

The Relationship Between Medical Student Neuroticism and Preferred Medical Specialty: A Cross-Sectional Study

Jonathan Shaw, Brenton Phung, Ashley Lai, James Hagerty, Van Le, Seung Rim Yoo, Jerome Torres, Angelene Won, Charles Lai, Peter Bota, Aaron Jacobs

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Abstract

Choosing and matching into one's preferred specialty is one of the most important and potentially stressful concerns medical students face. Many factors play a role in specialty choice such as prior life experiences, lifestyle, and how well a medical student feels they fit in with the personalities of said specialty. This study examines the relationship between neuroticism and specialty choice among medical students at a single U.S. allopathic medical school using the Big Five Inventory and proprietary questions to quantify neurotic personality traits and specialty perceptions in current US medical students. Respondents interested in surgical specialties believed that surgical specialties were more competitive than medical specialties, but were not found to be more neurotic than their medicine counterparts. Additionally, those whose interest included both surgical and medical specialties were found to be less neurotic than their peers. The results of this study indicate that medical students are already cognizant and concerned about matching into their desired specialties in their preclinical portion of their medical education.

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Original Manuscript

The Relationship Between Medical Student Neuroticism and Preferred Medical Specialty: A Cross-Sectional Study

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1 Introduction

A crucial decision for medical students is selecting their future specialty. In the fourth year of medical school in the United States do so by applying to the National Resident Matching Program (NRMP). Specialty choice is influenced by various factors, including prior experiences, gender, lifestyle, economic status, and personality traits[1]. Understanding the role of personality in specialty selection is vital, as alignment between the two can improve job satisfaction and patient care[2]. Research suggests that 51% of pre-clerkship students are interested in competitive specialties, making early insights valuable[3].

The five-factor model of personality includes extraversion, agreeableness, openness, conscientiousness, and neuroticism[4,5]. Neuroticism, which includes tendencies toward anxiety, self-consciousness, and emotional instability, plays a significant role in decision-making[6]. While personality's influence on specialty choice has been studied, neuroticism's specific impact remains underexplored[2]. Previous research suggests surgeons exhibit lower neuroticism[5,7], whereas aspiring obstetricians and psychiatrists display higher neuroticism[8,9].

This study examines the relationship between neuroticism and specialty choice among medical students at a U.S. allopathic medical school. The goal is to provide insights for personalized medical career counseling and interventions tailored to student needs.

2 Methods

2.1 Participants and Recruitment

Medical students (120 M1 and 126 M2) from a California allopathic medical school were invited via institutional email to complete an anonymous online survey. Responses were collected over two weeks.

2.2 Measures

The survey included demographic questions (school year, gender), eight questions from the Big Five Inventory (BFI) assessing neuroticism, and specialty-related questions: specialty interests, perceived competitiveness of chosen specialties, and self-perceived preparedness for matching [Table 1]. BFI and proprietary questions were randomized within their respective sections.

2.3 Statistical Analysis

Data analysis was conducted using IBM SPSS Statistics 28.0.1.0. Normality was assessed via the Kolmogorov-Smirnov test. For normally distributed data, independent sample t-tests were used with school year, gender, and specialty interest type as grouping variables. For non-normally distributed data, the Kruskal-Wallis test was employed.

3 Results

Kolmogorov-Smirnov tests indicated normal distribution for self-reported surgical, medical, and overall competitiveness, as well as neuroticism scores. Independent t-tests revealed no

significant differences based on gender, school year, or specialty interest type. However, students interested in both surgical and medical specialties had lower neuroticism scores ($t(30) = -2.039$, $p = .031$) than those focused on only one field.

M2 students reported feeling tenser ($H(1) = 4.867$, $p = .027$) and moodier ($H(1) = 10.364$, $p = .001$) than M1 students. Students interested in surgical specialties perceived their specialties as harder to match into ($H(1) = 4.080$, $p = .043$), whereas those interested in medical specialties did not share this perception ($H(1) = 5.486$, $p = .019$). Participants interested in both surgery and medicine reported feeling more relaxed ($H(1) = 5.882$, $p = .015$) compared to those interested in only one field.

Table 1: Descriptives

	N	Min	Max	M	SD
Which school year are you?	32	1	2	1.31	0.471
What gender do you identify as?	32	1	2	1.41	0.499
Surgery	32	1	2	1.59	0.499
Medicine	32	1	2	1.19	0.397
Both	32	1	2	1.69	0.471
Surgical Competitiveness	15	1	5	3.27	1.123
Medical Competitiveness	25	1	5	2.83	1.197
Overall Competitiveness	29	1	5	2.91	1.058
Neuroticism vs Emotional Stability	32	6	26	15.19	6.061
Is depressed, blue	32	1	4	2.25	1.218
Is relaxed, handles stress well	32	1	5	3.72	1.301
Can be tense	32	1	5	3.34	1.153
Worries a lot	32	1	5	3.28	1.35
Is emotionally stable, not easily upset	32	1	5	4.03	1.15
Can be moody	32	1	5	2.84	1.247
Remains calm in tense situations	32	2	5	3.84	1.11
Gets nervous easily	32	1	5	3.34	1.181
Medical school feels overwhelming	32	1	5	3.16	1.37

feel I am very prepared academically	3 2	1	5	3.5	1.16 4
am a competitive applicant for the specialties I have in mind	3 2	1	5	3.44	1.21 6
worry a lot about matching into my preferred specialty	3 2	1	5	3.25	1.27
am confident in my ability to succeed as a medical student	3 2	1	5	3.91	1.02 7
The specialties I am considering are not that hard to match into	3 2	1	5	2.78	1.28 9
have a plan for how I'm going to match into the specialty that I want	3 2	1	5	3.5	1.16 4
have access to enough resources to become a competitive applicant for my specialties of interest	3 2	1	5	3.69	1.17 6
am worried about not having enough research/publications for my specialty of interest	3 2	1	5	3.66	1.33 5
will have to take a gap/research year to match into my specialties of choice	3 2	1	5	1.84	1.19 4

4 Discussion

Students interested in surgery perceived their field as highly competitive, aligning with literature on the competitiveness of neurosurgery, orthopedic surgery, ENT, and plastic surgery[10]. However, they did not display higher neuroticism levels, differing from findings that surgeons tend to be less neurotic than physicians in medical specialties[2]. Students interested in medical specialties were not significantly more neurotic than expected ($F(30) = .220$, $p = .642$), contradicting previous studies[8,9]. These discrepancies may stem from sample size limitations or the fact that interest does not necessarily translate to actual practice.

Students interested in both surgery and medicine reported lower neuroticism levels and greater stress management abilities ($F(30) = 5.142$, $p = .031$). This could indicate that they are drawn to less competitive subspecialties or have backup plans.

Overall, participants exhibited moderate neuroticism ($M = 15.19$, $SD = 6.061$), differing from literature suggesting lower neuroticism among medical students and physicians⁵. The M2 cohort may have skewed results due to stress from board exam preparation.

Differences emerged between M1 and M2 students but not between genders. M2s reported higher tension ($H(1) = 4.867$, $p = .027$) and moodiness ($H(1) = 10.364$, $p = .001$). The lack of gender differences contradicts some studies linking gender to specialty choice[9], but this could be due to a small sample size.

This study found an association between neuroticism and specialty interest among medical students. Students interested in both surgical and medical specialties exhibited lower neuroticism and better stress management. Those interested in surgical specialties perceived them as highly competitive. These findings highlight that M1 and M2 students are already considering their specialties, potentially generating stress. Further investment in student resources and support systems for the residency application process is warranted.

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None

Declaration of Interest

The authors have no competing interests to declare.

Ethics Statement

This study received ethical approval from the CUSM IRB (approval: HS-2023-59) on November 27, 2023. This study was performed in accordance with the ethical standards as laid down in the 1964 Declaration of Helsinki and its later amendments. Informed consent was obtained from all individual participants included in the study.

Data Accessibility Statement:

The data used to support our conclusions was not acquired from a public repository. The raw data and statistical analyses can be accessed through the following link: <https://doi.org/10.3886/E221542V1>. This work is licensed under a Creative Commons Attribution 4.0 International (CC BY 4.0) License.

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