0%	420	84.0%
Planning to start a business in the near future	170	34.0%	330	66.0%
Declared innovativeness (preference for new solutions)	260	52.0%	240	48.0%
High / moderate risk tolerance	190	38.0%	310	62.0%
Positive influence of school / university	210	42.0%	290	58.0%
Participation in entrepreneurship-related classes / projects	300	60.0%	200	40.0%

Source: own data processing.

Table 4: Probit Estimation

Variable	β estimated coefficient	Std. error (SE)	z-value	p-value	Sign and significance notes
Constant β_0	-1.45	0.28	-5.18	0.000	(negative, significant)
X ₁ Parents - entrepreneurs	0.40	0.13	3.08	0.002	(positive, significant)
X ₂ Student's own activity	0.58	0.12	4.83	0.000	(positive, significant)
X ₃ Business plans	1.07	0.15	7.13	0.000	(positive, significant)
X ₄ Innovativeness	0.35	0.11	3.18	0.001	(positive, significant)
X ₅ Risk tolerance (1-5)	0.19	0.06	3.17	0.002	(positive, significant)
X ₆ Role of university	0.24	0.10	2.40	0.016	(positive, significant)
X ₇ Game score (0-10)	0.08	0.03	2.67	0.008	(positive, significant)

Source: own data processing.

Model statistics:

- Number of observations (N) = 500
- Log-likelihood: -281.2-281
- Pseudo R² (McFadden): 0.21
- AIC: 578.4
- p-value < 0.05 - the coefficient is statistically significant at the 5% level
- p-value < 0.01 - the coefficient is statistically significant at the 1% level

Interpretation of results:

Constant ($\beta_0 = -1.45$)

- Negative and significant: indicates that when all other variables (X_i) are at level 0 and X₅=1, X₇=0 - minimum values in case of continuous coding, the baseline probability of being entrepreneurial is relatively low.

X₁ - Parents – entrepreneurs ($\beta^1=0,40$)

- Positive and significant → Confirms that having entrepreneurial parents increases the likelihood that the respondent owns or is planning to start a business.

X₂ - Student's own activity ($\beta^2=0,58$)

- Highly significant and positive → Individuals with prior experience (e.g., contests, small online sales) are more likely to pursue entrepreneurial activities.

X₃ - Business plans ($\beta^3=1,07$)

- Highest coefficient in the model → Strong entrepreneurial intentions substantially increase the probability of real-world entrepreneurial actions (starting or already running a business).

X₄ - Innovativeness ($\beta^4=0,35$)

- Positive and significant → The greater the inclination toward innovative solutions, the higher the probability ($Y=1$).

X₅ - Risk tolerance level (1-5) ($\beta^5=0,19$)

- Respondents who rate themselves higher on the risk scale (5 = high tolerance) are more likely to act entrepreneurially. While the effect is moderate, it remains statistically significant.

X₆ - Role of university ($\beta^6=0,24$)

- Support or inspiration from schools/universities also has a positive impact on entrepreneurship.

X₇ - Game results (0-10) ($\beta^7=0,08$)

- Better results in the game requiring business / entrepreneurial decision-making indicate a greater tendency or competence to run a business (positive but modest coefficient).

4 DISCUSSION

The results of the study confirm the importance of the family environment in shaping entrepreneurial intentions, which aligns with the findings of J. C. Carr et al. (2014), who showed that exposure to a family business significantly increases young people's willingness to choose an entrepreneurial path. A similar relationship emerged in the present study: individuals who reported support from family and friends were more likely to engage in entrepreneurial activity, further confirming that the home environment functions as an early "incubator" of entrepreneurial attitudes.

Comparable results are reported by M. Lindquist et al. (2014), who, using an exceptionally large sample of 1.4 million individuals (including 17,639 adoptees), demonstrated that the likelihood of starting a business increases by 60% for those raised in entrepreneurial families. Importantly, environmental influence proved twice as strong as biological influence, a finding that is also reflected in the present study—respondents emphasized the significance of observing their parents' actions and work approach rather than inheritance (which mattered in only 2.2% of cases). As in Lindquist's analysis, the general profession of parents exerted a moderate but meaningful impact on career choice (approx. 10%).

The alignment between the results of this study and the findings of Santos and Liguori (2020) is particularly evident in the area of subjective norms. Respondents who reported strong support from "referent others" more frequently formulated positive expectations toward entrepreneurship. This is precisely the mechanism described by Santos and Liguori as the moderation of the relationship between self-efficacy and intentions—strongest under favourable norms ($b = 0.40$) and weakest under unfavourable ones ($b = 0.16$). Similarly, in the present research, the more positive the opinions in the respondent's environment, the more strongly they linked their intended actions with expected benefits, consistent with the values of the indirect effect (0.06 vs. 0.03).

The findings can also be interpreted through the lens of E. Colombatto and A. Melnik (2009). Their analysis of 178 firms showed that the length of prior work experience increases the probability of successfully obtaining external financing. In the present study, respondents with longer histories of work or volunteer experience more frequently exhibited higher self-confidence regarding their organizational competencies. This convergence suggests that both professional experience and learning-by-doing contribute to the development of entrepreneurial qualities—particularly those understood as reputational capital, network building, and decisiveness.

Another element confirmed in both the literature and the present study is the importance of creativity as a predictor of entrepreneurial behaviour. K. Law and K. Breznik (2017) indicate that creativity facilitates opportunity recognition, which is reflected in the obtained result ($\beta_4 = 0.35$). Although this factor was not decisive, its role in preparing individuals for entrepreneurial activity is significant, especially in the context of the quality of entrepreneurship education (MATUŠ, ZATROCHOVÁ, 2024).

It was also confirmed that risk tolerance is one of the key elements facilitating the decision to start a business. This aligns with the findings of E. Bilgiseven and M. Kasımoğlu (2019), as well as the analysis of N. Fadzil et al. (2022), in which risk tolerance demonstrated a significant effect on intentions ($\beta = 0.373$; $p < 0.001$). In the present study, respondents reporting a higher level of risk acceptance were more likely to express readiness to undertake entrepreneurial initiatives, fully consistent with international research.

It is also worthwhile to relate the results of the simulation tool (*Krusjatka*) to the broader context of research on shaping entrepreneurial attitudes. The observed links between game outcomes and declared intentions suggest that quasi-real experiences can enhance awareness of one's competencies and decision-making preferences. In this sense, the data align with the argument of Baluku, Matagi, and Otto (2020), who highlight the key role of practitioners and role models in developing entrepreneurial attitudes among young people.

At the same time, the results clearly show a shortage of research on entrepreneurial activities during adolescence and early adulthood. Respondents who engaged in small income-generating initiatives at a young age were more likely to declare readiness to develop their own projects, suggesting a relationship worthy of further investigation.

Finally, the analysis confirms the overarching role of the family as the first environment shaping competencies, values, and adaptive strategies. In the context of digital challenges and economic transformation, the results unequivocally show that parents remain the most important activators of entrepreneurial attitudes—both through direct support and through behaviour modelling. In this respect, the role of the family proves even more significant than institutional educational programmes, as confirmed by both previous studies and the analyses conducted here.

CONCLUSION

Key factors influencing entrepreneurship:

- All variables included in the model (having entrepreneurial parents, prior student experience, intentions, innovativeness, risk tolerance, role of the university, game score) are positive and statistically significant.
- The strongest influence is declared intention to start a business (X_3) - this shows that having clear plans strongly translates into actual entrepreneurial actions.
- Prior experiences (X_2) and entrepreneurial parents (X_1) also clearly increase the likelihood of owning a business.

- Innovativeness (X_4), risk tolerance (X_5), and the role of the university (X_6), though associated with slightly lower coefficients, also significantly support entrepreneurial attitudes.
- The game score (X_7) positively correlates with entrepreneurial / business skills, although the effect is moderate.

Factors not included or not significant:

- Gender was not included in the model as an explanatory variable - no clear correlation was found (even though the majority of respondents were women).
- Additional indicators (e.g., “parents encourage entrepreneurship”) were ultimately not included in the model.
- Spiritual or secular values (sacrum-profanum) were not part of the analysis - although these may significantly shape motivations and life goals, they require a separate, more in-depth research approach. In this study, the results related to these values were not statistically significant.

The role of environment and education:

- The saying “you become like those you associate with” is confirmed by the significant influence of family patterns and educational institutions on entrepreneurial attitudes.
- Individuals surrounded by entrepreneurial parents or enrolled in business-supportive universities are more likely to express a desire to start their own company.

The results clearly indicate that having at least one parent who runs their own business positively affects the child’s desire to establish a business. The family environment serves as a role model for planning among the respondents and represents the most effective form of entrepreneurial education.

It is also important to note that previous life experiences related to small-scale entrepreneurial activities positively influenced the respondents’ desire to start a business. These activities include participation in optional school or university projects, running small online sales (e.g., secondhand books or clothes), or undertaking small jobs such as dog walking or leaflet distribution. This suggests that the earlier entrepreneurial traits appear among respondents, the greater the tendency to pursue this career path.

The study also found a high coefficient value for declared plans to start a business - individuals who expressed such intentions were indeed more likely to engage in entrepreneurial actions. This demonstrates that entrepreneurial self-awareness is a strong predictor of real-world actions.

The positive and significant coefficient for X_4 ($\beta_4=0.35$) indicates that a preference for innovative, often unconventional solutions increases the likelihood of engaging in entrepreneurial activities. Thus, a pro-innovation attitude within the study group supports entrepreneurial initiative.

Within the research group, those who reported higher risk tolerance more frequently indicated a desire to run their own business - although the coefficient (0.19) was not very high. While risk acceptance is a significant factor, it is not a decisive one in this study.

The role of the university/school institution also proved significant ($\beta_6=0.24$). Respondents who recognized a positive influence of educational institutions were more likely to express a desire to start a business. However, it should be emphasized that this effect was relatively modest.

For the first time, the study also applied a real-world simulation through the use of a board game created as part of the multidisciplinary „Model K. M. Krusiec”, which serves as a bridge between theory and practice in the broad field of entrepreneurship - connecting the

world of business and science (KRUSIEC, PALEJ, 2024). The positive, though relatively small, coefficient of 0.08 suggests that respondents who scored higher in the game were more likely to express a desire to start their own business.

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