Personality and Learning Styles of Final-Year Medical Students and the Impact of these Variables on Medical Specialty Choices

Son Sınıf Tıp Öğrencilerinin Kişilik ve Öğrenme Stillerinin Tıpta Uzmanlık Tercihi üzerine Etkileri

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ABSTRACT

Objective: Medical student profile is changing on campuses today and there is a much greater variation in the range of personality type and learning style preferences to be considered. In this study it is aimed to determine the learning styles of medical school students at Gazi University and to find out whether there is any relationship between students' personality types, learning style preferences and their medical specialty choices.
Methods: The study was conducted on 170 final year students (96.6%) at the Gazi University School of Medicine in the 2011-2012 academic year. The authors used Myers-Briggs Type Indicator (MBTI) to determine the personality traits and Grasha Riechmann Student Learning Style Scale (GRSLSS) to establish the learning styles.
Results: During the study, 91.8% of the students declared that they wanted to be a specialist and 4.1% wanted to be a general practitioner in the near future. Most preferred specialty appeared to be dermatology (11.2%) in whole group. Choices of female students who want to be a specialist were dermatology, ophthalmology and obstetrics and gynecology and their distributions were 22.8%, 13.0% and 9.8%, respectively ($p<0.05$). The most common personality type in all preferred specialty areas was Introverted Sensing Thinking Judging (ISTJ). The students with ISTJ personality type had a higher score on the collaborative and competitive learning style.
Conclusion: Last-year medical students are characterized by a ISTJ personality type in most of the medical specialty preferences. Furthermore, these students have collaborative and competitive learning styles.

Key words: Learning style, medical specialty, medical student, personality type

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ÖZET

Amaç: Günümüzde kampüslerdeki tıp öğrencilerinin profili değişmektedir ve kişilik tiplerinde ve öğrenme stili tercihlerindeki varyasyonlar dikkate alınmalıdır. Bu çalışmada Gazi Üniversitesi tıp öğrencilerinin öğrenme stillerini ve öğrencilerin kişilik tipleri, öğrenme stilleri ve tıpta uzmanlık tercihleri arasında herhangi bir ilişki olup olmadığını belirlemek amaçlanmıştır.
Yöntemler: Çalışma 2011-2012 akademik yılında Gazi Üniversitesi Tıp Fakültesinde 170 (%96.6) son sınıf öğrencisi ile yapılmıştır. Yazarlar kişilik özelliklerini belirlemek için Myers-Briggs Kişilik Ölçeği (MBKÖ) ve öğrenme stililini ortaya çıkarmak için Grasha Riechmann Öğrenci Öğrenme Stili Ölçeği (GRÖÖSÖ) kullanmışlardır.
Bulgular: Araştırma sırasında yakın gelecekte öğrencilerin %91.8'i uzman ve %4.1'i genel pratisyen olmak istediklerini açıklamışlardır. Tüm grupta en çok tercih edilen uzmanlık dermatoloji (%11.2) olarak gözükmektedir. Uzman olmak isteyen kız öğrencilerin tercihleri dermatoloji, oftalmoloji ve kadın doğumdur dağılımlar sırasıyla %22.8, %13.0 ve %9.8'dir ($p<0.05$). Tercih edilen tüm uzmanlık alanlarında en sık kişilik tipi İçe Dönük-Duyusal-Düşünme-Yargılama (İDDY) dır. İDDY kişilik tipi olan öğrencilerin işbirlikli ve yarışmacı öğrenme stili puanları daha yüksektir.
Sonuç: Birçok uzmanlık tercihinde son sınıf tıp öğrencileri İDDY kişilik tipi ile karakterizedir. Ayrıca bu öğrenciler işbirlikli ve yarışmacı öğrenme stiline sahiptir.

Anahtar Sözcükler: Öğrenme stili, tıpta uzmanlık, tıp öğrencisi, kişilik tipi

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INTRODUCTION

Medical education is a difficult and life-long process both in undergraduate and postgraduate levels. The students are expected to demonstrate competency in areas of technical skills, team working and lifelong learning skills beyond medical education before and after graduation (1,2). In addition to these, the selection of medical specialty is as important as the educational process. The selection of medical specialty is based on many determinants such as personal (e.g., personal and learning styles), cultural, national and international values, academic achievements, finances, lifestyle and role models. Although many factors can influence this choice, personal features may play a stronger role in their specialty choices.

There are many kinds of personality measures used with medical students (3). One of the widely used ones is Myers-Briggs Type Indicator (MBTI). It has been used for assessing personality types of people for decades and hundreds of studies over the past 40 years have proven the instrument to be both valid and reliable. It has been also used for medical students in many studies (4-11). The instrument addresses the two related goals in the development and application of the MBTI instrument:

1. The identification of basic preferences of each of the four dichotomies specified or implicit in Jung's theory.
2. The identification and description of the 16 distinctive personality types that result from the interactions among the preferences.

The instrument evaluates the individual's favorite world, way of processing information, and way of making decisions and structuring the outside world. A four-letter personality type code results from how the questions are answered along four dichotomies (12).

The Grasha-Riechmann Student Learning Style Scales (GRSLSS) is designed specifically for use with senior high school and college/university students and it focuses on how students interact with the instructor, other students, and with learning in general (13). GRSLSS promotes an optimal teaching/learning environment by helping the faculty design courses and develops sensitivity to the students' needs (14).

Grasha-Riechmann student learning style model, which describes six dimensions of an individual's learning style, was developed in the early 1970s. The learning styles have been defined as personal qualities that influence a student's ability to acquire information, to interact with peers and the teacher, and otherwise participate in learning experiences (13).

Many studies have been conducted comparing specialty choices and the personality (4-11) but limited number of them compares the relationship between personality and learning styles as they impact students' choices.

In this study it is aimed to determine the categorization of the personalities and learning styles of last year medical students (interns) and the relationship of these factors with students' medical specialty choices.

Thus in this study researchers focused on the following questions:

1. What are the personality types of the last year (intern) students at Gazi University Medical School suggested by Myers – Briggs?

2- Is there a significant difference between personality types and sexes?

3-What are the learning style preferences of the last year (intern) students at Gazi University Medical School in terms of six dimensions suggested by Grasha-Riechmann?

4- Is there any significant relationship between learning styles and the medical specialty of choice?

METHODS

Participants

In Turkey, upon completion of the medical degree, doctors may be qualified to train in one of the specialties of their choice for residency based on their performance on a Central National Residency Matching Examination.

The research was conducted at Gazi University School of Medicine in Ankara, the capital city of Turkey, in the academic year of 2011-2012. At the end of the 2012 semester a total of 176 students had graduated, and 170 of them (96.6%) (55.1% female, 44.9% male) have participated in the study. The forms were given to final year students and were filled under the supervision of the researchers.

Instruments

Research data form included MBTI and GRSLSS. The MBTI is an instrument that identifies a person's preferences for gathering data, processing information, and making decisions using four dichotomous scales (6). The first dichotomy identifies whether a person is energized by the outer world of people and things (Extraversion) or the inner world of ideas and experiences (Introversion). The second dichotomy identifies a person's preference for gathering information using their 5 concrete senses (Sensing) or by a sixth sense or "hunch" that allows them to recognize patterns and possibilities (Intuition).

The third dichotomy focuses on whether people prefer to make judgments and decisions based on logic and objective data (Thinking) or based on personal values and subjective data (Feeling). The fourth dichotomy identifies whether a person prefers to achieve closure and have things decided (Judging) or whether a person prefers to continue to consider options (Perceiving) rather than reaching a closure. The four MBTI dimensions analyzed are Extroversion-Introversion (E-I), Sensing-Intuition (S-N), Thinking-Feeling (T-F), and Judging-Perception (J-P). Based on the individual's responses to the questions, a four-letter personality type was generated which consists of four dimensions (eg, ESFP, INFJ). The validity and the reliability analyses of the Turkish version of MBTI had been conducted elsewhere (15).

The GRSLSS promotes understanding of learning styles that have six categories: independent students, dependent learners, competitive students, collaborative learners, avoidant learners, and participant learners. The GRSLSS was made up of 60 items that can be answered on a 5-point Likert Scale and has six sub-scales with 10 items on each scale. The participants are grouped into low, moderate and high on each of the sub-scales (Table 1). Turkish validity and reliability studies of the scale of GRSLSS had been conducted elsewhere (16).

Table 1. Low, Moderate, and High score definitions based on the norms of each learning scale of GRSLSS (without dividing scores by 10) (4).

	Low	Moderate	High
Independent	10.0-27.9	28.0-38.9	39.0-50.0
Avoidant	10.0-18.9	19.0-31.9	32.0-50.0
Collaborative	10.0-27.9	28.0-34.9	35.0-50.0
Dependent	10.0-29.9	30.0-40.9	41.0-50.0
Competitive	10.0-17.9	18.0-28.9	29.0-50.0
Participant	10.0-30.9	31.0-41.9	42.0-50.0

Statistical analyses

Data were analyzed using SPSS for Windows, version 16.0 (SPSS Inc, Chicago, Illinois). Chi-square analyses were used to statistically evaluate significant differences in the medical specialty choices, personality profiles of the students and gender. Kruskal-Wallis test was used to statistically evaluate significant differences in the personality profiles of the students and their learning styles. All tests were considered to be statistically significant when $p<0.05$.

RESULTS

Specialty, sex and personality

Students' choices in specialties were determined by asking them "*Do you want to study as a general practitioner or a specialist? If a specialist, please indicate*." While 44.9% of students were men, 55.1% were women and 91.8% of the students declared that they wanted to be a specialist and 4.1% wanted to be a general practitioner. The most preferred specialty expressed by students was dermatology (11.2%) (Figure 1).

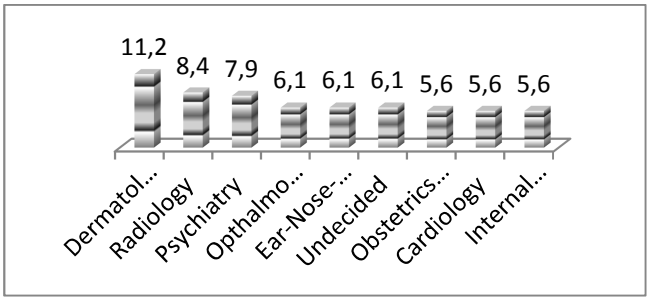

Figure 1. Percent Distribution of Medical specialty choice (n=170)

Table 2 shows that 22.8% of female students will seek a residency in dermatology, 13.0% in ophthalmology and 9.8% in obstetrics and gynecology ($p<0.05$).

Table 2. Distribution of Medical Specialty Choices by Sex, n=170

Specialty	Male (%)	Female (%)	p*
Dermatology	5.3	22.8	0.001
Radiology	12.0	9.8	NS
Psychiatry	10.7	7.6	NS
Ophthalmology	1.3	13.0	0.003
ENT	12.0	5.4	NS
Undecided	5.3	9.8	NS
Obstetrics & Gynecology	1.3	9.8	0.024
Cardiology	4.0	10.9	NS
Internal Medicine	4.0	9.8	NS

*Chi-square test, NS: Non significant

In examining MBTI personality types by sex, ISTJ was the most common type (41.9%), and no difference was detected between the sexes (Figure 2).

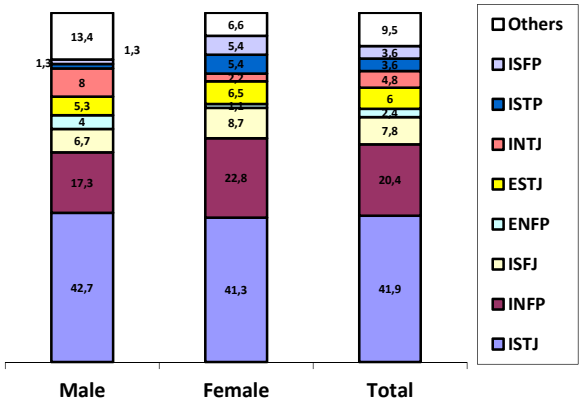

Figure 2. Percent Distribution of personality types by sex Chi-square test, p>0.05

The most common personality type was ISTJ in all specialty areas. There were statistically significant differences in MBTI types between decided and undecided students and students whose choices are psychiatry (p<0.05). While 31.2% of the students who preferred psychiatry were in the category named "others", 23.1% of the undecided students had ISFJ personality type. In the detailed analysis, the students who preferred psychiatry had INFJ personality type (p=0.001). Among the students who prefer radiology, the 11.1% have an ENFP type (p>0.005) (Table 3).

Specialty and learning style

The students who sought further training in ophthalmology displayed statistically significant lower scores on the avoidant learning style and higher scores on competitive learning style as compared to the other students who were not willing to undergo training in this area (p<0.05). On the other hand the medical students with a special interest in cardiology had statistically significant lower scores on avoidant learning style and higher scores on participant learning style (p<0.05). There were no statistically significant differences between learning styles in other specialty areas (Not presented in the table).

Personality and learning style

According to score definition presented in Table 1, the interns who have ISTJ personality type had *high* collaborative and competitive learning styles scores, *moderate* independent, avoidant, dependent and participant learning style scores. The interns who have *other* type of personality have statistically higher avoidant learning style scores than ISTJ, INFP, ENFP, ISTP, and ISFP personality types(p<0.05) (Table 4).

Table 3. Distribution of personality types by medical specialty choice*

Specialty	MBTI (%)									
	ISTJ	INFP	ISFJ	ENFP	ESTJ	INTJ	ISTP	ISFP	Others	p**
Dermatology	43.4	18.6	7.6	2.1	6.9	5.5	2.1	4.1	9.7	NS
Radiology	38.9	22.2	0.0	11.1	0.0	11.1	5.6	0.0	11.1	NS
Psychiatry	31.2	12.5	0.0	0.0	6.2	6.2	0.0	12.5	31.2	0.036
Ophthalmology	53.8	38.5	0.0	0.0	0.0	0.0	0.0	0.0	7.7	NS
ENT	57.1	21.4	0.0	0.0	7.1	7.1	0.0	0.0	7.1	NS
Undecided	38.5	7.7	23.1	0.0	0.0	15.4	0.0	15.4	0.0	0.025
Ob & Gyn	40.0	30.0	0.0	0.0	0.0	0.0	20.0	0.0	10.0	NS
Cardiology	40.0	30.0	0.0	0.0	0.0	0.0	20.0	0.0	10.0	NS
Internal Medicine	30.8	23.1	15.4	0.0	0.0	0.0	15.4	7.7	7.7	NS

*: Analysis of each row is performed between the students who pursue a career in any field or not.
**:Chi-square test, NS: Non significant

Table 4. Distribution of personality types by learning styles (Mean ± SD)

Personality types	Learning styles Independent	Avoidant	Collaborative	Dependent	Competitive	Participant
ISTJ	38.9±0.6	29.1±0.7	36.4±0.6	36.4±0.5	31.8±0.8	34.5±0.7
INFP	40.2±0.6	27.4±1.1	37.5±1.0	37.3±0.6	30.2±1.1	35.6±1.0
ISFJ	38.6±0.7	31.2±1.5	34.5±1.4	35.2±1.4	30.8±1.7	31.7±1.8
ENFP	37.2±0.6	26.3±2.3	34.0±3.0	32.7±3.6	34.5±6.9	38.0±3.3
ESTJ	38.1±1.8	29.3±1.9	35.9±1.8	34.6±1.6	28.8±3.7	33.2±2.7
INTJ	40.9±1.6	30.3±1.9	38.9±1.2	36.8±2.3	35.8±3.2	38.0±1.4
ISTP	38.2±2.0	26.5±2.7	39.5±2.2	39.8±2.1	36.2±3.7	38.5±1.9
ISFP	36.7±1.9	27.0±1.3	32.0±2.2	33.2±1.9	33.0±2.7	33.7±1.4
Others	36.9±1.5	32.9±1.4	36.2±2.0	34.3±1.1	27.9±1.9	31.5±2.2
p	NS	**0.04**	NS	NS	NS	NS

NS: non significant

DISCUSSION

Although this study is based on a single survey in the Faculty of Medicine, it has been informative in terms of revealing the personality and learning style factors affecting medical students' decision to choose a certain specialty in Turkey.

The specialties mostly preferred in previous years, such as plastic surgery, general surgery, cardiovascular surgery, and pediatrics are not listed in the first choices of students in recent years and were replaced by less-risky areas in terms of malpractice likelihood such as dermatology, radiology, and psychiatry. In our study, while male students do prefer radiology, ENT, and psychiatry, female students seek training in dermatology, and ophthalmology. There may be many factors influencing the decision making in choosing a specialty. We have focused on personality types and learning style factors. The medical malpractice law, which has been enforced for the last couple of years in Turkey, may be an influencing factor in deciding on less risky specialties.

Using MBTI, our last year medical students are characterized as Introverted-Sensing-Thinking-Judging (ISTJ) types. The most common MBTI styles for the students in our study correspond nicely to the most common preferences found in other studies conducted with medical students and medical residents (6-9). Individuals who are ISTJ types are characterized as quiet and serious. They earn success by thoroughness and dependability. They are practical, matter-of-fact, realistic, and responsible. They decide logically what should be done and work toward it steadily, regardless of distractions. Also they take pleasure in making everything orderly and organized – their work, their home, and their life (4). Similar to our study, another study found that female physicians had significantly higher sensing components as compared to their male colleagues (10). In addition, a study that analyzed the changes in MBTI types and medical specialty choices over time reported that the proportion of feeling types was the highest and the most permanent among women (11).

Alltogether, specialties and MBTI types revealed that ISTJ was the most common personality type in all specialty areas. However, ISFJ type was significantly higher among emotionally unstable persons as compared to other groups. The difference is related to the feeling component of undecided students. Unstable behavior may be related to dominant feelings. The results of the study by Stilwell et al. (11) revealed that there is a shift towards judging type over the years among doctors due to an increase in technology and knowledge in all fields of medicine. This study also demonstrated that the physicians used perceiving skills more frequently in examination and diagnosis in the 1950s, but today doctors order tests and interpret the results, rather than relying on more inductive processes.

The majority of our study group consisted of ISTJ type students, and their competitive and collaborative learning style scores are in the high category. The ''competitive" learner is classified as a student who learns material in order to perform better than others in the class. They prefer teacher-centered instructional procedures (13). Indeed, the medical students often study the lecture notes for examination by spending more time on the important parts. People with introverted personality type learn with internal reflection and distill one's thoughts independently (9). Students with collaborative learning styles feel they can learn by sharing ideas or talents. They cooperate with the teacher and like to work with others (13). A study done at the same setting with a different student group revealed high scores in competitive and collaborative learning styles as in our study (17). The students with collaborative learning style are eager to learn and take responsibility for the process of learning. These students are very curious and hands-on (13). This is also a specific feature of *thinker* persons who are the majority of our study group. According to MBTI thinkers are logical, reasonable, questioning, critical, and tough (18).

Although almost all of the last year students in our institution participated in the study, we have compared the personality preferences and learning styles of students in a single institution. This is the most important limitation of this study.

CONCLUSION

Last year medical students are characterized as Introverted-Sensing-Thinking-Judging types in most of the medical specialty choices. The students having this type of personality have collaborative and competitive learning styles. Although the graduates of medical schools receive the Medical Doctor degree, professional counseling may be beneficial in their career planning. Mentoring for specialty choices of last year medical students including personality tests and learning styles may help them have a better near future. Therefore, the establishment of Career Counseling Centers in schools of medicine may be useful.

It is important to keep in mind that the results should not be used in isolation. Medical students and educators are cautioned against over-valuing personality types in the career selection process. To maximize learning, faculty should provide guidance in a manner that allows all students to use or express their individual preferences toward understanding, appreciating, and applying skills.

Conflict of Interest
No conflict of interest was declared by the authors.

REFERENCES

1. Harden RM. Outcome-Based Education: the future is today. Med Teach 2007;29:625-9.
2. European Core Curriculum the Students' Perspective, 5th International Follow-Up Conference on the Bologna Process in Medical Education, 6 - 10th July, 2006. Bristol (UK) (cited 2012 July 26), Available from URL: http://www.educmed.net/pdf/documentos/bolonia/eccsp.pdf.
3. Hojat M, Zuckerman M. Personality and specialty interest in medical students. Med Teach 2008;30:400-6.
4. Royston PJ, Mathieson K, Leafman J, Ojan-Sheehan O. Medical student characteristics predictive of intent for rural practice. Rural and Remote Health 2012;12:2107. (Online). Available from URL: http://www.rrh.org.au
5. Davis KR, Banken JA. Personality type and clinical evaluations in an obstetrics/gynecology medical student clerkship. Am J Obstet Gynecol 2005;193:1807-10.
6. Bell MA, Wales PS, Torbeck LJ, Kunzer JM, Thurston VC, Brokaw JJ. Do personality differences between teachers and learners impact students' evaluations of a surgery clerkship? J Surg Educ 2011; 68: 190-3.
7. Sefcik DJ, Prerost FJ, Arbet SE. Personality Types and Performance on Aptitude and Achievement Tests: Implications for Osteopathic Medical Education. J Am Osteopath Assoc. 2009;109:296-301.
8. Zardouz S, German MA, Wu EC, Djalilian HR. Personality types of otolaryngology resident applicants as described by the Myers-Briggs Type Indicator. Otolaryngol Head Neck Surg 2011;144:714-8.
9. Swanson JA, Antonoff MB, D'Cunha J, Maddaus MA. Personality profiling of the modern surgical trainee: insights into generation X. J Surg Educ 2010; 67: 417-20.
10. Clack GB, Allen J, Cooper D, Head JO. Personality differences between doctors and their patients: implications for the teaching of communication skills. Med Educ 2004; 38: 177-86.
11. Nancy A. Stilwell, Mollie M. Wallick, Sara E. Thal & Joseph A. Burleson. Myers-Briggs Type and Medical Specialty Choice: A New Look at an Old Question. Teaching and Learning in Medicine 2000; 12:14-20.
12. Myers Briggs Personality Type Indicator. (cited 2012 August 02), Available from URL: http://www.myersbriggs.org/my-mbti-personality-type/mbti-basics/.
13. Grasha A.F. Teaching with Style A Practical Guide to Enhancing Learning by Understanding Teaching and Learning Styles. San Bernardino: Alliance Publishers; 2002.
14. Riding R., Rayner S, editors. Cognitive Styles and Learning Strategies. London: David Fulton Publishers; 1998.
15. Tuzcuoğlu AS. Translation, Reliability and Validity Study of Myers Briggs Type Indicator. PhD Thesis, Marmara University Institute of Social Sciences, Istanbul, 1996.
16. Süral S. The Relationship Between Learning Styles and Academic Achievements of Primary Candidate Teachers in Science and Technology Teaching Lesson. M. Sc. Thesis, Pamukkale University Institute of Social Sciences, Denizli, 2008.
17. Budakoglu I, Erdemli E, Babadogan C. Learning styles of term 1 medical students in Turkish and English departments of medical faculty. Procedia - Social and Behavioral Sciences 2012; 46: 3271-4.
18. Quenk NL. Essentials of Myers-Briggs Type Indicator® Assessment. 2nd ed. New Jersey: John Wiley and Sons Inc; 2009.