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Choice of medical specialty and personality traits measured with the EPQ-R(S) in medical students and specialist doctors

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Summary

Objective: The study was conducted to examine the differences between personality traits of medical students choosing future specialties and among specialist doctors.

Methods: Two groups were tested: students and specialist doctors, totaling 87 people. The former consisted of 5th and 6th year medical students (48 people), and the latter included doctors of various specialties (39 people). All statistical analyses were performed using Statistica 10 software. Statistical significance was set at $p < 0.05$. The Eysenck Personality Questionnaire Revised Short form (EPQ-R(S)) was used to conduct personality assessments.

Results: In the student group, there were no differences in the personality traits measured with the EPQ-R(S) depending on their preferred specialty (surgical, non-surgical, pediatric, internal medicine specialties or areas which do not require contact with the patient). In the group of doctors, there were no differences in personality traits measured with the EPQ-R(S) pediatric and surgical specialists. Internal medicine specialists had a significantly higher level of extraversion.

Conclusion: Personality traits are not the most important factor influencing the choice of the professional path in young Polish doctors. Contrary to the stereotypes prevailing in the medical environment, also among specialist doctors, the personality-related differences are not so obvious. The results of this study can be used in medical career counseling, in order to help young medical students to choose their future career paths.

medical specialties, personality traits, medical students, specialist doctors, EPQ-R(S).

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INTRODUCTION

In our cultural conditions, doctors are often viewed through the prism of their specialty. There are numerous stereotypes about the personality traits of doctors in particular specializations. In the Polish culture, surgeons are perceived as accurate, secretive and distant, while pediatricians are seen as warm, open and friend-

ly. Similarly, in other countries, physicians are attributed particular personality traits and characteristic behaviors depending on their specialty [1]. For the purpose of the article, we have adopted the definition of personality as a set of relatively constant features and psychological dispositions of a given person, distinctive from other individuals [2]. According to Eysenck's approach, the basic dimensions describing personality include extraversion/introversion, scrupulousness, openness to experience, agreeableness and neuroticism. Personality is shaped throughout life, especially during childhood and adolescence. Personality development is influenced both by the external environment during socialization, including events that are repeated over time or are of significant importance, as well as the individual's innate biophysical features [2].

The education of a doctor in Poland takes over a dozen years. Medical studies last 6 years, and after their completion, graduates, in order to obtain a license to practice medicine, take the Final Medical Examination and hold a 13-month postgraduate internship [3]. During the internship, young doctors complete apprenticeships at various hospital departments and learn about the work characteristics of specialists in different fields of medicine. Then they face the choice of a specialty path and its mode: "residential" (based on a contract of employment with the unit running a specialty training, financed by the Ministry of Health) or "non-residential" (based on a civil law agreement with a training unit, e.g. volunteering or full-time, financed by the employer, where the salary is not legally regulated) [3]. The duration of specialty training varies from 4 to 6 years. The position is awarded based on, among others, the result of the Final Medical Examination [3]. The time of medical education of a physician includes the period of life changes, making family and career choices, and thus – the formation of personality [4].

The aim of this study was to try to answer the question whether there are actual dependencies between the physician's personality traits and their selected specialty. Is it possible to distinguish characteristic personality traits in students considering the selection of individual specialization paths that correspond to the personality traits of specialists in a given field? We also examined whether within a group of specialists in a given field of medicine there are some personality traits appearing with a greater frequency than others, and whether a similar relationship is present in students declaring interest in a given medical specialty.

Prospective studies carried out in other countries showed differences in personality traits between medical students choosing different specialties [5-10]. Research [5-7] included a group of graduates of American medical schools before starting their professional work. Significant differences were observed between: neuroticism, openness and agreeableness, but no differences in extraversion or scrupulousness were found. Another study, conducted on a group of graduates of the Swedish Medical University Karolinska [8] also showed differences in their personality traits. Prospective surgeons were characterized by lower agreeableness than their peers choosing a specialty in family medicine and internal medicine. In turn, psychiatrists showed lower scrupulousness compared to surgeons. Similar relationships were studied among students of the Medical University of Seoul in South Korea [9]. It was observed, among others, that students characterized by higher agreeableness favored work in general medicine, and those with greater openness – preferred to work in hospital specialist departments. There were also differences in the personality of doctors specializing in various fields of medicine. Among the resident doctors of surgery in Oman [10], a higher level of psychoticism was demonstrated than among residents of other specialties. In another American study conducted in Ohio [11], higher levels of scrupulousness and extraversion and lower of agreeableness were observed among surgeons compared to the doctors of non-surgical specialties. In subsequent studies [12, 13], it was also noticed that besides all previously mentioned features, the leading factors affecting med school graduates' career choices are: gender, age, own interests, scientific achievements and socio-economic status.

This is a pioneering study of this matter in Poland and it may serve as a reference point for comparisons between doctors working in Poland and doctors from other countries.

METHODS

Experimental groups

Two groups were examined: students and specialist doctors. The inclusion criteria for the student group were: voluntary and informed consent for participation in the study and current status of a medical student. The exclusion criterion was current or previous status of a student of a different field of study. The inclusion criteria for the group of doctors were: voluntary and informed consent for participation in the study, the title of a specialist doctor, current medical license to practice medicine in Poland, completion of a medical school and specialist training in Poland.

Study sample included a total of 87 people, 48 fifth and sixth year medical students and 39 doctors of different specialties. In the student group, 64.6% (31 people) were women, and 35.4% (17 people) were men. The mean age was 24.3 years (ranging from 21 to 27 years). In the group of specialist doctors, 56.4% (22 people) were women and 43.6% (17 people) men. Their mean age was 44.9 years (ranging from 32 to 64 years). The distribution of age and gender is illustrated in Figures 1 – 4.

The participants were given 45-60 minutes to complete the questionnaire. The research project was approved by the Bioethical Commission of the Jagiellonian University.

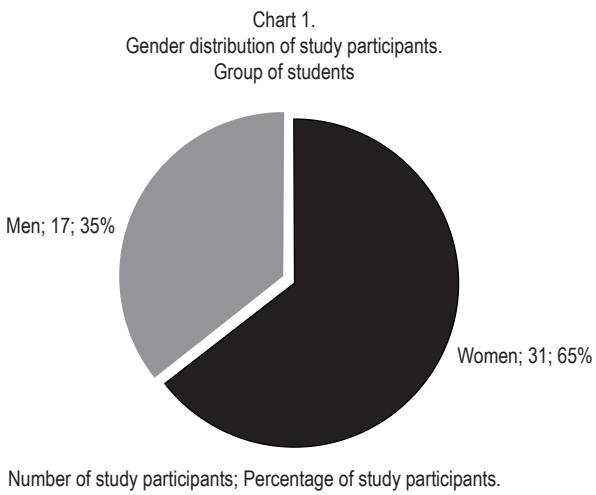

Figure 1. Gender distribution in the student group

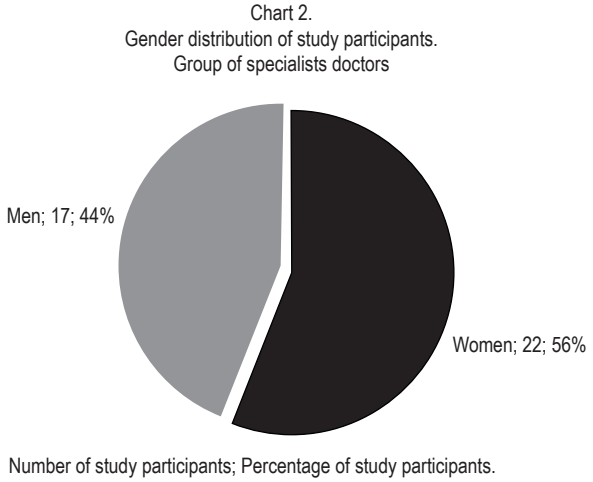

Figure 2. Gender distribution in the doctor group.

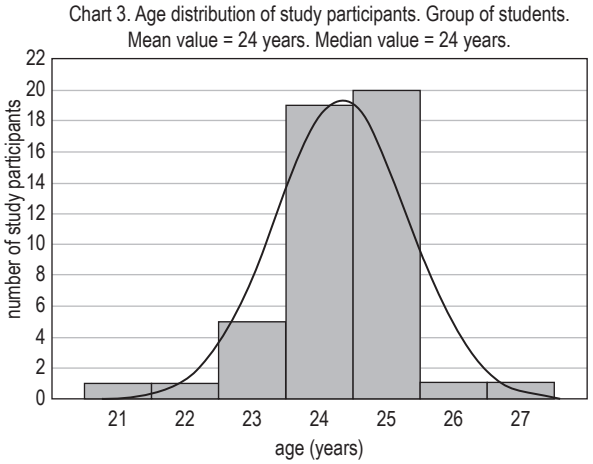

Figure 3. Age distribution in the student group.

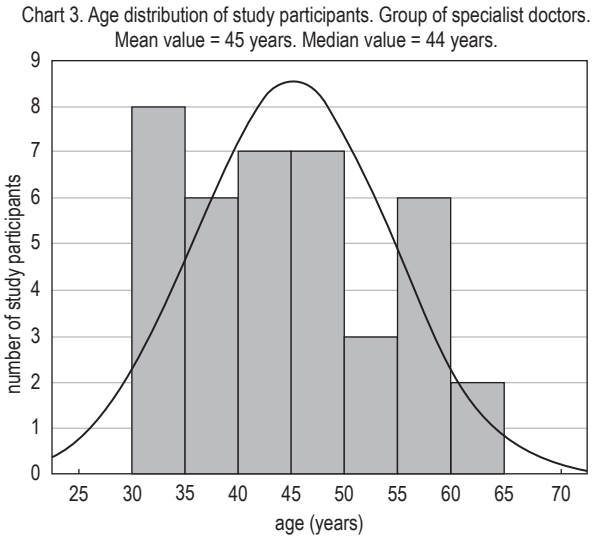

Figure 4. Age distribution in the doctor group.

RESEARCH TOOLS

Eysenck Personality Questionnaire EPQ-R (S)

The questionnaire is used to examine basic dimensions of personality. It is based on the concept of H.J. Eysenck, who defined personality as a relatively permanent organization of character, temperament, intellect and physical properties that determine specific ways of adapting to the environment. The questionnaire consists of 48 questions to which the respondent answers "Yes" or "No". The results are presented on four main and two additional scales. Three of the main scales – Psychoticism (P), Extraversion (E) and Neuroticism (N) – refer to the basic dimensions of personality. The control scale, ie. the Lie scale (L), measures the tendency of the test subject to present himself/herself in a better light. The two additional scales – addiction tendency scale (A) and crime tendency scale (C), indicate personality-related vulnerability to addiction and crime. The utility of the test has been confirmed in many clinical trials [13 – 17], besides its wide use in education and vocational counseling, but also as an auxiliary tool in sports, pre-marital and family counseling. Both its psychometric properties and the time needed to complete it made the questionnaire a suitable research tool for the project. The team of the Psychological Test Laboratories of the PTP (Polish Psychology Association) developed a Polish adaptation of the test [2], while the standardization procedures were supervised by A. Jaworowska [18]. In the study, we used a short version of the test, which does not contain addiction (A) and crime tendency © scales.

According to the theory of H.J. Eysenck's, the three main dimensions of personality are: Extraversion-Introversion, Neuroticism (stability – instability) and Psychoticism [2]. The first two, as demonstrated by Eysenck, have strong links with other personality models that have been in use in the professional literature. He postulated that Psychoticism is a new, third main dimension of personality. So how are these dimensions of personality described in his theory?

Extroverts are social people who feel a significant need to make contact with others. They have a large group of friends, seek new experiences and risks. They are impulsive, carefree, full of joy and optimism, active, avoiding stability and boredom, with a tendency to lose control or behave aggressively. Introverts, on the other hand, are introspective, calm, serious, withdraw from interpersonal contacts, with the exception of a small circle of relatives. They are careful in taking action, prefer safety, routine and order, control their emotions and behaviors. They can be relied on, but they can also be pessimistic [2].

Neuroticism is manifested through such traits as a tendency to experience anxiety and worry, depressiveness, mood variability, irrationality, sleep problems, psychosomatic complaints, unstable and strongly reactive emotionality, and a prolonged, often inadequate emotional response to various stimuli [2].

Psychoticism, as described by Eysenck, is associated with a tendency to a lonely lifestyle, dislike of people, low empathy and sensitivity, hostility, aggression even towards relatives, bizarreness, malice towards others, sometimes cruelty. Such people are not afraid of danger and risk. Strongly developed Psychoticism is associated with dissocial behaviors, but just as in the case of antisocial disorder, high scores on this scale are rare, because the Psychoticism Scale is not intended to examine this psychopathology in detail, but rather determine its intensity in the general population [2].

Personal questionnaire for the study participant

A personal questionnaire for the study participant was an additional research tool. The version for specialist doctors contained questions concerning gender, age, medical specialty, name of completed medical school and place of specialist training, as well as the profession acquired during education and performed by parents and grandparents of the participant. In the case of medical students, the questions concerned gender, age, favored medical specialty and the profession acquired during education and performed by parents and grandparents of the participant.

Statistical analyzes

The obtained test results were calculated and analyzed using Statistica 10 software. Raw EPQ-

R(S) scores were converted into sten scores taking into account the age and sex of the subjects [18]. Due to the sample size and the sten scale, the Kruskal-Wallis test was chosen as the main statistical test. Non-parametric tests are useful for research on data with non-normal distribution, which include personality traits measured by the EPQ-R(S). However, they have less power than parametric tests. Therefore, following the assumptions of the central limit theorem, ANOVA tests were also carried out [19]. Statistical significance was set at $p < 0.05$.

RESULTS

The student group

The students were asked to indicate their most preferred medical specialty (first choice), but they could also name other specialties they were considering (no limit). 45 people (93.75% of the respondents) mentioned more than one alternative medical specialty – from 2 to 4 specialties. Table 1 presents the distribution of first choice specialties. 93.75% of the respondents considered more than one option. 58.33% of the respondents selected three or more options. In the next step, of the study all subjects completed the EPQ-R(S) test.

Table 1. First-choice medical specialties in the student group.

Surgical specialties			Non-surgical specialties		
1st – choice specialties	Number of people	Percentage of people	1st – choice specialties	Number of people	Percentage of people
gynecology	5	10,4	endocrinology	6	12.5
orthopedics	4	8,3	cardiology	6	12.5
surgery	2	4,2	neurology	5	10.4
general surgery	1	2,1	pediatrics	5	10.4
pediatric surgery	1	2,1	gastroenterology	2	4.2
urology	1	2,1	anesthesiology	1	2.1
			dermatology	1	2.1
			internal medicine	1	2.1
			emergency medicine	1	2.1
			family medicine	1	2.1
			oncology	1	2.1
			psychiatry	1	2.1
			radiology	1	2.1

EPQ-R(S) test results were analyzed in relation to both the 1st choice specialties and all the specialties selected by the examined subject. In order to perform the analysis, several categories were distinguished among the medical specialties. The first one was the division into surgical and non-surgical specialties, based on the presence of surgical operations in the training program. General surgery, pediatric surgery, gynecology, orthopedics, urology, but also otolaryngology and ophthalmology fulfill this requirement. All the remaining specialties were qualified as non-surgical. Due to the specificity of work and selection frequency, a separate analysis was carried out for the following groups: pediatric specialties, strictly internal medicine specialties and specialties which require very little doctor-patient contact (radiology and pathomorphology). We observed a high level of indecision of the respondents concerning their preferred prospective specialties, reflected by the discrepancies in their reported preferences, ie. 17 people (37.78%) were considering both the surgical and non-surgical specialties. The Kruskal-Wallis test and the ANOVA did not show statistically significant differences for either of the above-mentioned groups ($p > 0.05$). Detailed results are presented in Tables 2 – 4 and Figures 5 – 9.

Table 2. EPQ-R(S) test results for surgical and non-surgical specialties (stens) in the group of students.

	Median	Mode	Min	Max	25 percentile	75 percentile	Interquartile range
Surgical specialties (15)							
Neuroticism	4	4	2	10	4	7	3
Extroversion	6	numerous	2	10	3	7	4
Psychoticism	4	4	1	7	3	5	2
Lie scale	6	6	3	8	4	6	2
Non-surgical specialties (33)							
Neuroticism	5	6	2	10	4	6	2
Extroversion	5	3	2	10	3	7	4
Psychoticism	4	3	1	9	3	6	3
Lie scale	5	6	1	8	4	6	2

Table 3. Kruskal-Wallis test results for surgical/non-surgical specialties in the group of students

	Kruskal-Wallis test (H)	Significance level (p-value)
Neuroticism	0,02	0,89
Extroversion	0,07	0,79
Psychoticism	0,06	0,8
Lie scale	0,19	0,67

Table 4. EPQ-R(S) test results in the group of students along with Kruskal-Wallis test results for the individual groups (stens)

	Median	Mode	Min	Max	25 percentile	75 percentile	Interquartile range	Kruskal-Wallis test (H)	Significance level (p-value)
All study participants (48)									
Neuroticism	5	4	2	10	4	7	3	–	–
Extroversion	5	3	2	10	3	7	4	–	–
Psychoticism	4	3	1	9	3	5,5	2,5	–	–
Lie scale	5,5	6	1	8	4	6	2	–	–
Internal medicine specialities (28)									
Neuroticism	5	numerous	2	10	4	6,5	2,5	0,01	0,94
Extroversion	5	3	2	10	3	7	4	0,05	0,82
Psychoticism	3	3	1	9	3	4,5	1,5	1,9	0,17
Lie scale	6	6	1	8	4	7	3	0,18	0,28
Pediatric specialities (16)									
Neuroticism	5,5	4	3	9	4	6,5	2,5	0,31	0,58
Extroversion	6	10	2	10	3	10	7	0,5	0,48
Psychoticism	4	4	1	7	3	5,5	2,5	0,33	0,57
Lie scale	5	6	1	8	4	6	2	0,84	0,77
Specialities with limited patient-doctor contact (7)									
Neuroticism	4	4	3	10	3	7	4	0,39	0,53
Extroversion	6	10	2	10	3	10	7	0,16	0,69
Psychoticism	4	4	2	7	3	6	3	0,38	0,54
Lie scale	5	4	1	8	4	7	3	0,01	0,91

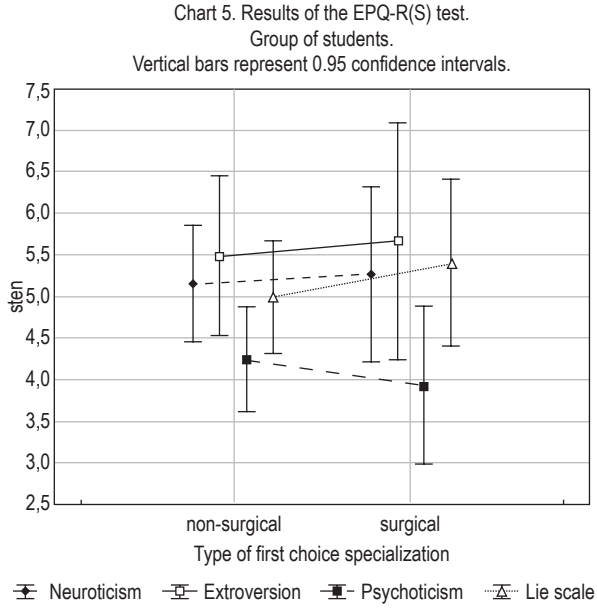

Figure 5. EPQ-R(S) scores in the student group.

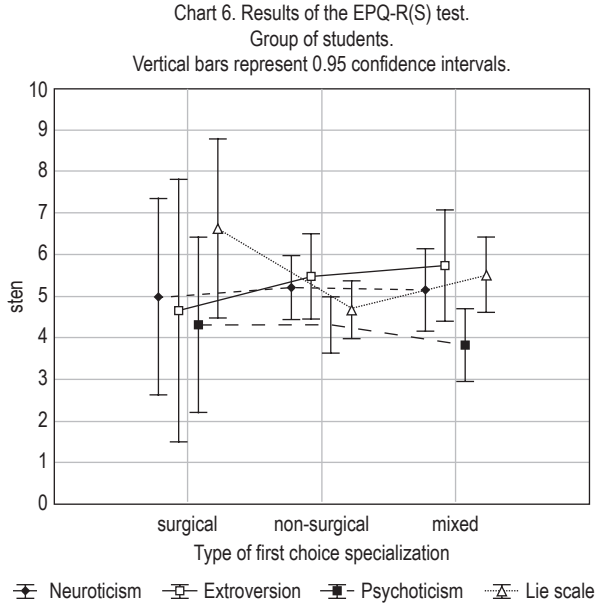

Figure 6. EPQ-R(S) scores in the student group.

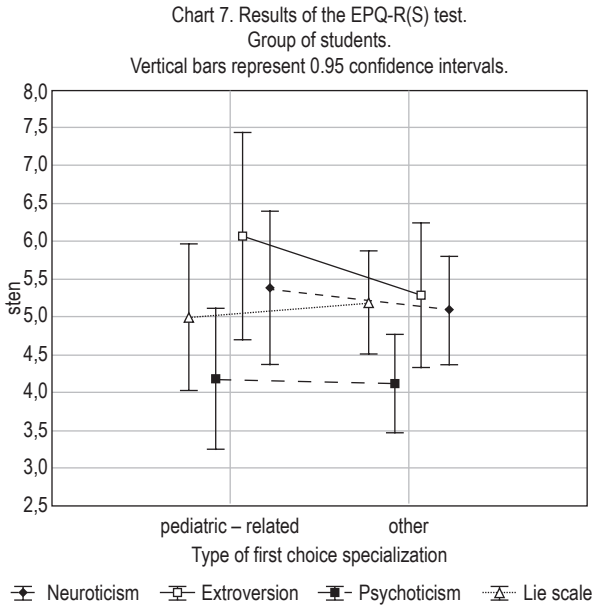

Figure 7. EPQ-R(S) scores in the student group.

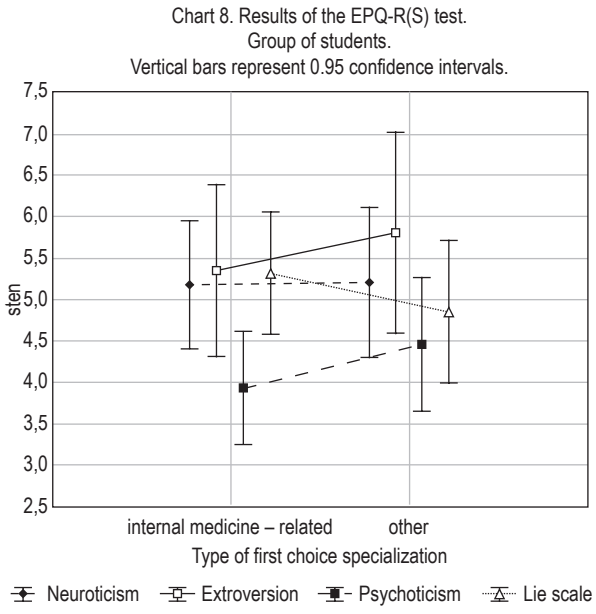

Figure 8. EPQ-R(S) scores in the student group.

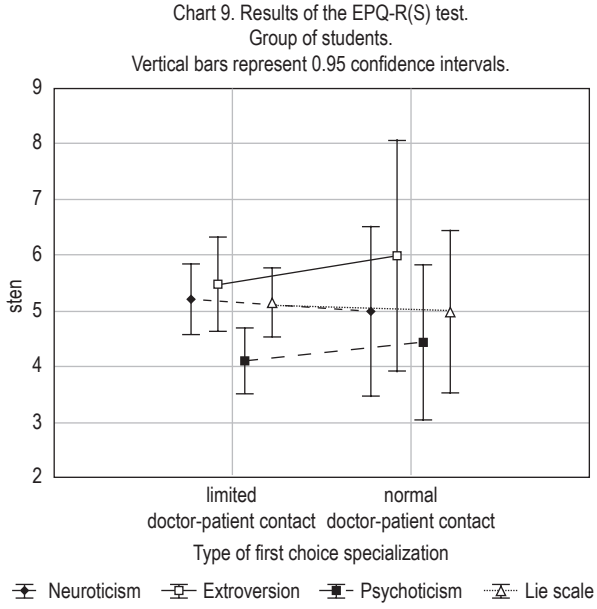

Figure 9. EPQ-R(S) scores in the student group.

The doctor group

The examined specialist doctors were asked to fill in the questionnaire with regards to all completed and ongoing medical specialty training programs. Due to the recently adopted mode of specialization, a large number of respondents had more than one specialty (eg. first-degree specialty in internal medicine and second-degree in endocrinology). Therefore, the doctors who did not have specialties from two mutually different groups (eg., surgical and non-surgical) were qualified for the analysis. Table 5 presents the distribution of the indicated medical specialties. After providing this information, the subjects completed the EPQ-R(S).

Table 5. Medical specialties in the doctor group.

Surgical specialties			Non-surgical specialties		
Completed medical specialty	Number of people	Percentage of people	Completed medical specialty	Number of people	Percentage of people
general surgery	3	7.7	internal medicine + subspecialities	6	15.4
gynecology and obstetrics	3	7.7	pediatrics + subspecialities	6	15.4
orthopaedics and traumatology	2	5.1	internal medicine	4	10.3
ophthalmology	1	2.6	pediatrics	3	7.7
			pediatrics, neonatology	2	5.1
			family medicine	2	5.1
			anesthesiology and intensive therapy	1	2.6
			infectious disease	1	2.6
			dermatology	1	2.6
			forensic medicine	1	2.6
			oncology	1	2.6
			pediatrics, family medicine, sports medicine	1	2.6
			psychiatry	1	2.6

For the analysis of the EPQ-R(S) test results, the following groups were distinguished: surgical and non-surgical specialties (same criteria as in the student group), pediatric specialties and internal medicine specialties. The Kruskall-Wallis and ANOVA tests showed no statistically significant personality-related differences between surgical and non-surgical specialists, or between pediatricians and other specialists ($p > 0.05$). The results are illustrated in Tables 6-8 and Figures 10, 11.

Internal medicine specialists (10 people – 25.6% of the group) scored high on the Extraversion scale significantly more frequently than other subjects – as demonstrated by both the Kruskall-Wallis test ($p = 0.02$) and the ANOVA

(p = 0.02). No other personality-related differences proved statistically significant. For specialists of internal diseases, the average score on the Extraversion scale was 7.3 sten, and for other specialists 5.17 sten. A detailed distribution of results is presented in Table 8 and Figures 12, 13.

Table 6. EPQ-R(S) test results for surgical and non-surgical specialties (stens) in the doctor group.

	Median	Mode	Min	Max	25 percentile	75 percentile	Interquartile range
Surgical specialities (9)							
Neuroticism	5	numerous	2	8	4	6	3
Extroversion	4	3	2	8	3	6	3
Psychoticism	5	numerous	1	6	3	6	3
Lie scale	6	numerous	3	7	5	6	1
Non-surgical specialities (30)							
Neuroticism	5	4	2	10	4	6	2
Extroversion	6	8	2	10	4	8	4
Psychoticism	4	4	2	10	3	5	2
Lie scale	6	6	1	9	4	6	2

Table 7. Kruskal-Wallis test results for surgical/non-surgical specialties in the doctor group

	Kruskal-Wallis test (H)	Significance level (p-value)
Neuroticism	0,01	0,93
Extroversion	2,34	0,13
Psychoticism	0,2	0,66
Lie scale	0,52	0,47

Table. 8. EPQ-R(S) test results in the doctor group along wilt Kruskal-Wallis test results for the individual groups (stens)

	Median	Mode	Min	Max	25 percentile	75 percentile	Interquartile range	Kruskal-Wallis test (H)	Significance level (p-value)
All study participants (39)									
Neuroticism	5	4	2	10	4	6	2	–	–
Extroversion	6	numerous	0	10	3	8	5	–	–
Psychoticism	4	3	1	10	3	5	2	–	–
Lie scale	6	6	1	9	4	6	2	–	–
Internal medicine specialities (10)									
Neuroticism	5	numerous	2	10	4	6	2	0,27	0,6
Extroversion	8	8	5	10	5	8	3	5,32	0,02
Psychoticism	3,5	numerous	2	5	3	4	1	1,07	0,3
Lie scale	4	4	1	7	4	6	2	1,58	0,21
Pediatric specialities (12)									
Neuroticism	4	numerous	3	8	3	5	2	2,02	0,16
Extroversion	4,5	numerous	2	10	3	6,5	3,5	1,16	0,28
Psychoticism	4,5	2	2	8	2,5	6,5	4	1,08	0,3
Lie scale	6	6	2	9	4	7	3	1,13	0,29

Chart 10. Results of the EPQ-R(S) test.
Group of specialist doctors.
Vertical bars represent 0.95 confidence intervals.

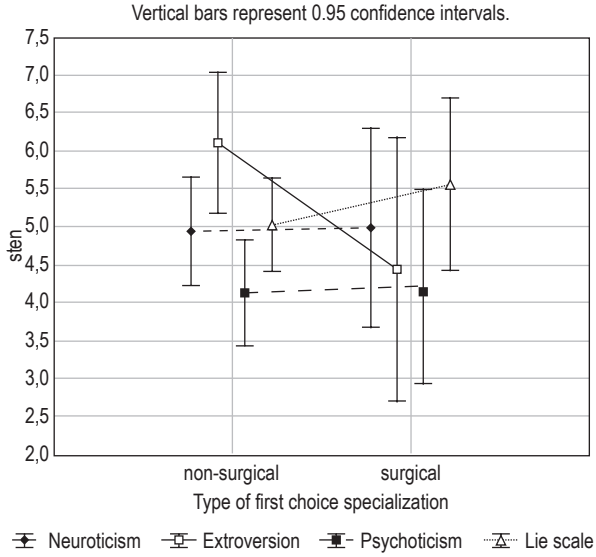

Figure 10. EPQ-R(S) scores in the doctor group.

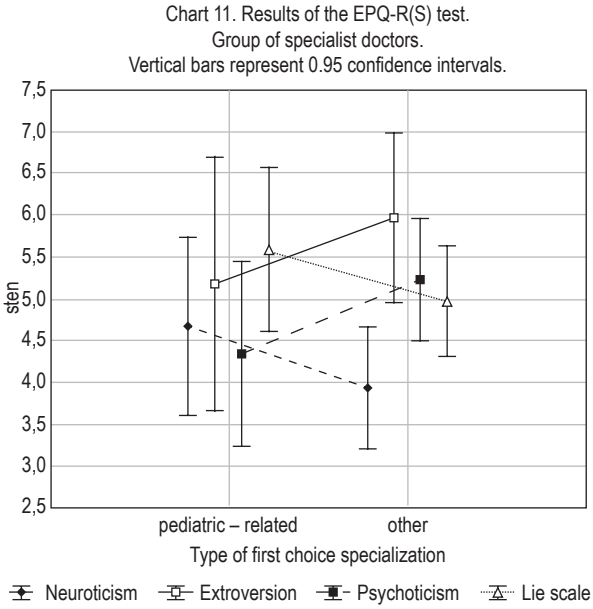

Figure 11. EPQ-R(S) scores in the doctor group.

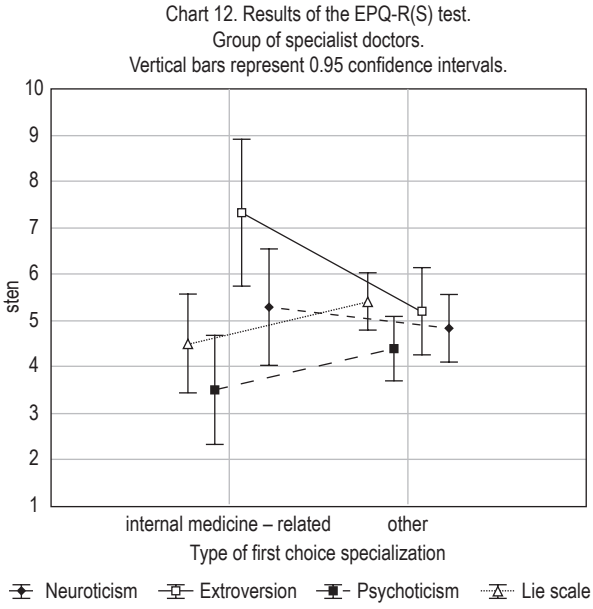

Figure 12. EPQ-R(S) scores in the doctor group.

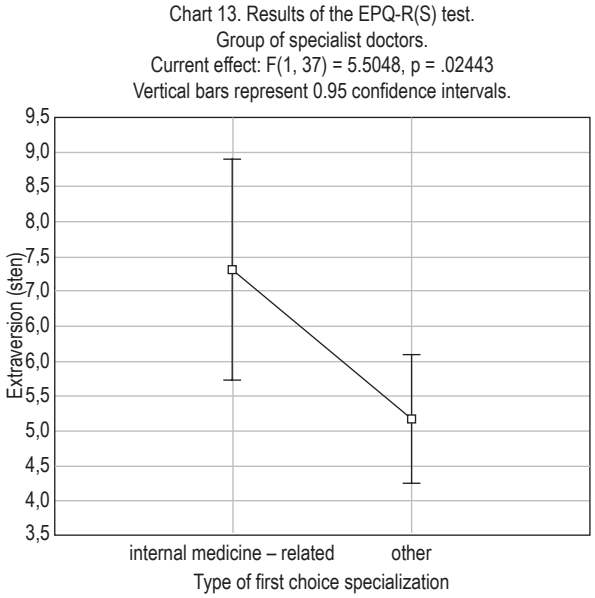

Figure 13. EPQ-R(S) scores in the doctor group.

DISCUSSION

The results obtained in the course of this project constitute a valuable contribution to research on the personality traits as predictors of career choice. In the long-term, conclusions from this research can be used to create new tools for career counseling in medical professions. Especially since it is a pioneering research study nationwide. What is interesting is that our findings differ from those of similar studies conducted in other countries [5 – 11]. First of all, they indicate that there are no differences in the intensity of measured personality traits in the group of medical students. This suggests that personality traits are not the most important element influencing the choice of the future path of professional development by medical students. Interestingly, the reported motivation to choose a given specialization included the respondents' scientific interests, practical aspects of work in a given specialty and the opportunity to acquire a training position, more frequently than the impression of a personality fit for a given job or interest in contact with certain types of patients. The choice of specialization is affected by many external and internal factors, and according to our results, for most med students, personality is not one of the most important ones, at least not

in the final years of medical university education. In years 2010-2012, a study on motivations to pursue particular medical specialties was carried out among medical students in Cracow [20]. It was found that autotelic motivations related to the professional ethos, sense of mission and passion for a given field proved to be superior to other motivation types. The sense of harmony with one's personality and the nature of work in a given medical field is not (at least consciously) indicated by students as their motivation.

In addition, students finishing their education, despite the upcoming moment of choice of their future specialty, did not show certainty in their decision. 93.75% of the respondents considered more than one career option, and there were significant discrepancies as to the nature of the given specialization, eg. 17 people (37.78%) mentioned both the surgical and non-surgical specialties as their potential choices. This suggests that students graduating from the medical faculty are not sure about their plans for the future and their decision at the time of filling out the questionnaire could later be drastically changed. The compulsory 13-month-long postgraduate medical internship before the specialist training may be an opportunity for many people to face the realities of daily work in various hospital wards and to confirm or challenge some of their previous ideas about the medical specialties they are considering. It would be worthwhile to carry out a prospective study assessing the extent to which the indicated prefered specialty choice declared by med students changes as they complete their postgraduate internship. What percentage of respondents would choose the same medical specialty before and after the internship?

Data about students' preferences regarding the choice of specialization and their motivations could be applied not only in career counseling, but it could also be used by the Ministry of Health and other organizational units involved in the process of specialist medical training. From the social point of view, it is necessary to train a particular number of doctors in various medical fields according to the patients' needs. In Poland, some specialties are currently in short supply, eg. geriatrics or emergency medicine [21]. To encourage students to take up these specializations, they were offered higher salaries by the government, which was guaranteed by the official acts [22]. A thorough examination of the needs and motivations of young doctors could contribute to finding other solutions to the problem of personnel deficits. Taking into account the fact that research findings indicate the dominance of autotelic motivations among students [20], one should not expect that raising wages, and thus referring to instrumental motivations, will bring a significant effect. Perhaps it would be more beneficial to introduce changes in the training system and make the work environment friendlier for doctors. Such modifications could be beneficial for patients as well, whose care is an important motivation for young doctors.

Studies carried out by foreign research teams showed differences in personality traits among students choosing different medical specialties, but this has not been demonstrated in this study. So, where do such discrepancies between various research results come from? First of all, it should be taken into account that the researchers used different personality questionnaires, measuring different sets of traits – neuroticism, openness, agreeableness, extraversion, scrupulousness and psychoticism [5 – 11]. The EPQ-R (S) does not contain three of these features, so it is possible that their examination in the Polish population would generate similar results, demonstrating some differences between medical students depending on the selected medical specialty. Another reason for the differences between the presented and foreign research can be found in the education system in individual countries – for example, the level of students' decisiveness may differ depending on the time they spent during their studies in practical classes and internships. The differences in the system of assigning specialization training positions, in the availability of those positions and in working conditions should also be considered. In a system based on interviews, personality and interpersonal skills can have a greater impact on the ability to qualify for the chosen specialization, than when the allocation of training positions is based on exam results alone, as it is Poland. It is also necessary to take into account differences in the manifestation of personality traits between different populations and different stereotypes,

norms and cultural requirements to which students adapt in the process of socialization.

Based on the common stereotypes, it could be expected that surgeons (who are commonly considered distant and secretive) will score higher on the Psychoticism Scale or lower on the Extraversion Scale [1]. However, contrary to the popular beliefs mentioned above, personality differences between surgical or pediatric specialties as reflected by the EPQ-R(S) scores were not demonstrated in the examined Polish sample. Such findings may be linked to (among others) the qualification system for specialization training in Poland, which, based on the Final Medical Exam Result, can reduce the influence of personality-related factors on the possibility of obtaining a desired training position. The obligatory interview during the recruitment process means that both employers and applicants may be more inclined to duplicate stereotypes functioning in a given culture as to the personality traits required in a given specialization. An employer facing a choice between candidates with similar results may be willing to make a decision based on the presence of particular personality traits that he or she considers more favorable in an employee. In the Polish system, a person with a higher exam score will be admitted, even if the difference is 0.01%. Similarly as among students, all cultural differences, stereotypes and beliefs prevailing in the society may influence a doctor's decision to choose a given medical specialty and these should be taken into account.

The issue that should also be analyzed in the case of specialist doctors is the potential effect of their selected specialty on their personality. This hypothesis is even more probable in the face of this study results indicating a lack of personality-related differences among medical students choosing their future specializations. At the beginning of the specialty training, a doctor's personality is relatively shaped, but it is not immune to change. On the contrary – research shows that personality is not absolutely stable throughout the adult life of the individual [23]. Working in specific conditions linked to the specifics of a given medical specialty may over time affect the expression of some personality traits and behaviors and thus affect personality test results. For example, a pediatrician who often has to express sociability, openness and joy in contact with the patient can strengthen his extraversion by practicing it at work. However, it cannot be assumed that this relationship must be based on positive feedback only. If the expression of a certain trait, ie. extraversion, would be associated by a given doctor with stress, overwork and/or other symptoms of occupational burnout, so common in the medical profession [24], or the level of this trait required at work would be much higher and unacceptable for the mental well-being of said doctor, this could lead to a reduction of the initial expression of this trait. The exemplary pediatrician, feeling that he is forced to be an extrovert at work, experiences psychological discomfort and escapes into introversion. This could suggest that manifestation of personality traits differs between specialist doctors working in various fields of medicine, environments or countries, depending on the external and internal stimuli. It may increase or decrease as a result of working conditions, the frequency of occupational burnout and the level of satisfaction from work among doctors.

An important difference, which our research has shown, is the statistically higher level of extraversion in internal medicine specialists in comparison with other specialists. This specialization is one of the widest fields of medicine, and therefore requires a wide and diverse knowledge. But besides knowledge, it also requires good contact with patients, the ability to gain their trust, ensure cooperation and extract all the information necessary to make a diagnosis. This is also necessary during the treatment process, where cooperation and following the doctor's instructions are the key to therapeutic success. It seems, therefore, that being sociable and communicative should be an advantage if not a requirement for a specialist in internal medicine. On the other hand, other aspects of extraversion: impulsiveness, being active, seeking risks and continuous stimulation are traits whose expression does not seem to be beneficial in the work of the internal medicine specialist. Internal diseases develop gradually, tend not to require immediate interventions, and their treatment usually demands calm rethinking and systematic planning of procedures by the doctor. Internists are those specialists who spend most of their time at the desk, filling out paperwork and searching for further informa-

tion in books, with breaks devoted to physical examination of patients. If they are more likely to exhibit the above features, then such a tendency would rather result from the response to their repression resulting from their work.

Our study did not focus on anticipated prestige and income, which may be the key factor in the choice of specialty training [25]. We did not concentrate much on the personal experience of future specialists either. Sometimes working with a nice, charismatic doctor may be a turning point in choosing one's professional path.

It is also worth mentioning that our study did not take into consideration students with physical disabilities, but we do acknowledge that this could also be an important factor.

A significant limitation of the study was doctors' limited willingness to participate in the survey, which contributed to the extended data collection period. In addition, several people presented a strong emotional response, including verbal aggression in response to the proposal to participate in the study. This problem should be taken into account when planning further research. Hence, cooperation with the Education Monitoring System (educational platform for medical postgraduates in Poland) could be an extremely practical solution. One role of this system is to coordinate the process of specialization training of doctors during the whole period of training – from recruitment to specialization examination, which could be used for prospective studies.

CONCLUSION

In the group of medical students, there were no differences in personality traits measured with the EPQ-R(S) depending on their preferred medical specialty: surgical, non-surgical, pediatric, internal or those where doctor-patient contact is not required, which indicates that personality traits are not the most important factor influencing the choice of professional path of young Polish doctors, unlike their colleagues from other countries. In addition, the high level of student indecision reflects the conflicts between the various motivations that guide them in the decision making process.

In the group of specialist doctors, there were no differences in personality traits measured with the EPQ-R(S) pediatricians and surgical specialists, but our results suggested higher extraversion levels in internal medicine specialists. This leads to the conclusion that there are dependencies between the field of medical work and personality. Further research is needed to determine the cause and effect of this relationship.

Differences between the results of this study and foreign research that address this problem may result from intercultural differences as well as a different qualification system for specialization training or working conditions in specific fields of medicine.

It will be interesting to observe whether specialty choice is a fixed and stable decision or it may be changed during the course of medical formation. It is worth to further investigate how and whether career choices among future specialists are connected with socioeconomic change in Europe, where work-life balance seems to be an increasingly important factor in the decision making process.

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