Original Article Open Access

Comparison of Motivational Dimensions and Personality Traits in Medical Students of the School of Medicine and the International Campus of Iran University of Medical Sciences

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Article Info

Article history:
Received 23 Dec 2019
Accepted 20 Feb 2020
Published 16 March 2020
Keywords:
Keller's Motivation
Personality Traits
Students

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Abstract

Background & Objective Learning about and comparing personality traits and motivation in students enable us to understand negative biases for those who have different preferences. Therefore, this study aimed to compare the motivational dimensions and personality traits in students of the school of medicine and the international campus of Iran University of Medical Sciences, Tehran, Iran.

Materials and Methods: This causal-comparative research was performed on all students studying basic medical sciences in Iran University of Medical Sciences in the academic year of 2017-2018. In total, 401 subjects were selected by stratified cluster sampling. Data were collected using Keller's motivation questionnaire and the NEO-Five Factor Inventory. In addition, data analysis was performed using MANOVA.

Results According to the multivariate analysis results, there was no significant difference between the students of the school of medicine and the international campus in terms of personality traits and motivational dimensions ($F(9\&391)=1.33$, $P>0.05$).

Conclusion: According to the results of the present study, the school of medicine and the international campus of Iran University of Medical Sciences used similar medical student selection criteria, and the university has been able to create similar educational environments in the two mentioned places.

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Introduction

The education system of a society is the foundation for its social, economic, political, and cultural development (1), where the topic of success or failure in education, especially the academic achievements of students, is among the most important concerns (2). As one of the largest barriers to achievement, a lack of motivation has made the most attractive and useful training ineffective and futile (3, 4). Psychologists have highlighted the importance of attention to motivation due to its effective correlation with achievements, learning, skills, and behaviors (5), focusing on the identification of individual differences and personality traits related to students' motivation (6).

Motivation refers to the force that creates, maintains and directs a behavior (7). According to Keller, motivation plays a pivotal role in the learning of students, and in this setting, he presented the ARCS model, which is a combination of motivational and voluntary concepts and theories (8) and emphasizes that learning does not occur without four factors of attention (interest), relevance (communication), confidence, and satisfaction. This scholar believes that interest in educational content leads to a learner's focus on education, and if the educational content fits the needs and experiences of the learner, it will increase motivation and learning. In addition, a learner's former experiences affect their confidence in gaining success, which ultimately increases their satisfaction with the results of their activities (9). Keller's motivational model is used in various educational fields in many countries to solve educational problems (10).

Another factor affecting academic success in relation to motivation is the personality traits of students. The increase in positive motivation in the results of studies on the use of Keller motivational model in educational settings shows the great importance of the role of personality in academic achievement (11). According to Costa Jr & McCrae, personality traits are an organized and unit set consisting of relatively stable characteristics that distinguish a person from another person (s). In general, personality traits are divided into five classes of neuroticism/emotional stability (describing individuals who are anxious, hostile, and irritable), extroversion/introversion (an extrovert is a person who is sociable, outgoing, and active; on the other hand, an introvert is a person who is more attached to their thoughts and feelings), openness (indicates the individual's interest and fascination with new phenomena and experiences), agreeableness/ compatibility (respecting others), and conscientious (how reliable a person is) (12). In other words, personality traits are a set of physical, psychological, and behavioral features that distinguish a person from other people (13) and allows the prediction of behaviors in specific situations (14). In addition, personality traits have a

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[DOR: 20.1001.1.22519521.1398.12.36.8.6]

correlation with the motivational factors of an individual (15,16). Therefore, learning the personality traits of a person can be effective in the identification, prevention, and elimination of problems (17,18).

Studies have shown that the evaluation of the correlation between academic motivation and personality traits is crucial in making educational programs more applicable, maximizing the academic achievement of students, and establishing rational relationships between the university and the market, all of which reduce negative individual and social consequences for university graduates (19). The social status of the medical field and the society's emphasis on the importance of the medical field are significant factors in the selection of the medical field by the students (20), which has caused a high demand for education in this field. Meanwhile, some universities (e.g., Iran University of Medical Sciences), has responded to this demand by establishing an international campus, where student admission conditions differ from other medical schools, causing the general belief that students accepted in the international campus have different characteristics, compared to those admitted to the university by taking the nationwide university entrance exam. In addition, fee payment by students may affect their academic achievement and motivation.

Therefore, with regard to the important role of physicians in the treatment of patients and given the different admission criteria for medical students in the school of medicine and international campus (for instance, tuition fees for international students, which has led to the belief that medical students at the School of Medicine and the International Campus are different in terms of some variables that affect academic achievements, such as personality traits and motivation), the present research aimed to compare Keller's motivational dimensions and personality traits in medical students in the school of medicine and international campus, Iran University of Medical Sciences, Tehran, Iran. It is hoped that the results be used as documents to use or modify admission criteria for medical students at the school of medicine or the international campus.

Materials and Methods

This causal-comparative study was performed on all medical students in the school of medicine and the international campus of Iran University of Medical Sciences in the academic year 2017-2018. In total, 104 students were selected by stratified cluster sampling. After receiving approval from the ethics committee with the ethical code of IR.IUMS.REC.1396.930542633 and learning about the number of basic science classes of the school of medicine and the international campus of Iran University of Medical Sciences, nine and three classes were selected randomly from the school of medicine and the international campus, respectively. The questionnaires were distributed between students following explaining the research objectives and ensuring the subjects of the confidentiality terms regarding their personal information. In the end, the completed questionnaires were collected from the students. In this study, data were collected using the following tools:

1.NEO-Five Factor Inventory (short form): was prepared by Costa Jr & McCrae to evaluate personality traits. This 60-item questionnaire evaluates five personality factors (neuroticism, extroversion, openness, agreeableness, and conscientious) with 12 items and is scored based on a five-point Likert scale (from completely disagree=0 to completely agree=4). Notably, the score ranges of the subscales are 12-24, 24-48, and 48-60. The validity and reliability of the tool were confirmed by content validity and a test-retest method with a three-month interval. In this regard, the reliability of the subscales of neuroticism, agreeableness, openness, and conscientiousness were estimated at 0.83, 0.75, 0.80, and 0.79, respectively (21).

2. Keller's motivational questionnaire: in this research, we applied a valid and reliable questionnaire developed by Soltani Arabshahi et al. based on Keller's motivational model to evaluate the learning motivation components of medical students in the school of medicine and the international campus of Iran University of Medical Sciences. This 20-item tool has four subscales scored based on a five-point Likert scale from completely agree to completely disagree. The validity of the questionnaire was confirmed by the content validity method, whereas its reliability was approved at a Cronbach's alpha of 0.83 with a retest at a 10-day interval and with (r=0.89, P=0.001) (22). To analyze the research data and compare the two groups in the indicators measured in this study, first, the results of the multivariate analysis of variance test (MANOVA) were examined to determine the significance of the differences between the means of the two groups in the indicators. In addition, the Box and Levene's tests were used to assess the assumptions of equality of covariance variance matrices and homogeneity of two groups of variances in terms of dependent variables. According to Box test results, there was no serious violation of the assumption of the equality of variance-covariance matrices (BoxM=35.655, F=1.098, P>0.05).

Data analysis was performed in SPSS version 20 using Kolmogorov-Smirnov test to assess normal distribution of the data, the result of which was indicative of the normal distribution of the data (P>0.05), the Levene's test to assess the homogeneity of variances among the variables, the results of which confirmed the assumption of homogeneity in personality traits and motivational

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components (P<0.05), Chi-square to evaluate compatibility status in all demographic variables, and a significance level above 0.05, which showed the matching of the two groups. It is worth noting that the P-value of 0.05 was considered statistically significant.

Results

In this study, 150 out of 401 subjects (37.4%) were enrolled in the university in the academic year of 2015, whereas 151 and 100 students (37.7% and 24.9%, respectively) were entered in the academic years of 2016 and 2017, respectively. The demographic characteristics included gender, marital status, place of residence, and Mothers' occupational status of medical students studying basic sciences in Iran University of Medical Sciences, as shown in Table (1). According to the table, the majority of the students were female and single with mothers who had an associate degree or a BSc.

Table 1:Frequency distribution of medical students under study according to demographic characteristics

Variable		Faculty type Medicine Number (Percentage)	International Number (Percentage)	Total Number (Percentage)
gender	Female	177 (56.0)	58 (68.2)	235 (58.6)
	male	139 (44.0)	27 (31.8)	166 (41.4)
	Total	316 (100.0)	85 (100.0)	401 (100.0)
marital status	Single	309 (97.8)	81 (95.3)	390 (97.3)
	Married	7 (2.2)	4 (4.7)	11 (2.7)
	Total	316 (100.0)	85 (100.0)	401 (100.0)
place of residence	Tehran	129 (41.0)	57 (67.1)	186 (46.5)
	Other than Tehran	186 (59.0)	28 (32.9)	214 (53.5)
	Total	315 (100.0)	85 (100.0)	400 (100.0)
Mothers' occupational status	Employed	152 (50.0)	55 (64.7)	207 (53.2)
	housewife	152 (50.0)	30 (35.3)	182 (46.8)
	Total	304 (100.0)	85 (100.0)	389 (100.0)

Table 2 shows the mean and standard deviation of personality components among students. According to the table, conscientiousness was a dominant component in students in the school of medicine and the international campus in terms of the mean obtained.

Table 2: Mean and standard deviation of personality components at the level of medical school and international in medical students under study

personality components	Medicine Number	Medicine Mean (standard deviation)	International Number	International Mean (standard deviation)	Total Number	Total Mean (standard deviation)
neuroticism	316	21.03 (7.754)	85	21.72 (7.902)	401	21.18 (7.780)
openness	316	28.70 (6.865)	85	29.64 (7.168)	401	28.90 (6.932)
extroversion	316	27.48 (5.373)	85	27.67 (6.132)	401	27.52 (5.535)
agreeableness	316	29.50 (5.738)	85	30.41 (6.671)	401	26.69 (5.951)
conscientious	316	32.10 (6.963)	85	33.13 (7.937)	401	32.32 (7.182)

On the other hand, Table 3 illustrated that among Keller's motivational components, the highest mean (standard deviation) in medical students was related to satisfaction (20.87±3.444), thereby presenting the component as a dominant component among the students in the school of medicine and the international campus.

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Table 3: Mean and standard deviation of Keller's motivational components at the level of medical school and international in medical students under study

Keller's motivational components	Medicine		International		Total	
	Number	Mean (standard deviation)	Number	Mean (standard deviation)	Number	Mean (standard deviation)
attention	316	19.23 (3.880)	85	19.31 (4.024)	401	19.25 (3.906)
relevance	316	20.70 (3.688)	85	21.19 (3.096)	401	20.80 (3.573)
confidence	316	19.04 (3.876)	85	18.74 (3.733)	401	18.98 (3.844)
satisfaction	316	20.74 (3.656)	85	21.35 (2.458)	401	20.87 (3.444)

This test was performed to assess the differences between the two groups in the research variables following the confirmation of the main assumptions of the Manova test and the lack of serious violation of its hypotheses.

Table 4:Multivariate analysis of variance test results in linear composition of variables

	Test	Value	F	The degree of freedom of assumption	Error release degree	P	Eta-squared
group	Pillai's Trace	0.03	1.33	9	391	0.219	0.03
	Wilks Lambda	0.03	1.33	9	391	0.219	0.03
	Hotelling's Trace	0.03	1.33	9	391	0.219	0.03
	Roy's Largest Root	0.03	1.33	9	391	0.219	0.03

Table 5: Results of the effects between subjects on the scores of motivational components and personality traits of medical students and international campus group

Variable / Index	group	Number	Mean (standard deviation)	Degree of freedom (1 & 2)	F	Significance level
neuroticism	Medicine	316	21/03 (7/754)	(1&399)	0/416	0/520
	International	85	21/72 (7/902)			
openness	Medicine	316	27/48 (5/373)	(1&399)	1/214	0/271
	International	85	29/64 (7/168)			
extroversion	Medicine	316	32/10 (6/963)	(1&399)	0/081	0/776
	International	85	27/67 (6/132)			
agreeableness	Medicine	316	28/70 (6/865)	(1&399)	1/575	0/210
	International	85	30/41 (6/671)			
conscientious	Medicine	316	29/50 (5/738)	(1&399)	1/382	0/240
	International	85	33/13 (7/937)			
attention	Medicine	316	19/23 (3/880)	(1&399)	0/025	0/876
	International	85	19/31 (4/024)			
relevance	Medicine	316	20/70 (3/688)	(1&399)	1/255	0/263
	International	85	21/19 (3/096)			
confidence	Medicine	316	19/04 (3/876)	(1&399)	0/416	0/519
	International	85	18/74 (3/733)			
satisfaction	Medicine	316	20/74 (3/656)	(1&399)	2/146	0/144
	International	**85**	21/35 (2/458)			

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The results presented in Table 4 were indicative of lack of significance of four statistics of Pillai's Trace (F=1.33, P>0.05), Wilks Lambda (F=1.33, P>0.05), Hotelling's Trace (F=1.33, P>0.05) and Roy's Largest Root (F=1.33, P>0.05). Therefore, there was no significant difference between the two groups in terms of the dependent variables (P>0.05). Furthermore, the Eta-squared correlation showed that only three percent of the variance related to the difference between the groups was due to the interaction of dependent variables, which was not significant at 0.05 error level. As such, no significant difference was found between the two groups in terms of indexes assessed. A more accurate presentation of these results is provided in Table 5. As observed, no significant difference was observed between the two groups of students in the school of medicine and the international campus regarding personality traits and Keller's motivational dimensions. While the students in the school of medicine obtained lower scores in the personality dimensions, compared to the students in the international campus, this difference was not significant. Moreover, no significant difference was found between the two groups of students in terms of motivational dimensions. On the other hand, while students in the international campus received higher scores in motivational dimensions, compared to other students, this difference was not statistically significant.

Discussion

The current study aimed to compare two groups of students in the school of medicine and the international campus of Iran University of Medical Sciences in terms of motivational dimensions and personality traits. According to the results of the multivariate analysis test, no significant difference was observed between the two groups regarding personality traits (neuroticism, openness, agreeableness, extroversion, and conscientious) and motivational dimensions (attention, relevance, confidence, and satisfaction) (P>0.05). While the personality and motivational components' scores of the students in the medical school were lower than the students in the international campus (with the exception of the extroversion trait and confidence, respectively), the difference between the groups was statistically insignificant (P=0.05).

In line with our findings, Tamanaeifar et al. reported a relationship between personality traits, motivation for progress, and learning styles following the assessment of 440 students. According to the mentioned scholars, personality traits predicted learning styles (23). Moreover, Komarrajua et al. assessed the role of five large personality traits in the prediction of motivation for progress among university students. In the end, it was concluded that the traits of conscientiousness and openness explained 17% of intrinsic motivation variance, whereas accountability and extroversion explained 13% of the mentioned variable, which is consistent with our findings. Moreover, they believed that it is crucial to use all five personality traits to encourage and foster motivation (24).

However, our findings are incongruent with the results obtained by Mohammadzadeh Admalaei et al. in terms of the lack of significant difference between medical students regarding personality traits and motivation. In a research conducted to compare male students in the Shahid Cahmran University of Ahvaz with different learning styles regarding personality traits and motivation for success, Mohammadzadeh Admalaei et al. found a significant difference in this regard. This lack of consistency between the results might be due to the use of different assessment tools such as the Hermance questionnaire and evaluation of other effective factors including learning styles and GPAs (25).

According to the researcher, the lack of a significant difference in the personality traits of students in the school of medicine and the international campus might be indicative of adherence to professional ethical criteria in selecting medical students and successful performance of the university in creating an academic environment that could motivate students throughout their education. A high level of conscientiousness in medical students is not a surprise since medicine is a field that requires high conscientiousness and accountability. In fact, higher accountability leads to the improvement of social interactions. In addition, the personality trait of conscientious raises the level of competence in medical students, which plays an important role in patient care and is recognized as one of the most important principles of professional ethics in medicine.

Conclusion

According to the results of the present research, the school of medicine and the international campus of Iran University of Medical Sciences had similar criteria for medical student selection, and the university has been able to create a similar educational environment in the two mentioned places. In addition, it could be concluded that those who select the field of medicine have similar motivations and personality traits that equip them with the ability to deal with academic challenges and learn professional skills as future physicians. One of the major drawbacks of the present study was using only one university as a research population, which limited the generalization of the results. In addition, there was no research background for this topic in Iran and other countries, which complicated the process of comparing the results with other studies. Nonetheless, our findings can be used to recognize the personality traits of learners and focus on their

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individual differences in the design of educational programs proportional to the needs of students. It is recommended that the personality traits and motivational dimensions of students be taken into account by the higher education planners in the design of educational programs as a fundamental structure so that proper courses could be held for these individuals.

Acknowledgments

This article was extracted from a doctoral dissertation in the field of educational psychology. It is notable that the research received no financial support. Hereby, we extend our gratitude to the students, professors, and the personnel of Iran University of Medical Sciences for assisting us in performing the research.

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