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Personality as a determinant of medical students functioning

The paper summarises a three-year long research study into personality of medical students conducted at four Polish medical universities. The study had its immediate origins in the experiences, thoughts and even moments of astonishment the authors had while observing the academic life and participating in it. It looked as if students did not receive sufficient coaching in such important interpersonal factors as assertiveness, communicative skills or empathy. Students themselves often verbalized their apprehension that important psychological traits, which to them seemed desirable in the medical profession, were not positively reinforced in the course of studies.

These unscientific remarks sparked the authors' interest and desire to convert them into a research programme. The aim was to diagnose personality of medical students in three years of studies and at four different medical universities simultaneously. This approach was chosen to enable comparisons between the schools and within particular universities. The authors were mainly interested in providing answers to three fundamental questions: what is the personality profile of students commencing medical studies?; do personality factors change in the course of medical studies and if so, to what extent?, and what is the personality profile of medical graduates?

It seems that such a personality diagnosis may serve as an excellent introduction to further studies on the psychological profile of prospective doctors and, in the long run, may promote more practically oriented teaching of interpersonal abilities and a better understanding of their impact on the functioning in the medical profession.

Experimental procedures. Personality is understood as "a set of mental properties which influences the characteristic patterns of individual behaviour and does not change in time or situation"(8). The study was based on the concept of the so-called Big Five which has a strong theoretical foundation in international literature of the subject and a reliable measurement tool in Poland, the NEO-FFI personality inventory by *C o s t a* and *M e C r a e* (1).

The Polish adaptation of the inventory was finished in 1994 by a team led by *S t r e l a u* (1) and it was validated for Polish conditions and normalised for age and gender. The personality factors in the inventory are neuroticism which measures emotional adjustment, extraversion which determines the quality and amount of social relations, openness which describes cognitive curiosity and tolerance to new ideas, agreeableness which measures the individual's attitude towards other people and conscientiousness which assesses the individual's attitude towards work.

The inventory consists of 60 statements. The participants mark a number next to the statement to indicate the extent to which they agree or disagree with that statement. In the next step the raw scores are converted into a sten scale. It is assumed, as suggested by the authors of the inventory, that scores in the range of 1–3 stens reflect low intensity of the trait, scores of 4–6 stens are considered average and scores ranging from 7 to 10 stens are high.

Random-stratified sampling was used in the study. The population was stratified according to the faculty and the year of studies, and the first year, third year and sixth-year students were chosen. Next, groups of students in each year were randomly selected to participate in the study. This sampling technique was chosen with the purpose of tracking the changes in the intensity of each personality factor (dimension) during the course of medical studies. All participants, irrespective

of the year of studies, were tested in the same way by means of identical procedures, techniques and tools. Also, the testing procedure used at all medical universities was uniform. A comparative lateral research method was applied but it is the authors' intention to continue the study by means of a comparative longitudinal method in order to find out whether personality traits really change during the course of medical studies.

The results were verified statistically. First the test result was calculated for each student and next the percentage of students in each year with low, average and high scores in every personality factor was estimated. To find out whether the differences were statistically significant the difference in proportions test was performed (significance level < 0.05) (8).

Table 1. Scores for first-year students

	Low (%)	Average (%)	High (%)
Neuroticism	35.2	44.4	20.4
Extraversion	6.3	47.5	46.2
Openness	11.4	54.9	33.7
Agreeableness	11.1	38.3	51.6
Conscientiousness	4.9	35.0	60.1

Table 2. Scores of intensity of personality traits at each medical university and statistical significance analysis

Conscientiousness	Agreeableness	Openness	Extraversion	Neuroticism	Year of study	Parameter		
						Low	High	
10.7	13.4	13.4	9.8	25.0	I			Białystok
5.0	21.0	5.0	7.0	23.0	III	Low		
4.0	16.8	5.9	9.9	30.7	VI			
39.3	45.5	57.1	46.4	49.1	I			
60.0	53.0	63.0	64.0	45.0	III	average		
48.5	46.5	60.4	50.5	46.5	VI			
50.0	41.1	29.5	43.7	25.8	I			
35.0	26.0	32.0	29.0	32.0	III	high		
47.5	36.7	35.7	39.6	22.8	VI			
4.2	10.8	10.0	7.5	39.2	I			Katowice
3.6	15.2	3.6	2.7	56.3	III	low		
5.9	16.0	4.2	6.7	41.2	VI			
33.3	42.5	52.5	45.0	39.2	I			
33.0	36.6	46.4	42.9	33.0	III	average		
30.3	37.8	49.6	45.4	42.0	VI			
62.5	46.7	37.5	47.5	21.6	I			
63.4	38.2	50.0	54.4	10.7	III	high		
63.8	46.2	46.2	47.9	16.8	VI			
1.0	5.8	10.6	1.8	48.1	I			Poznań
12.0	13.7	6.0	10.3	35.0	III	low		
3.8	16.3	6.7	6.7	34.6	VI			
30.8	31.7	50.0	46.2	42.3	I			
42.0	40.2	50.4	48.7	45.3	III	average		
42.3	45.2	53.8	57.7	50.0	VI			
68.2	62.5	39.4	49.0	9.6	I			
46.0	46.1	43.6	41.0	19.7	III	high		
53.9	38.5	39.4	35.6	13.7	VI			
3.6	10.0	11.8	4.5	29.1	I			Szczecin
5.0	15.0	4.0	12.0	32.0	III	low		
12.0	11.0	7.0	7.0	38.0	VI			
36.4	32.7	66.0	51.8	47.3	I			
39.0	48.0	60.0	50.0	43.0	III	average		
37.0	47.0	59.0	58.0	41.0	VI			
60.0	57.3	28.2	43.7	23.6	I			
56.0	38.0	36.0	38.0	25.0	III	high		
51.0	42.0	34.0	35.0	21.0	VI			

Table 3. Scores for sixth-year students

	Low (%)	Average (%)	High (%)
Neuroticism	36.6	45.0	18.4
Extraversion	7.5	52.6	39.9
Openness	5.9	55.2	38.9
Agreeableness	15.1	43.9	41.0
Conscientiousness	6.4	39.1	54.5

DISCUSSION

When analysing the intensity of psychological parameters in a selected group of people, different interpretative approaches can be adopted. One of the aims of this paper was to conduct a personality analysis of freshmen students (Table 1). It seems important to find out to what extent people follow their mental predisposition when choosing their university studies. Undoubtedly, the medical profession requires specific psychological traits and although they do not necessarily take the same "value" they still need to be kept within a certain range. If one was to determine the most crucial factors that determine the psychological functioning of a medical doctor, one would need to mention: the ability to maintain proper relations with the patient (extraversion, agreeableness), mental resistance to professional stress (neuroticism) and responsible attitude to professional duties (conscientiousness). In other words, the population of medical students should comprise individuals who are resistant to stress, empathetic, sensitive to the needs of other people, communicative etc. From the point of view of prospective doctors it would be advisable that freshmen students already displayed those traits which would be merely reinforced during the course of studies.

The personality profile of an average freshman student that emerges from the studies conducted at four Polish medical universities has the following facets:

a) the neuroticism factor is usually at an average level. Statistically, a freshman is a person who has a limited control of stress, is easily irritable and displays such negative emotions as fear, confusion, anger and guilt;

b) almost the same percentage of the population is average or high in the extraversion factor which indicates that they are friendly, talkative and eager to play; they seek stimulation and are usually optimistic and in a good mood. Only 6.3% of the population scores low in this factor and reveals unsatisfactory adjustment to the prospective professional role;

c) most scores in the openness factor are in the average range. As defined by the authors, individuals who are average in openness are practical but willing to consider new ways of doing things, seeking a balance between the old and the new. Quite a significant number of participants score high in this factor because, as it seems, creativity and resistance to authority is typical of the age group represented by the students;

d) in the agreeableness factor the personality profile is very clear. More than 50% of participants score high in this factor, which means that they are positive towards others, altruistic, sensitive, eager to cooperate and trustful;

e) in the conscientiousness factor almost all participants are in the average or high range and over 60% of them are high scorers. Such individuals are strong-willed, motivated to act and persistent in achieving their goals. They are also meticulous, punctual and reliable in work.

The authors also analysed the changes in the intensity of personality factors during the course of studies (Table 2). The most significant statistical relations are shown for each medical university separately because the change in the intensity of personality traits may be, to a large extent, influenced by the system of education or curricular differences.

As far as the neuroticism factor is concerned, at three universities (Poznań, Białystok, and Szczecin) we experienced something that we chose to call the "pendulum principle". The intensity

of the trait increases in the third year of studies and decreases back to the first year level in senior students. It is obvious that freshman and sophomore students have to cope with a heavy work load and they are under a lot of strain. Consequently, they become less resistant to stress and distance themselves from the environment. The change between the third and fourth year of studies may be caused by the fact that students gain life experience and learn how to behave and cope with the problems without significant consequences for their mental condition. The pendulum principle also applies to the extraversion factor at the same universities. The level of extraversion decreases in third-year students as compared with freshmen and seniors. The reason for that may be that the students start pursuing their own study objectives and limit their social contacts and become more distrustful of interpersonal relations. The scores in openness are constantly average or high in all years of studies and at all universities and tend to increase during the course of studies. The students become more curious about the world around them and more active intellectually. The intensity of the agreeableness factor decreases due to the process of education, individual experiences and personal development – though it is hard to evaluate the impact of these aspects individually. This tendency was observed at all universities and, in the authors' opinion, it is profitable from the point of view of the medical profession. In the student groups from Poznań, Białystok and Szczecin the conscientiousness factor decreases statistically in the third year of studies and increases in the sixth year of studies – though not to the level displayed in the first year of studies. The tendency is nonexistent in students from Katowice who display the same intensity of the trait throughout their studies.

For many reasons the authors were particularly interested in the personality profile of medical graduates. It seems that an optimal graduate should be characterised by a low level of neuroticism, an average level of extraversion, agreeableness and openness and by a high level of conscientiousness. It appears that the scores for the entire population of sixth-year students mostly conform to the model which the authors consider the most desirable. Only in the neuroticism factor the profile of a medical graduate does not comply with the assumption since a large group of participants are average scorers. In the process of education one should reinforce individual abilities to reduce stress and control emotions. The analysis of personality profiles for each medical university reveals several differences in the intensity of personality traits. These issues are discussed in separate articles.

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SUMMARY

The paper presents the results of a personality study conducted on students of medical universities in Białystok, Katowice, Poznań and Szczecin. The study was based on the five-factor model

comprised of five personality dimensions: neuroticism, extraversion, openness to experience, agreeableness and conscientiousness. The Polish version of Costa and McCrae's inventory was applied. The study was performed on first-year, third-year and sixth-year medical students in order to analyse the personality profile of freshman students, track the changes in the intensity of personality traits during the course of medical studies and outline the personality profile of medical graduates. The results achieved point to positive personality adjustment of medical students to the future involvement in the medical profession and indicate several facets of personality development throughout the course of studies.

Osobowość jako wyznacznik funkcjonowania studentów medycyny

Funkcjonowanie jednostki w określonej roli zawodowej jest uwarunkowane wieloma czynnikami o charakterze zewnętrznym i czynnikami natury psychologicznej. Zawód lekarza wymaga szczególnych dyspozycji wewnętrznych, zależnych od indywidualnych cech psychicznych, takich jak osobowość, umiejętności interpersonalne itp. Przedmiotem podjętych badań była osobowość studentów medycyny, a celem ukazanie zmian w trakcie trwania studiów, następujących w zakresie natężenia określonych jej cech. Na ich podstawie możemy pośrednio wnioskować o charakterze wpływu procesu kształcenia medycznego na stymulację rozwoju osobowości studentów. Wyniki badań dają asumpt do dyskusji na temat osobowościowego „przygotowania” przyszłych lekarzy do pełnienia roli zawodowej. Narzędziem badawczym zastosowanym w badaniach był kwestionariusz inwentarza osobowości NEO-FFI Costy i McCrae, zaadaptowany na warunki polskie w roku 1994. Badanie zostało oparte na koncepcji ujmującej osobowość w kategoriach cech, tzn. pięcioczynnikowym modelu osobowości. Inwentarz ten bada osobowość w obrębie pięciu czynników (wymiarów): neurotyczność – odzwierciedla przystosowanie emocjonalne, ekstrawersja – charakteryzuje jakość i ilość interakcji społecznych oraz poziom aktywności i zdolności do odczuwania pozytywnych emocji; otwartość na doświadczenie – opisuje tendencję jednostki do poszukiwania i pozytywnego wartościowania doświadczeń życiowych, tolerancję wobec nowości i ciekawość poznawczą; ugodowość – opisuje pozytywne *versus* negatywne nastawienie do innych ludzi, orientację interpersonalną przejawiającą się w altruizmie *versus* antagonizmie; sumiennosc – charakteryzuje stopień zorganizowania, wytrwałości i motywacji jednostki w działaniach zorientowanych na cel. W badaniach posłużono się losowo-warstwowym doбором próby. Zasada takiego doboru próby wiązała się z potrzebą obserwacji ewentualnych zmian w zakresie natężenia danej cechy (wymiaru) osobowości w zależności od okresu studiowania na uczelni. Wyniki badań wskazują na pojawiający się „kryzys osobowościowy” studentów III roku, opisują też profile osobowościowe absolwentów badanych uczelni.