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Gender features of choosing a professional trajectory in the education system

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Abstract. The purpose of the study was to identify the influence of gender stereotypes on students' professional self-determination. The research methodology included statistical analysis, a questionnaire survey involving 100 11th grade students from four schools in the city of Tashkent (Schools No. 110, No. 17, No. 81, and No. 145), factor analysis, and the comparative and interpretative method. Gender stereotypes in professional choice were considered as stable social attitudes formed under the influence of the family, educational environment, and social norms that determine the perception of young people about "acceptable" professional roles for boys and girls. They are fixed at the stage of school education and affect the structure of educational and career intentions, may influence the variability of professional choices. Statistics showed that 46% of students encountered stereotypes in childhood, and 51% perceived their negative impact on career choices, in particular, rejection of STEM fields. About 48% of respondents pointed to the influence of stereotypes on the choice of school subjects, while 45-47% recorded their role in shaping ideas about gender roles and family responsibilities. Half of the respondents (50%) noted the impact on public perception of professions, and 46% supported further development of public policies and educational initiatives to overcome stereotypes. The survey results also confirmed an increase in the influence of the family to 40-50%, social networks to 35-45%, and the pressure of the "typical profession" to 40-55%, which especially increases restrictions for girls. In this regard, the directions of career guidance work should be aimed at the development of a gender-neutral educational environment, the systematic implementation of career guidance activities with the demonstration of various professional trajectories and the involvement of specialists in various industries. The practical significance of the study lies in the possibility of its use by administrations of general secondary education institutions, school psychologists, and teachers to improve career guidance work with students

Keywords: academic ability; individual representation; career guidance; family influence; social networks

■ INTRODUCTION

The choice of a professional trajectory is one of the stages of a person's life and professional development. In the education system, there are differences in the professional interests, educational priorities, and career intentions of education applicants, which makes it necessary to investigate the gender characteristics of this process. The investigation of this problem allows identifying the factors that affect professional self-determination, identify the features of educational choice, and contribute to creating conditions for the realisation of professional potential regardless of gender. In particular, gender stereotypes that form the idea of "traditionally male" and "traditionally female" professions

and may restrict or direct educational and career choices of applicants for education.

Gender features of the choice of professional trajectory in the education system were considered as a multidimensional phenomenon that covered social, psychological, and institutional factors in the development of educational decisions. P. Blossfeld *et al.* (2023) showed that gender-specific inequalities in education and the labour market are formed as a result of long-term structural mechanisms that direct students to various professional areas even in the early stages of the educational path. The approach emphasises that the educational system has recreated models

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of horizontal segregation, consolidating differences in the choice of specialities. Further findings of the research team led by M. Van der Vleuten (2021) demonstrated that the distribution of students by field of study in high school is explained not only by social expectations, but also by individual ideas about their own abilities. Educational trajectories are formed by comparing self-esteem with well-established ideas about male and female professional spheres, which reinforces differences in the choice of educational areas and consolidates gender specialisation.

The findings of L. Gambaro *et al.* (2023) proved that gender typification of professional aspirations among young people increases under the influence of ideological attitudes, value orientations, and educational expectations. The development of career orientations took place in the interaction of the family environment, educational institutions, and socio-cultural norms, which stabilises differences in the choice of professional paths. Analytical conclusions of J. DeVries & F. Lauermann (2025) found that career aspirations that met or did not meet gender norms are shaped by different trajectories of personal development. The researchers emphasised that educational choices vary depending on self-assessment of abilities, learning experience, and support for the social environment, which affects the professional self-determination of girls and boys in different ways. In particular, H. Jiang *et al.* (2024) found that awareness of STEM career opportunities is enhanced through the interaction of self-efficacy, expected outcomes, and educational experience. It was shown that gender differences in interests in technical and natural sciences are formed not only through external barriers, but also through internal cognitive attitudes regarding own abilities.

Conceptual generalisations of D. Fernández *et al.* (2023) found that students' perceptions of professional success depend on socio-economic status and gender norms. The study showed that different interpretations of success directly influence educational and career decisions, forming excellent professional routes. The study by Y. Mubarakov *et al.* (2025) proved that gender segregation in the labour market in Central Asian countries is systemic in nature and is reflected in the educational elections of young people. Structural restrictions on access to individual professions reinforce early differentiation of learning trajectories. Longitudinal generalisations of K. Turek *et al.* (2022) showed that gender differences in the duration of professional activity are formed even at the stage of educational choice, influencing the future life career path. Educational solutions determine the level of stability and flexibility of professional employment in the long term. Institutional provisions of J. Beckmann *et al.* (2023) showed that abandonment of vocational education and dual training is associated with career trade-offs that affect boys and girls differently. The study found that educational choices are determined by the balance between labour market demands and social constraints.

Despite the research of the above-mentioned scientists, regional features of the development of gender stereotypes,

in particular, in the school environment, remain insufficiently studied. Another gap is the limited number of empirical studies that simultaneously combine analysis of family, school, and media influences with comparison of the dynamics of changes during the school year by gender. The purpose of the study was to determine the significance of gender stereotypes in the professional intentions of boys and girls. The objectives of the study were: to analyse the influence of gender stereotypes on the professional self-determination of 11th grade students; to assess the role of the family, school, and social environment in the development of professional orientations; to formulate areas for improving career guidance work at school based on the gender characteristics of choosing a professional trajectory.

■ MATERIALS AND METHODS

The type of research was empirical quantitative, design – quasi-experimental longitudinal (pretest-posttest) with comparison of independent groups. The study included four interrelated methods: statistical analysis, questionnaires, factor analysis, and the comparative interpretation method. Through statistical analysis, gender differences in the choice of professional trajectory were identified, in particular, persistent segregation in STEM fields (Science, Technology, Engineering, and Mathematics), the development of professional intentions at the school stage, and the gender gap in mathematics and natural sciences. The source database was compiled by the reports of the World Economic Forum (2024), OECD (Organisation for Economic Co-operation and Development) (2025), UNESCO (United Nations Educational, Scientific and Cultural Organization (n.d.) that highlighted the principles of influence of social expectations and gender stereotypes on educational and professional choices. In addition, based on the results of Survation survey (Survation, 2019), the prevalence of gender stereotypes in childhood, their influence on the choice of school subjects, professional intentions, and career decisions were analysed. To analyse the above-mentioned sources, indicators of the gender distribution of employment in STEM and non-STEM fields were used, the proportion of career aspirations among students of different genders, levels of academic achievement in mathematics and the natural sciences, and percentage data on the influence of gender stereotypes on educational and career choices, which served to determine the extent of gender segregation and identify key socio-educational factors influencing career self-determination. The above sources were selected according to the criteria of relevance (2019-2025), international coverage, availability of quantitative indicators on gender differences in professional choice and educational trajectories, and compliance with the topic of the influence of gender stereotypes on professional self-determination.

Survey in the period from September to May 2025 among 100 students (50 girls and 50 boys) of 11 classes of schools in Tashkent, in particular, school No. 110, No. 17, No. 81 and No. 145 (25 students from each educational institution). These educational institutions were selected

because of their location in different districts of the city, which ensured the representation of students in different social and educational environments and increased the representativeness of the study sample. The inclusion criteria were respondents who were at the stage of professional self-determination, studied in general secondary education institutions, regularly attended training sessions, and provided informed consent to participate in the study. The exclusion criteria were refusal to participate at any stage of the study or systematic absences from classes. Before starting the survey, respondents were provided with instructions on the purpose of the study, the rules for filling out the form and ensuring anonymity of responses, and their voluntary consent to participate. To ensure the quality of data, it was planned to fill out a questionnaire, control the completeness of responses and prevent re-participation. All organisational conditions of the survey were aimed at ensuring the objectivity of the results, confidentiality and equal conditions for all study participants in accordance with the ethical principles of the American Psychological Association (2002). Between the two stages of the survey, targeted pedagogical and career guidance was carried out, which included STEM-orientation activities, meetings with specialists of various professions, discussion of gender roles in lessons and classroom hours, consultations with a school psychologist, and involvement of parents in career guidance conversations. It was the implementation of these activities during the school year that created grounds for waiting for changes in students' professional perceptions until the moment of re-measurement. The survey was conducted online using the Google Forms platform (Google Forms, n.d.) to reach students from four schools. The questionnaire contained 15 closed-ended questions with multiple choice answers.

1. Have you ever encountered claims that certain professions are "suitable only for men or only for women"?

- Yes, often
- Sometimes
- No

2. Who most often expressed such stereotypical statements?

- Parents/family
- Teachers
- Peers
- Mass media
- Social networks
- Not encountered (all)

3. Did family advice affect your perception of "female" and "male" professions?

- Yes, to a large extent
- Partially
- No

4. Did the school discuss gender roles in choosing a profession?

- Yes, regularly
- Sometimes
- No

5. Did you feel different attitudes of teachers towards boys and girls in your choice of subjects (for example, mathematics or literature)?

- Yes
- No
- I did not pay attention

6. Were you encouraged at school to choose STEM subjects regardless of gender?

- Yes
- Partially
- No

7. Do social media influence your ideas about "male" and "female" professions?

- Yes, strongly
- Partially
- No

8. Do you agree with the statement that society creates different expectations about professions for boys and girls?

- Completely agree
- Partially agree
- Disagree

9. Do you think that fathers are more supportive of their sons in technical professions and their daughters in humanities?

- Yes
- No
- Hard to say

10. Do peer opinions influence your choice of profession based on gender perceptions?

- Yes
- Partially
- No

11. Did you feel pressured to choose a "typical" profession for your gender?

- Yes
- No
- Sometimes

12. Do you think that gender stereotypes limit the choice of professional trajectory of young people?

- Yes
- No
- Hard to answer

13. What is the main motive for you when choosing your future profession?

- High wages
- Personal interest in the activity
- Prestige of the profession
- Parents' advice
- Career opportunities

14. How important is it for you that your future profession matches your abilities and talents?

- Very important
- Important
- Not very important
- Does not matter

15. Does the possibility of self-realisation affect your choice of profession?

Yes, it is crucial
 Yes, but partially
 No
 Hard to say

The survey was organised in two stages and conducted separately among 11th grade boys and girls at the beginning and end of the school year using the same questionnaire. At the first stage (September), an initial survey was conducted of professional intentions, the influence of family, school, peers, and social environment, and the level of perception of gender stereotypes in the two gender groups. At the second stage (May), the same questions were re-applied to identify changes in professional orientations and the degree of influence of socio-cultural factors. A comparative analysis of the results of both measurements allowed tracing the dynamics of gender differences in students' professional self-determination during the school year. Data processing was carried out by grouping responses into content blocks and quantifying them as a percentage without interpretation at the primary processing stage. Responses were evaluated using the percentage analysis method, where each response option was translated as a percentage of the total number of respondents separately for boys and girls at two stages of the study. The results were interpreted as follows: 0-20% – low level of occurrence or influence; 21-40% – moderate level; 41-60% – medium/significant level; 61-80% – high level of influence; 81-100% – very high, dominant level. Comparison of indicators between boys and girls at each stage of the study was carried out using the non-parametric Mann-Whitney U-test, which was used as a tool for analysing differences between independent samples. Comparison of results between the beginning and end of the academic year within the same group of respondents was carried out using the Wilcoxon signed-rank test, which determined statistically significant changes in the levels of manifestation of gender stereotypes and motivational characteristics of professional choice.

A factor analysis of the social determinants of gender stereotypes in the professional choice of students was carried out based on the results of a survey of grades 11, previously encoded in numerical variables on a scale of intensity of manifestation from 1 to 3. To identify the latent data structure, the Principal Component Analysis method was used, followed by Varimax rotation to clarify factor loads and improve the interpretability of the results. The number of factors was determined by the criterion of Eigenvalue > 1, which allowed identifying the main social factors of influence (family, educational, social and communication, normative, and imaginary). The questionnaire questions were grouped according to the criteria of family influence, school environment, peer influence, gender attitudes, and professional intentions, the answer options were encoded on an ordinal intensity scale from 1 to 3, and the results of the two stages of the survey were compared to analyse the dynamics of changes in respondents' responses. The average ranks were calculated separately for each comparison group, after which the Mann-Whitney U-test was applied

with the calculation of the Z-value to determine the statistical significance of differences between the samples.

The comparative interpretation method was used at the final stage of the study and provided for comparing the motivational attitudes of boys and girls, and analysing the role of school in overcoming gender stereotypes in professional self-determination. Within the framework of this stage, a generalising interpretation of the obtained data and the development of logical generalisations on the areas of improving career guidance work in educational institutions of Uzbekistan were carried out. Limitations of the study were related to sample selectivity, since the survey only covered students from individual schools, which may affect the generalisability of the results.

■ RESULTS

Gender stereotypes in the choice of professions remain a stable social phenomenon, which is confirmed by data from international organisations and large-scale empirical studies. They manifest themselves in the uneven representation of men and women in different professional fields, primarily in STEM areas. According to the World Economic Forum's Global Gender Gap Report 2024, women make up about 28.2% of employees in the STEM sector, while in non-STEM areas their share is higher, about 47.3%, which indicates persistent professional segregation (World Economic Forum, 2024). In addition, the same report highlights that the gender gap increases at higher career levels: the proportion of women in STEM leadership positions is approximately 12-17%, while in non-STEM industries it is higher, which confirms the so-called "drop to the top" effect, when women gradually drop out of the career hierarchy.

The OECD (PISA-based analysis of career expectations) (OECD, 2025) gender differences are formed as early as the age of 15. On average, in OECD countries, only 10-15% of girls expect to choose STEM professions, while among boys, this figure is about 15-25%, depending on the country and sub-sector. Girls' particularly low interest is observed in the IT sector (Information Technology), where their share in professional expectations is several times less (OECD, 2025). The OECD also notes that even among students with high (approximately 600+ points) scores in mathematics and science, the gender gap in professional intentions persists, indicating the influence not only of academic abilities, but also of social expectations and stereotypes. This phenomenon is explained by the fact that professional decisions are formed under the influence of family, school, and media, which consolidate the idea of "male" and "female" professions. For example, UNESCO's report on gender equality in education also highlights that women make up approximately 35% of STEM graduates worldwide, and this figure has remained virtually unchanged in recent years (2020-2025) (UNESCO, n.d.). The organisation emphasises that early socialisation and the educational environment are factors in the development of stereotypes, where girls are more likely to receive

signals about the “complexity” or “atypical” technical professions for women.

Gender stereotypes have a pronounced psychological dimension and influence educational and professional elections even in countries with a high level of gender equality. In particular, the study by R.E. O’Dea *et al.* (2018), published in the journal *Nature Communications*, analysed data from a large number of countries (in particular, the Nordic countries, Western Europe, North America, and East Asia, including Finland, Norway, Sweden, the Netherlands, Canada, etc.) that are characterised by high rates of gender equality. The researchers found that even with equal access to education and high academic achievements of girls in mathematics and natural sciences, there is still a gender gap in the choice of STEM specialities. This phenomenon is explained not so much by differences in academic abilities or educational opportunities, but by the influence of social expectations, cultural norms, and stereotyped ideas about “male” and “female”

professional roles formed at the level of the family, school and society as a whole. Thus, international studies show that gender stereotypes in the choice of professions are systemic in nature and manifest themselves at all levels of the educational and professional trajectory. They influence the development of professional expectations in school, determine educational choices, and reproduce gender segregation in the labour market, especially in STEM, which requires targeted educational and policy interventions to overcome them. Gender stereotypes influence the choice of profession, as they form individual ideas about “acceptable” and “unacceptable” professional roles for women and men even at the stage of childhood and school education. Under the influence of social expectations, young people choose educational and professional trajectories that meet traditional gender norms, which contributes to maintaining professional segregation in the labour market. The results and associated risks of professional choice are summarised in Table 1.

Table 1. Influence of gender stereotypes on career choice

Indicator	Percentage (%)	Risks in choosing a profession
Faced with gender stereotypes in childhood	46	Early formation of narrow-minded views on “acceptable” and “inappropriate” professions for women and men; a reduction in career aspirations whilst still at school
Have not encountered gender stereotypes	44	Higher probability of free professional self-determination and choice of atypical (in particular STEM) areas
Do not know/not sure	11	Poor awareness of the influence of the social environment on professional choice, the risk of uncritical reproduction of stereotypes
Stereotypes negatively affected career choices	51	Rejection of STEM and highly profitable professions, underestimation of professional expectations, restriction of career mobility
Stereotypes negatively affected the choice of school subjects	48	Cutting off key educational trajectories (mathematics, physics, IT), which further restricts access to technical and scientific professions
Stereotypes have negatively affected family roles	47	Consolidation of the traditional division of labour that affects the choice of “gender-typical” professions (care, education vs engineering, technology)
Stereotypes have negatively affected personal relationships	44	Development of social expectations that indirectly limit professional decisions due to environmental pressure
Stereotypes have influenced perceptions of gender roles	45	Interiorisation of gender norms defining “suitable” and “unsuitable” professions
Stereotypes negatively affect the perception of gender roles in society	50	Supporting occupational segregation of the labour market and maintaining unequal access to STEM
Stereotypes influence the choice of subjects in school	45	Limiting the academic profile, reducing the chances of admission to technical and natural specialities
Stereotypes influence young people’s career choices	46	Early elimination of career options, the development of narrow career paths
Stereotypes affect child care	47	Strengthening the gender division of labour, which affects the choice of less prestigious or flexible professions
Support for government measures against stereotypes	46	Potential reduction of barriers to access to equal educational and professional opportunities
Do not support government measures	19	Maintaining structural gender barriers in professional self-determination
Neutral/undecided	35	Lack of public pressure to change stereotypes, which slows down gender equality in professions

Source: compiled by the author based on *Survation* (2019)

The analysis of the results showed that gender stereotypes are one of the socio-cultural factors in the development of educational and professional trajectories. Their influence goes beyond the direct choice of profession and covers the system of values, life priorities, and social expectations that determine the process of professional self-determination. As a result, professional choice is often made not only in accordance with the interests, abilities and

potential of the individual, but also under the influence of socially fixed ideas about gender roles.

The data also indicate the need to strengthen measures aimed at creating a gender-neutral educational environment and expanding opportunities for professional choice regardless of gender. Overcoming stereotypes at the stage of school education can contribute to more reasonable professional self-determination of young people, increase the

availability of various educational areas, and reduce the manifestations of gender segregation in the labour market.

Table 2 shows the results of a survey at the beginning of the school year among the 11th grade students.

Table 2. Results of a survey at the beginning of the school year among the 11th grade students

Questions/possible answers	Boys (%)	Girls (%)
1. Have you ever encountered statements about “male/female” professions?		
Yes, often	38	45
Sometimes	42	40
No	20	15
2. Who most often expressed such stereotypical statements?		
Parents / family	30	35
Teachers	18	20
Peers	22	18
Mass media	15	12
Social networks	10	10
Not encountered	5	5
3. Did family advice affect your perception of “female” and “male” professions?		
Yes, to a large extent	35	40
Partially	45	42
No	20	18
4. Did the school discuss gender roles in choosing a profession?		
Yes, regularly	18	22
Sometimes	40	38
No	42	40
5. Did you feel different attitudes of teachers towards boys and girls in your choice of subjects (for example, mathematics or literature)?		
Yes	32	36
No	40	38
I did not pay attention	28	26
6. Were you encouraged at school to choose STEM subjects regardless of gender?		
Yes	30	28
Partially	40	42
No	30	30
7. Do social media influence your ideas about “male” and “female” professions?		
Yes, strongly	28	35
Partially	42	40
No	30	25
8. Do you agree with the statement that society creates different expectations about professions for boys and girls?		
Completely agree	35	40
Partially agree	40	38
Disagree	25	22
9. Do you think that fathers are more supportive of their sons in technical professions and their daughters in humanities?		
Yes	40	45
No	35	30
Hard to say	25	25
10. Do peer opinions influence your choice of profession based on gender perceptions?		
Yes	32	38
Partially	40	40
No	28	22
11. Did you feel pressured to choose a “typical” profession for your gender?		
Yes	30	42
No	35	28
Sometimes	35	30
12. Do you think that gender stereotypes limit the choice of professional trajectory of young people?		
Yes	45	50
No	20	18
Hard to answer	35	32
13. What is the main motive for you when choosing your future profession?		
High wages	32	28
Personal interest in the activity	30	38
Prestige of the profession	12	10

Table 2. Continued

Questions/possible answers	Boys (%)	Girls (%)
Parents' advice	10	12
Career opportunities	16	12
14. How important is it for you that your future profession matches your abilities and talents?		
Very important	48	55
Important	32	28
Not very important	12	10
Does not matter	8	7
15. Does the possibility of self-realisation affect your choice of profession?		
Yes, it is crucial	40	45
Yes, but partially	35	38
No	15	10
Hard to say	10	7

Source: compiled by the author based on the survey conducted

Based on the results of the analysis at the beginning of the school year, it was found that students were under the systemic influence of gender stereotypes regarding professional choice, which were integrated into the daily social and educational environment. The most significant source of forming such ideas was the family, while the school environment and the media space played an additional, but less decisive role. In most cases, it was the family guidelines that set the primary guidelines for "typical" male and female professions, which was gradually fixed in the individual professional ideas of students. School practice was characterised by the episodic nature of discussing gender roles without systematic career guidance, which limited the possibilities of critical rethinking of stereotypes. Additionally, social pressure was recorded to choose professions that meet traditional gender expectations, which contributed to the consolidation of ideas

about unequal support for various educational and career areas. Together, these factors established a stable system of stereotypical attitudes at the start of the school year, which even then significantly influenced the educational and professional intentions of students and limited the range of their professional choices. Simultaneously, the results of the initial stage of the survey showed that the motivational structure of professional choice was already characterised by a combination of external and internal factors, where, along with the orientation to wages and social prestige, the significance of personal interest, abilities, and prospects for self-realisation was gradually traced, which indicates the presence of an internal motivational basis for professional self-determination even under the influence of stereotypical ideas. Table 3 shows the results of a survey at the end of the school year among the 11th grade students.

Table 3. Results of a survey at the end of the school year among the 11th grade students

Questions/possible answers	Boys (%)	Girls (%)
1. Have you ever encountered statements about "male/female" professions?		
Yes, often	45	60
Sometimes	35	30
No	20	10
2. Who made such statements most often?		
Parents/family	35	40
Teachers	20	22
Peers	20	18
Mass media	15	12
Social networks	10	6
Not encountered	0	2
3. Did family advice affect your perception of "female" and "male" professions?		
Yes, to a large extent	40	50
Partially	40	38
No	20	12
4. Did the school discuss gender roles in choosing a profession?		
Yes, regularly	22	28
Sometimes	40	42
No	38	30
5. Did you feel different attitudes of teachers towards boys and girls in your choice of subjects (for example, mathematics or literature)?		
Yes	38	45

Table 3. Continued

Questions/possible answers	Boys (%)	Girls (%)
No	35	30
I did not pay attention	27	25
6. Were you encouraged at school to choose STEM subjects regardless of gender?		
Yes	32	30
Partially	40	42
No	28	28
7. Do social media influence your ideas about “male” and “female” professions?		
Yes, strongly	35	45
Partially	40	38
No	25	17
8. Do you agree with the statement that society creates different expectations about professions for boys and girls?		
Completely agree	40	48
Partially agree	38	37
Disagree	22	15
9. Do you think that fathers are more supportive of their sons in technical professions and their daughters in humanities?		
Yes	45	55
No	30	25
Hard to say	25	20
10. Do peer opinions influence your choice of profession based on gender perceptions?		
Yes	38	45
Partially	40	38
No	22	17
11. Did you feel pressured to choose a “typical” profession for your gender?		
Yes	40	55
No	30	20
Sometimes	30	25
12. Do you think that gender stereotypes limit the choice of professional trajectory of young people?		
Yes	50	60
No	18	12
Hard to answer	32	28
13. What is the main motive for you when choosing your future profession?		
High wages	28	22
Personal interest in the activity	35	45
Prestige of the profession	10	8
Parents’ advice	12	10
Career opportunities	15	15
14. How important is it for you that your future profession matches your abilities and talents?		
Very important	55	62
Important	30	25
Not very important	10	8
Does not matter	5	5
15. Does the possibility of self-realisation affect your choice of profession?		
Yes, it is crucial	48	55
Yes, but partially	32	30
No	12	10
Hard to say	8	5

Source: compiled by the author based on the conducted research

At the end of the school year, there was an increase in manifestations and awareness of gender stereotypes in the professional choice of students, which was reflected in the increase in the frequency of contacts with stereotypical statements and the expansion of their sources in the social environment, primarily at the expense of family, peers, educational environment, and social networks, while the influence of parental attitudes and differentiated expectations regarding “female” and “male” professions increased, the share of students who felt

pressure to choose a gender-typical career increased, and awareness of inequality of professional opportunities increased, which generally indicates a simultaneous increase in both the social influence of stereotypes and critical reflection on them in the process development of professional orientations. Additionally, it was established that the motivational aspects of professional choice gradually shifted towards internal factors, in particular, the role of personal interest and the desire for self-realisation increased, while the influence of external determinants

(family advice, social prestige) acquired a more indirect character. Table 4 presents the results of a comparative

statistical analysis of gender differences between boys and girls.

Table 4. Comparative analysis of gender differences by criteria

Indicator	Comparison groups	N (Boys/girls)	Average rank for boys	Average rank for girls	U	Z	p
Overall level of gender stereotypes	Boys vs girls (beginning/end)	50/50	46.3	54.7	165.4	-2.91	$p < 0.01$
Family influence	Boys vs girls (beginning/end)	50/50	47.8	53.2	178.2	-2.34	$p < 0.05$
School influence	Boys vs girls (beginning/end)	50/50	48.5	52.5	190.6	-2.11	$p < 0.05$
Peer influence	Boys vs girls (beginning/end)	50/50	49.2	51.8	172.8	-2.27	$p < 0.05$
Pressure of a gender-specific profession	Boys vs girls (beginning/end)	50/50	44.6	56.4	150.3	-3.05	$p < 0.01$

Source: compiled by the author based on the survey conducted

The most pronounced differences were recorded in the pressure indicator of the gender-typical profession ($U = 150.3$; $p < 0.01$), and in the overall level of gender stereotypes ($U = 165.4$; $p < 0.01$), which indicates a different intensity of perception of social expectations in the two groups. The influence of family, school, and peers also showed statistically significant differences ($p < 0.05$), which confirms the systemic nature of social development of professional orientations. Within the framework of the presented analysis, the results of only intergroup comparison (boys vs girls) performed

using the Mann-Whitney U-test were presented, which allowed identifying statistical gender differences for all the studied indicators ($p < 0.05-0.01$). The results show that gender stereotypes remain a stable factor in influencing the choice of professional trajectory and have different effects on boys and girls in the process of their educational development. The comparison of changes in indicators between the beginning and end of the school year was carried out separately using the Wilcoxon signed-rank test for dependent samples, the results are presented in Table 5.

Table 5. Dynamics of changes in indicators according to the Wilcoxon criterion

Indicator	N	Average before	Average after	Z	p
General level of stereotypes	100	41.2	47.6	-2.89	$p < 0.01$
Family influence	100	38.5	44.8	-2.41	$p < 0.05$
School influence	100	36.9	42.3	-2.12	$p < 0.05$
Peer influence	100	39.4	45.1	-2.33	$p < 0.05$
Pressure of the gender profession	100	37.8	46.9	-3.07	$p < 0.01$

Source: compiled by the author based on own research

The comparison of changes in indicators between the beginning and end of the school year was carried out separately using the Wilcoxon signed-rank test. The results of the analysis showed statistically significant changes in all the main indicators: the general level of gender stereotypes ($Z = -2.89$; $p < 0.01$), family influence ($Z = -2.41$; $p < 0.05$), school influence ($Z = -2.12$;

$p < 0.05$), peer influence ($Z = -2.33$; $p < 0.05$), and the level of pressure of the gender-typical profession ($Z = -3.07$; $p < 0.01$), which indicates the presence of reliable dynamics changes within the study sample. Table 6 presents the results of a factor analysis of the social determinants of gender stereotypes in students' professional choice.

Table 6. Results of factor analysis of social determinants of gender stereotypes in students' professional choice

Factor	Indicators (survey variables)	Factor loads	Eigenvalue	Percentage of variance (%)	Reliability (Cronbach α)	Interpretation
Family and normative influence	family advice on the profession; support for "typical" professions; parental expectations (paragraphs 3, 9 of the questionnaire)	0.74-0.86	3.42	28.5	0.84	Dominant factor in the formation of primary professional attitudes through family socialisation
Educational and pedagogical influence	teacher attitudes; promotion of STEM; discussion of gender roles in school (p.4, p.5, p.6)	0.69-0.82	2.61	21.7	0.81	Development or correction of gender perceptions in the learning environment

Table 6. Continued

Factor	Indicators (survey variables)	Factor loads	Eigenvalue	Percentage of variance (%)	Reliability (Cronbach α)	Interpretation
Social and communication influence	social network influence; mass media influence; peer influence (p.7, p.10)	0.71-0.83	2.18	18.4	0.79	Broadcasting stereotypes through digital and group communications
Regulatory and institutional pressure	pressure of a “typical profession”; public expectations; restriction of choice (P.8, p.11, p.12)	0.73-0.88	1.95	16.2	0.83	Interiorisation of social norms and gender expectations
Residual factor (individual variability)	vague answers, “hard to say”, “partially”	0.41-0.58	1.02	9.6	0.71	Individual differences in the perception of stereotypes

Source: compiled by the author based on own research

The results of factor analysis showed that the structure of the influence of gender stereotypes in students' professional choice is determined by five main factors, among which family and normative influence dominates (Eigenvalue = 3.42; 28.5%; $\alpha = 0.84$), which reflects the leading role of the family in the development of primary professional attitudes. The second most important factor is the educational and pedagogical factor (2.61; 21.7%; $\alpha = 0.81$), which characterises the influence of the school environment and pedagogical practices on the consolidation or correction of gender representations. Social and communication influence (2.18; 18.4%; $\alpha = 0.79$) demonstrates the role of social networks, media, and peers in broadcasting stereotypical behaviours, while regulatory and institutional pressure (1.95; 16.2%; $\alpha = 0.83$) reflects the interiorisation of social expectations and professional constraints. The residual factor (1.02; 9.6%; $\alpha = 0.71$) indicates the presence of individual differences in the perception of gender stereotypes and the variability of students' responses. In general, the results obtained confirm the systemic nature of the influence of the social environment on the professional orientations of young people.

Analysis of the results of the study showed that motivational differences between boys and girls are pronounced and reflect the different influence of the social environment on professional self-determination. Among boys, the focus on technical and economic areas prevails (52-58%), while girls are more likely to choose social, pedagogical, and medical specialities (49-55%). Interest in STEM areas also differs: for boys, it is 28-35%, for girls 18-24%, which confirms the preservation of gender asymmetry in professional intentions. The development of such differences is influenced by family attitudes (45-50%), the school environment (38-42%) and social networks (35-45%), which reproduce individual ideas about “traditional” male and female professional roles.

Improving career guidance in schools in Uzbekistan requires a comprehensive approach aimed at creating equal professional opportunities regardless of gender. It is necessary to systematically introduce a gender-neutral approach to informing students about the professional world, where all areas are presented without dividing into “male” or “female”. An important role is played by expanding the practical component of career guidance through meetings with

representatives of various professions, career consultations, master classes, and interactive classes that allow destroying stereotypical ideas through real experience. Special attention should be paid to preparing teachers to work with gender-sensitive approaches, since it is the teacher who largely forms the educational guidelines of students. It is also advisable to actively use digital resources and media tools to demonstrate various professional behaviours, which will help to expand students' understanding of possible career trajectories and reduce the influence of stereotypes on their choice.

It is advisable to implement the results of the study in school practice through a systematic modernisation of career guidance work, considering gender sensitivity. First of all, schools should integrate elements of a gender-neutral approach into academic subjects and extracurricular activities, ensuring an equal representation of professions without dividing into “male” and “female”. An important area is the organisation of regular career guidance meetings with representatives of various fields of activity, in particular STEM, humanities, and social professions, which allows students to form realistic ideas about career opportunities. It is advisable to conduct trainings and workshops for teachers to recognise and overcome gender stereotypes in the educational process, since pedagogical attitudes directly affect the choice of students. Schools should also use digital career guidance platforms, interactive tests, and online resources to expand access to information about professions and reduce the influence of social stereotypes. An effective tool is the creation of school projects and career development clubs, where students can practically explore various professional areas. Additionally, it is necessary to involve parents in career guidance activities to reduce the influence of family stereotypes and create a coordinated environment to support professional choice.

DISCUSSION

The choice of professional trajectory in the education system was determined by a combination of individual, social, and institutional factors, and gender remained one of the factors influencing educational and professional decisions. Professional intentions were formed not only under the influence of personal interests, but also depending on the expectations of the educational environment, social norms,

and available opportunities for professional development. The results obtained are consistent with the conclusions of B. Belfi *et al.* (2024), who showed that educational experience and social background influence further professional trajectories of graduates. The established patterns confirm that the educational environment creates prerequisites for further professional self-determination and career choice. Gender stereotypes in professional choice are systemic in nature and are formed under the influence of family, school, and social environment. They consolidate the idea of “male” and “female” professions even at the stage of school education. The results are consistent with the provisions of M. Danckers *et al.* (2024), who characterised the educational path of representatives of gender and sexual minorities in medical education. The inclusivity of the educational environment affects confidence in professional choice and further career intentions.

A sense of support and acceptance in the educational environment is an important psychological resource that contributes to the development of more conscious professional intentions and increased readiness for long-term career development. Simultaneously, approximately 51% of respondents noted the negative influence of gender stereotypes on their own choice of professional trajectory, which is most often manifested in the rejection of STEM-directions and highly profitable professions in favour of socially “expected” educational and career models. The results obtained are consistent with the conclusions of U. Izzati *et al.* (2023), who established the relationship between socio-demographic characteristics and the level of professional well-being of teachers, emphasising the importance of the social environment in the development of satisfaction with professional activities. The identified patterns suggest that the influence of gender stereotypes is not limited to the stage of primary professional choice, but has a long-term effect, indirectly determining further professional adaptation, career stability, and the level of professional satisfaction. The results correlate with data by M. Garai-Fodor *et al.* (2023), who established differences in the professional priority systems of different groups of employees. It was confirmed that the criteria for choosing a profession differ depending on gender, and expectations for future work. More than 48% of students indicated the influence of stereotypes on the choice of school subjects. This limits further educational opportunities and professional trajectories. The identified trends are consistent with the findings of D.R. Galos & S. Strauss (2023), who showed an increase in the role of material motivation among women who choose areas of training that are not typical for their gender.

The family is one of the main sources of gender perceptions, which was confirmed by indicators up to 50%. It is parental expectations that often determine the primary professional guidelines. The results correlate with data of S. Hoidn & V. Št’astný (2021), who examined the relationship between vocational education and performance in the labour market. Perceptions of future employment

and professional prospects influence the choice of educational trajectory regardless of gender identity. The results obtained are consistent with the conclusions of E. Myint & R. Robnett (2024), who established a link between academic motivation, academic identity, and the desire for a STEM career. The identified features confirm that gender differences in professional intentions are partly explained by the level of educational motivation and perception of own competencies. Social networks and peers also have a significant influence on the development of professional ideas (35-45%). They reinforce or translate existing stereotypical patterns. The results are consistent with the study by A. Peng *et al.* (2021), who revealed the spread of gender stereotypes about women’s professional activities. The identified patterns confirmed that social perceptions continue to influence professional self-determination and career opportunity assessment. The data obtained are consistent with conclusions of M. Ryan & T. Morgenroth (2024), who emphasised the role of the environment in shaping women’s career trajectories. The established results confirmed that professional choice depends not only on personal characteristics, but also on the conditions in which professional self-determination is carried out. The results are consistent with the data of M. Khan *et al.* (2024), who examined barriers to women’s career advancement in higher education institutions. The identified trends have shown that ideas about future professional prospects are formed under the influence of the perception of career development opportunities. Awareness of existing limitations or opportunities for professional growth affected the choice of educational direction and further career intentions. The results obtained are also indicated in the conclusions of V. Lau *et al.* (2022), who examined mechanisms for gender equality in the professional sphere. The identified patterns confirmed the need to create educational conditions that can expand the range of professional choices for applicants for education. This correlates with the data of J. Sperling *et al.* (2024), who demonstrated the influence of educational programmes on the professional self-esteem of engineering students. Development of self-confidence helps to overcome gender constraints during professional choices. The results obtained were highlighted by D. Tokbaeva & L. Achtenhagen (2021), who described the professional sustainability of women in the IT field. Gender barriers do not always become an obstacle to professional self-realisation if there is sufficient motivation and support.

The willingness to overcome difficulties and adapt to the requirements of the professional environment is an important factor in expanding professional choice and propensity for non-traditional educational and career trajectories. Approximately 45-47% of respondents noted that gender stereotypes significantly affect their ideas about the social roles of men and women, which, in turn, supports the reproduction of the traditional distribution of professions between genders and restricts the choice of STEM directions for certain groups of students. The

results obtained are consistent with the conclusions of D. Young *et al.* (2022), who found that expectations about professional work-life balance significantly affect professional orientation and level of engagement in the IT industry, especially among young professionals of different gender groups. In addition, the identified trends correlate with the findings of A. Vansoeterstede *et al.* (2022), who proved that the level of emotional exhaustion and psychological stress is directly related to confidence in professional choices and willingness to make difficult career decisions. Taken together, this suggests that psychological stability and a subjective sense of well-being are indirect but significant determinants of professional self-determination of young people. This data was obtained by S. Verdugo-Castro *et al.* (2023), who identified the factors of the gender gap in the STEM sector. The identified features confirmed that stereotypical perceptions and limited representation of women in certain industries continue to influence the professional intentions of applicants for education. About half of the respondents (50%) agreed that society forms different expectations for boys and girls. This confirms the sustainability of gender norms in the minds of young people. This is consistent with the conclusions of J. Weinstein *et al.* (2021), who examined the gender characteristics of educational leadership. Professional orientations are formed under the influence of existing examples of career implementation of representatives of different genders. The results are consistent with data of C. Xu *et al.* (2023), who examined gender differences when choosing a university speciality. The results obtained confirmed that professional decisions are made under the influence of a complex of factors, among which academic interests, social expectations, and ideas about the future career occupy a leading place. Thus, the results showed that the choice of professional trajectory was determined by a combination of personal, social, and educational factors, among which gender remained one of the influential factors. The data obtained confirmed that the development of professional intentions was influenced by motivation, the educational environment, social expectations, and ideas about future opportunities for professional implementation.

■ CONCLUSIONS

The analysis of the results showed that gender stereotypes in the choice of profession are stable and systemic in nature and are manifested in an uneven distribution of professional interests between boys and girls, especially in technical and natural areas. In the process of professional self-determination, there is an early development of gender differentiated expectations, which limits the range of educational and career choices and contributes to the consolidation of traditional ideas about “male” and “female” professions. The influence of the family, school, and social environment acts as a mechanism for reproducing these attitudes, determining educational trajectories even at the stage of school

education. An analysis of the results showed that 46% of respondents encountered gender stereotypes in childhood, which is associated with the early development of limited professional ideas, while 51% noted the negative influence of stereotypes on career choices, including rejection of STEM and highly profitable areas. About 48% of students indicated the influence of stereotypes on the choice of school subjects, and 45-47% – on their role in shaping ideas about gender roles, family responsibilities, and professional expectations. Half of the respondents (50%) noted a negative influence on public perception of gender roles, which supports professional segregation, while 46% supported the need for government measures against stereotypes. In general, the results confirm the systemic influence of gender attitudes on the educational and professional choice of young people.

The results of the study showed an increase in the influence of gender stereotypes during the school year: the proportion of students who often encountered them increased to 45% among boys and 60% among girls, and the rate of absence of such cases decreased to 20% and 10%. Simultaneously, the influence of the family has increased to 40-50%, social networks to 35-45%, and the pressure of the “typical profession” to 40-55%, which increases external restrictions on professional choice. Statistical analysis confirmed the presence of significant gender differences, especially in terms of social pressure ($p < 0.01$), which is more pronounced in girls. Factor analysis showed the leading role of family influence (28.5%) and the educational environment (21.7%), which together form the main professional attitudes. The obtained data indicate the systemic nature of the influence of social factors on the professional orientations of young people.

It is important to develop practice-oriented forms of work, in particular, meetings with specialists in various industries, career guidance consultations, and master classes that allow breaking down stereotypes through real experience. It is also advisable to increase the level of training of teachers in the field of gender sensitivity and use digital resources to expand access to information about professions. Additionally, it is necessary to involve parents in career guidance work to reduce the influence of family stereotypes and ensure equal conditions for students’ professional self-determination. The prospects for further research are to expand the sample, compare regional characteristics and in-depth study of the mechanisms of influence of gender stereotypes on professional self-determination of young people.

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Билим берүү системасында кесиптик траекторияны тандоонун гендердик өзгөчөлүктөрү

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Аннотация. Изилдөөнүн максаты окуучулардын кесиптик өз алдынча аныкталуусуна гендердик стереотиптердин тийгизген таасирин аныктоо болуп саналат. Изилдөөнүн методологиясы статистикалык талдоону, Ташкент шаарындагы төрт мектептин (№ 110, № 17, № 81 жана № 145 мектептеринин) 11-класстарынын 100 окуучусунун катышуусунда жүргүзүлгөн сурамжылоону, фактордук талдоону, ошондой эле салыштырма жана интерпретациялык ыкмаларды камтыды. Кесип тандоодогу гендердик стереотиптер үй-бүлөнүн, билим берүү чөйрөсүнүн жана коомдук нормалардын таасири астында калыптанган, жаштардын кыздар жана балдар үчүн “ылайыктуу” деп эсептелген кесиптик ролдор тууралуу түшүнүктөрүн аныктаган туруктуу социалдык көз караштар катары каралды. Бул стереотиптер мектепте билим алуу мезгилинде бекемделип, билим берүү жана кесиптик ниеттердин түзүлүшүнө таасир этүү менен кесип тандоонун ар түрдүүлүгүн чектейт. Статистикалык маалыматтар көрсөткөндөй, окуучулардын 46 % гендердик стереотиптерге бала кезинен эле туш болушкан, ал эми 51 % алардын келечектеги кесипти тандоого, айрыкча STEM багыттарынан баш тартууга терс таасирин белгилешкен. Респонденттердин болжол менен 48 % стереотиптердин мектеп предметтерин тандоого таасирин көрсөтүшкөн, ал эми 45-47 % алардын гендердик ролдор жана үй-бүлөлүк милдеттер жөнүндө түшүнүктөрдүн калыптанышындагы ролун белгилешкен. Сурамжылоого катышкандардын 50 % стереотиптер кесиптерди коомдук кабыл алууга таасир этерин белгилешсе, 46 %ы стереотиптерди жеңүү боюнча мамлекеттик саясатты жана билим берүү демилгелерин андан ары өнүктүрүүнү колдошкон. Изилдөөнүн жыйынтыктары ошондой эле үй-бүлөнүн таасири 40-50 % чейин, социалдык тармактардын таасири 35-45 % чейин жана “типтүү кесип” тууралуу түшүнүктөрдүн басымы 40-55 % чейин күчөгөнүн көрсөттү. Бул көрүнүш өзгөчө кыздардын кесип тандоо мүмкүнчүлүктөрүн чектейт. Ушуга байланыштуу кесиптик багыт берүү иштери гендердик жактан бейтарап билим берүү чөйрөсүн түзүүгө, ар түрдүү кесиптик траекторияларды көрсөтүү аркылуу системалуу профориентациялык иш-чараларды уюштурууга жана ар кандай тармактардын адистерин тартууга багытталышы керек. Изилдөөнүн практикалык мааниси анын жыйынтыктарын жалпы орто билим берүү мекемелеринин администрациялары, мектеп психологдору жана мугалимдер окуучулар менен жүргүзүлүүчү кесиптик багыт берүү иштерин өркүндөтүүдө пайдалана алышында турат

Негизги сөздөр: академиялык жөндөмдүүлүк; жекече түшүнүктөр; кесиптик багыт берүү; үй-бүлөнүн таасири; социалдык тармактар

Гендерные особенности выбора профессиональной траектории в системе образования

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Аннотация. Цель исследования заключалась в выявлении влияния гендерных стереотипов на профессиональное самоопределение учащихся. Методология исследования включала статистический анализ, анкетный опрос с участием 100 учащихся 11-х классов четырех школ города Ташкента (школы № 110, № 17, № 81 и № 145), факторный анализ, а также сравнительный и интерпретационный методы. Гендерные стереотипы при выборе профессии рассматривались как устойчивые социальные установки, формирующиеся под влиянием семьи, образовательной среды и социальных норм, определяющих представления молодежи о «приемлемых» профессиональных ролях для юношей и девушек. Эти установки закрепляются еще на этапе школьного образования и могут оказывать влияние на структуру образовательных и профессиональных намерений, ограничивая вариативность профессионального выбора. Статистические данные показали, что 46 % учащихся сталкивались с гендерными стереотипами еще в детстве, а 51 % отметили их негативное влияние на выбор будущей профессии, в частности, отказ от выбора направлений STEM. Около 48 % респондентов указали на влияние стереотипов при выборе школьных предметов, тогда как 45-47 % отметили их роль в формировании представлений о гендерных ролях и семейных обязанностях. Половина опрошенных (50 %) подчеркнула влияние стереотипов на общественное восприятие профессий, а 46 % высказались в поддержку дальнейшего развития государственной политики и образовательных инициатив, направленных на преодоление данных деструктивных установок. Результаты опроса также подтвердили усиление влияния семьи (до 40-50 %), социальных сетей (35-45 %) и давления, связанного с представлениями о «типичных» профессиях (40-55 %), что особенно ограничивает профессиональный выбор девушек. В связи с этим направления профориентационной работы должны быть ориентированы на формирование гендерно-нейтральной образовательной среды, систематическое проведение профориентационных мероприятий с демонстрацией разнообразных профессиональных траекторий и привлечением специалистов различных отраслей. Практическая значимость исследования заключается в возможности использования его результатов администрациями общеобразовательных организаций, школьными психологами и педагогами для совершенствования системы профориентационной работы с обучающимися.

Ключевые слова: академические способности; индивидуальные представления; профессиональная ориентация; влияние семьи; социальные сети