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Relationship Between Personality Traits And Academic Performance Among Medical Students

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Abstract-

Background

Students' school results in medicine are shaped by their mental abilities as well as their own personality. Learning about personalities helps create educational strategies beneficial to students' academic and job skills.

Objectives

To examine the relationship between personality traits and academic performance among newly enrolled medical students and assess gender-based differences in personality profiles.

Study Design: A quantitative, cross-sectional study.

Place and Duration of Study. Department of psychiatry Rawalpindi Medical College from jan 2022 to jan 2023

Methods

134 students newly admitted to Department of psychiatry Rawalpindi Medical College from jan 2022 to jan 2023 on this quantitative, cross-sectional study. Researchers measured personality using the EPQ and evaluated grades with academic records. The data were analyzed with SPSS version 21. In all the analyses, the significance level was maintained at $p<0.05$.

Results

Out of the 134 participants analyzed. 91.1% of the total group was female, compared with 8.9% male Among participants, ages were between 17 and 21 years (mean: 18.05, standard deviation: 0.76). A positive link was shown between psychoticism and neuroticism ($r = .247$), but there was no significant correlation between any personality trait and academic performance. Though the sexual differences in neuroticism, psychoticism and extraversion were not strong ($p > 0.05$), females had more neuroticism and were also more extraverted than males and males had higher scores in psychoticism than females.

Conclusion

Academic achievement in medical students is related to other areas more than their personality traits. Research found these personality trends between genders, but they were not reliable. A further investigation is needed to uncover new aspects that contribute to medical students' achievements.

Keywords: Personality traits, Medical students, Academic performance, Gender differences

Introduction

Earning academic milestones is vital for students in advancing their careers and achieving success in medical sciences (Hayat et al., 2020). Many personal and educational factors can influence a disciple's achievements in education. For medical students, performing well at school enables them to enjoy a better living standard when they become doctors (O'Malley, 2023). Not only intelligence but also what the student feels and believes influences their academic performance. Personality traits are often what shape their responses to stress and how they behave (MacCann et al., 2020). Personality traits and other aspects of individual differences are tremendously influential on academic accomplishments (Cooper & Cooper, 2020). Personality traits shape how students go about studying, deal with other students and supervisors, and overcome many medical education challenges (Hawsawi et al., 2025). Learning about the effect of certain personality characteristics (e.g., conscientiousness, neuroticism) on a student's school performance can help teachers improve their students' academic and psychological well-being (Osamika et al., 2021). For instance, conscientiousness, which involves being self-disciplined and goal-directed, typically improves a person's academic results by guiding good study habits and organising their time. Alternatively, people high in neuroticism often struggle to perform well at school, as such feelings can make it difficult to focus and keep working through challenges (Cuartero & Tur, 2021). Experts keep examining whether the personalities of medical students influence their learning outcomes. Most specifically, conscientiousness and extraversion positively affect students' achievement levels (Gupta, 2023). Because they are so meticulous, conscientious individuals usually do better at learning, whereas extroverts benefit by working together and interacting with others in the medical field. These investigations will support the creation of strategies and guidance that suit medical students of all personality types (Tanaguza, 2024). Also, being an extrovert and agreeable is significant because these skills help students when working with others in the medical field. Extraverted individuals tend to do well in groups and while interacting with patients. In addition, students who are easy to get along with usually build better relationships with other people in the classroom and on the wards, which supports effective and positive learning (López-López et al., 2020). Even though accomplishment in learning matters, other areas are essential for students in the challenging medical setting. Effective communication, understanding how others feel, and teamwork are equally necessary because they are all influenced by your personality (Suciu et al., 2021). Extraverted students would be more comfortable with clinical conversation for patient support, and agreeableness will promote a healthy and interactive learning environment. Despite how important these traits are, educational programs for medicine often fail to address differences in individual personalities (Stephens, 2024). By exploring the relationship between these variables, the study aims to fill this practical gap in the education framework. The findings will provide a firm ground for educators and policymakers to support and tailor more student-friendly interventions in the healthcare profession.

The study looks at how individual traits affect learning and is designed to help enhance medical education by considering how to better respond to individuals' differences. The beginning explains why understanding personality traits in medical students is important, pointing out that various aspects of individuals affect their studies. The results obtained during research will assist in forming unique strategies and education methods that strengthen the skills and kindness of medical students.

SUBJECTS AND METHODS

The present correlational study was conducted at Rawalpindi Medical College, focusing on a cohort of newly admitted medical students from the 2009 to 2011 batch. Personality evaluations and academic grades were recorded at enrollment, with a subsequent reassessment occurring after one year.

Study Design

The methodology employed in this study is a quantitative cross-sectional survey design.

Sample size:

A sample size of 134 newly enrolled medical students was included in the study. The sample was determined based on feasibility and similar studies like in which personality traits and academic performance were examined among 287 MBBS students using a cross-sectional survey design (Khan et al., n.d.).

Instruments:

1. Consent Form & Demographic Sheet: Following approval from RMC's ethical committee, all individuals provided informed consent for research participation. Subsequently, demographic data, including name, age, and gender, along with questionnaires, were collected.

2. Eysenck Personality Questionnaire (EPQ): The Eysenck Personality Questionnaire (EPQ) is a self-administered assessment tool based on Eysenck's personality theory, initially formulated by Hans J. Eysenck in 1975 (Eysenck, 1975). This instrument aims to evaluate personality traits such as psychoticism, extraversion, neuroticism, and social desirability through 100 yes/no questions. The subscales include Psychoticism, Neuroticism, Extraversion, and Social Desirability. Individuals scoring high on the E scale are typically sociable, adventurous, and assertive, while low scorers tend to be more reserved and serious. A high score on the N (Neuroticism) scale indicates a propensity for worry and moodiness, often correlating with emotional and psychosomatic issues. In contrast, low scorers are generally more stable and less anxious. The P (Psychoticism) scale assesses behaviours that may be indicative of schizoid or psychopathic tendencies, with high scorers potentially displaying conduct disorders and a lack of empathy. The Lie (L) scale is also included to evaluate response bias.

3. Academic Performance: Academic achievement was quantified using the Annual Grade Record Form, which documented the previous year's grades and percentage marks.

Procedure:

The study involved administering a series of questionnaires, specifically the EPQ90, an Annual Grade Record Form, a consent form, and a demographic information sheet, to newly enrolled medical students. Participants were allowed to complete these instruments immediately or submit them to a designated office representative the following day. Out of the 150 assessment forms distributed, we successfully collected nearly all responses; however, upon conducting a thorough review for data usability and cleaning, we determined that 134 participants met the criteria for inclusion in our analysis. The collected data was securely stored in a locked cabinet and subsequently entered and analyzed using IBM SPSS Statistics version 21.0.

Data Analysis: To examine the relationship between academic performance and personality traits, Pearson Product-Moment Correlation was used, and to determine the prevalence among gender Student’s t-test was run.

RESULTS

The standard data collection procedure has been used. All the collected data were subjected to analyses using version 21 (IBM 0.21) of the Statistical Package for Social Sciences (SPSS). Means, standard deviation, and other preliminary results were also calculated using descriptive statistics, while Pearson product moment correlation coefficients were used to establish the relationship between the study variables. Demographical information revealed that 106 (80.5%) female and 26 (19.5%) male students participated in the study. Based on the age, data explain that the student age ranged from 17 to 21 years (M=18.05; SD=0.76) Further data details show that 29 students were 17 years old, 73 were 18 years old, 27 were 19 years old, three were 20 years old, and only one student was 21.

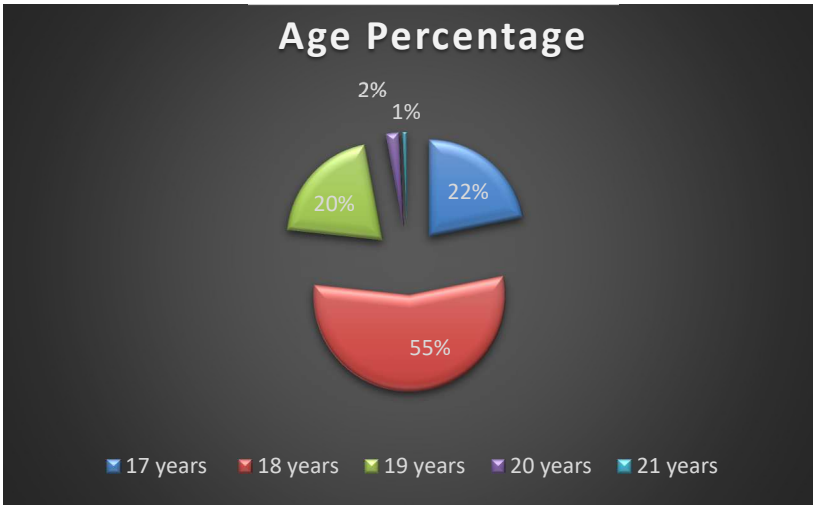

Figure 1. Frequency and Percentages of Medical Students based on their Age (*n*= 134)

Table 1.
Pearson Product Moment Correlation among Subscales of EPQ and percentages of grades.

		1	2	3	4
1	Psychoticism		.247	.150	.068
2	Neuroticism			.107	.095
3	Extraversion				.124
4	Academic performance				

*.*p*<.05,

Table 1 explains the correlation among study variables. This table revealed that psychoticism was significantly positively correlated with neuroticism, whereas no significant relationship was found between these personality traits and academic performance.

Table 2
Mean differences in study variables across Gender (n=134).

	Male(n=26)		Female(n=107)				95% CI		
Variables	Mean	SD	Mean	SD	T	*p*	LL	UL	Cohen's d
Psychoticism	5.12	2.1	4.30	2.9	1.35	.18	.37	2.00	.32
Neuroticism	8.85	4.64	9.50	4.52	.65	.51	2.61	1.31	.14
Extraversion	12.58	3.87	13.42	3.85	.90	.32	2.51	.83	.21
Academic performance	2.23	.51	2.24	.49	.11	.92	.23	.20	.01

Table 2 explains the mean differences in study variables across gender. The results of the table revealed that females have more neuroticism and extraversion traits, whereas males have more psychoticism traits as compared to females. The result was not statistically significant.

Discussion

This study aimed to discover how psychoticism, neuroticism, and extraversion affect academic achievement in medical students and if any variations occur between males and females. From the findings, no connection could be found between personality traits and school grades. No measurable differences in personality traits were found between males and females.Psychoticism, neuroticism and extraversion as personality traits are not related to academic performance. This finding runs contrary to what has been previously reported: that conscientiousness leads to better academic results (Kertechian, 2018). Yet, this finding fits with other research that points out that the role of personality in students' academic results can vary depending on various aspects and factors (Ten Cate et al., 2024). Notably, there is little or no relationship between neuroticism and academic outcomes, because stress and emotional problems related to neuroticism are often thought to reduce one's ability to learn or perform academically (Shin et al., 2023). It is possible that coping mechanisms appear in medical students as a result of neuroticism or that the order of medical studies helps to reduce the problems it could cause (Yusoff et al., 2021).While the link between psychoticism and neuroticism is only slight, it's still worth exploring. It proposes that having high psychoticism can make individuals' emotional stability less stable which may negatively affect their mental health and learning (Shi et al., 2018). Moreover, future studies are required to explain how this link affects students' well-being.The results revealed subtle gender differences in personality traits, with female students scoring slightly higher on neuroticism and extraversion, while male students scored higher on psychoticism. Although these differences were not statistically significant, they are consistent with broader trends in personality research, which often report higher levels of neuroticism in females and higher levels of psychoticism in males (Iimura & Taku, 2018). The higher extraversion scores among females may reflect their greater engagement in social and collaborative activities, integral to medical education and practice (Yildiz Durak, 2023). These findings underscore the importance of considering gender as a variable in personality and academic performance studies, as it may influence how students experience and navigate their educational journeys.

Implications for Medical Education

Since personality traits and achievements in academic settings are not related directly, it seems wise for medical educators to encourage a learning space suitable for students of all personality types. Helping students work on study skills, time management and overcoming stress may help them succeed in school more than concentrating on their personality traits. Therefore, the survey points to the need for special support measures for students who are more neurotic or psychotic, allowing them to access counseling services and similar programs.Gender differences found in the results impact how the curriculum is planned and how students are supported. One option is to include group work in lessons so that sociable students can reach their potential; simultaneously, offer resources for students to manage stressful situations and emotions. Identifying and responding to students' different needs helps educators to build an educational system that is inclusive, supportive and favorable for success in studies.

Conclusion

the impact of personality on medical students' academic achievement. No association was observed between personality type and academic performance, however, these results imply that heterogeneity ought to be taken into account in educational investigation and tradition. The active training of the future physician: The medical educators'

drive to help the iconic student reveals the student's resilience and ability to overcome barriers in their training, which results in the student being both professionally excellent and compassionate. Further research ought to study the connection between personality, school achievement, and a student's future in the medical profession.

Limitations and Future Directions

This study has several limitations that should be acknowledged. Study's research design might limit the relational establishment between the variables. Other study designs like longitudinal designs are needed to study such variables in order to better understand their influence on a medical student's course life throughout. Second, the reliance on self-reported personality and academic performance measures may introduce bias, as students may overestimate or underestimate their traits and achievements.One of the reasons that our study doesn't align with the previous findings is that EPQ is a patient population scale. In the normal population, like medical students, a scale like the Big-5 should be utilized.The sample size was small taken from a single institute, decreases the chances of results generalizability. Finally, the sample size, though adequate, was relatively small and drawn from a single institution, which may limit the generalizability of the findings. Study replication including a larger and more diverse sample would help in validating the findings. Future studies could benefit from incorporating objective measures of academic performance, as this paper includes findings only final assessments on the students, if it had included continuous assessment of the medical students, then the results might have shown multifaceted trends.

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References

Cooper, C., & Cooper, C. (2020). *Individual Differences and Personality* (4th ed.). Routledge. https://doi.org/10.4324/9780429059575

Cuartero, N., & Tur, A. M. (2021). Emotional intelligence, resilience and personality traits neuroticism and extraversion: Predictive capacity in perceived academic efficacy. *Nurse Education Today*, *102*, 104933. https://doi.org/10.1016/j.nedt.2021.104933

Eysenck, H. J. (1975). *Manual of the Eysenck Personality Questionnaire (junior and Adult)*. Hodder and Stoughton Educational.

Gupta, S. (2023). *Co-Parenting: What It Is and How to Make It Work*. Verywell Mind. https://www.verywellmind.com/co-parenting-what-it-is-and-how-to-make-it-work-7197870

Hawsawi, A. A., Nixon, N., & Nixon, E. (2025). Navigating the medical journey: Insights into medical students' psychological wellbeing, coping, and personality. *PLOS ONE*, *20*(2), e0318399. https://doi.org/10.1371/journal.pone.0318399

Sohail S, Ahmed A, Tanveer HU. Hollow fiber membrane for filtration of liquids. US Patent 11,148,100. October 19, 2021.Sohail S, Ahmed A, Tanveer HU. Hollow fiber membrane for filtration of liquids. US Patent 11,148,100. October 19, 2021. Available from: https://patents.google.com/patent/US11148100B2

Iimura, S., & Taku, K. (2018). Gender Differences in Relationship Between Resilience and Big Five Personality Traits in Japanese Adolescents. *Psychological Reports*, *121*(5), 920–931. https://doi.org/10.1177/0033294117741654

Kertechian, S. K. (2018). Conscientiousness as a key to success for academic achievement among French university students enrolled in management studies. *The International Journal of Management Education*, *16*(2), 154–165. https://doi.org/10.1016/j.ijme.2018.02.003

Khan, M. S., Malik, A. R., Ashraf Butt, A. U., Khalid, A., Maqbool, S., Khan, H., & Younas, M. W. (n.d.). Personality Dynamism and Academic Performance Among Boarders and Non-boarders Studying in a Medical University. *Cureus*, *11*(7), e5072. https://doi.org/10.7759/cureus.5072

López-López, M. J., Navarro-Abal, Y., Climent-Rodríguez, J. A., & Gómez-Salgado, J. (2020). Healthcare students' personality traits and competence-based learning methodologies. *Medicine*, *99*(17), e19812. https://doi.org/10.1097/MD.0000000000019812

Tanveer HU, Rai RA, Aslam RF, Muneeb Farrukh MH, Malik U. Impact of contaminated water on the prevalence of diarrheal diseases in children. Front Health Inform. 2024;13(8).

O'Malley, C. D. (2023). *The History of Medical Education: An International Symposium Held February 5–9, 1968*. Univ of California Press.

Osamika, B. E., Lawal, T., Osamika, A. E., Hounhanou, A. J. V., & Laleye, M. (2021). Personality Characteristics, Psychological Wellbeing and Academic Success among University Students. *International Journal of Research in Education and Science*, *7*(3), Article 3. https://doi.org/10.46328/ijres.1898

Shi, J., Yao, Y., Zhan, C., Mao, Z., Yin, F., & Zhao, X. (2018). The Relationship Between Big Five Personality Traits and Psychotic Experience in a Large Non-clinical Youth Sample: The Mediating Role of Emotion Regulation. *Frontiers in Psychiatry*, *9*. https://doi.org/10.3389/fpsyt.2018.00648

Sohail S, Ahmed A, Tanveer HU. Hollow fiber membrane for filtration of liquids. US Patent 11,148,100. October 19, 2021.Sohail S, Ahmed A, Tanveer HU. Hollow fiber membrane for filtration of liquids. US Patent 11,148,100. October 19, 2021. Available from: https://patents.google.com/patent/US11148100B2

Faheem HH, Tanveer HU, Abbas SZ, Maqbool F. Comparative study of conventional steam-methane-reforming (SMR) and auto-thermal-reforming (ATR) with their hybrid sorption enhanced (SE-SMR & SE-ATR) and environmentally benign process models for the hydrogen production. Fuel. 2021;297:120769. doi:10.1016/j.fuel.2021.120769

Sohail S, Ahmed A, Tanveer HU. Hollow fiber membrane for filtration of liquids. GB Patent GB2,573,404 B. November 6, 2019.

Sohail S, Ahmed A, Tanveer HU. Hohlfasermembran zur Filtration von Flüssigkeiten. EP Patent EP3,563,928. May 7, 2023.

Tanveer HU, Rai RA, Aslam RF, Muneeb Farrukh MH, Malik U. Impact of contaminated water on the prevalence of diarrheal diseases in children. Front Health Inform. 2024;13(8).ten Cate, O., Khursigara-Slattery, N., Cruess, R. L., Hamstra, S. J., Steinert, Y., & Sternszus, R. (2024). Medical competence as a multilayered construct. *Medical Education*, *58*(1), 93–104. https://doi.org/10.1111/medu.15162

Yildiz Durak, H. (2023). Role of personality traits in collaborative group works at flipped classrooms. *Current Psychology*, *42*(15), 13093–13113. https://doi.org/10.1007/s12144-022-02702-1
Yusoff, M. S. B., Hadie, S. N. H., & Yasin, M. A. M. (2021). The roles of emotional intelligence, neuroticism, and academic stress on the relationship between psychological distress and burnout in medical students. *BMC Medical Education*, *21*(1), 293. https://doi.org/10.1186/s12909-021-02733-5