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# Medical Speciality Choice: Does Personality Matter?

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## Abstract

There has been increasing interest in the personalities of doctors. This study examined whether personality differed based upon gender, level of training or medical speciality among 200 physicians and 134 medical students. Post-internship doctors scored significantly higher on conscientiousness ( $p=.001$ ) than those pursuing basic medical training. Among those pursuing basic medical training, females scored significantly higher than males on agreeableness ( $p<.001$ ) and conscientiousness ( $p=.001$ ). Among post-internship respondents, females scored significantly higher on agreeableness ( $p=.004$ ). There were no personality differences between post-internship doctors working in different specialities. However, among those pursuing basic medical training, those interested in person-focused medical specialities scored significantly higher on extraversion ( $p<.001$ ), conscientiousness ( $p=.001$ ), and lower on neuroticism ( $p=.01$ ) than those who had no strong preference. These results suggest that there is no unique personality profile associated with medical practice, or medical speciality. Instead, it appears that medical school may shape personality.

## Introduction

Interest in the "non-cognitive" traits of physicians, such as professionalism, personality, and empathy, has increased in recent years<sup>1</sup>. Research has identified relationships between personality and acceptance into medical school<sup>2</sup>, success in medical school<sup>3</sup>, clinical performance<sup>4-6</sup>, and physician wellbeing<sup>7,8</sup>. Research has also examined whether personality may predict medical speciality choice. The identification of such an association would be relevant to career counselling, assignment of clinical placements, predicting future distribution of medical speciality choices, and medical selection<sup>5,9,10</sup>. A recent review of the literature suggested that the relationship between personality and medical speciality is less clear than that between personality and academic and clinical performance<sup>1</sup>. This literature is clouded by the use of a myriad of personality measures, many of which are now considered outdated or not useful. Borges and Savickas have synthesised this research using the five-factor model of personality and suggest some potential associations between certain medical specialities and personality traits<sup>11</sup>. For example, general practitioners (GPs) appeared characterised by agreeableness and conscientiousness while surgeons were characterised by openness and extraversion. The current study sought to investigate personality among a sample of Irish medical students and doctors, to examine whether personality differed according to gender, level of training or medical speciality.

## Methods

The sample was composed of 334 physicians and medical students. The medical students attended a single Irish medical school while the physicians worked across eight different hospitals in Ireland. Of these participants, 134 (40%) were medical students, 43 (12.8%) were interns, 47 (14%) were senior house officers, 45 (13.4%) were registrars, 34 (10.1%) were consultants, 23 (6.9%) were trainee GPs, 5 (1.5%) were GPs, and 3 (0.9%) were medical researchers. A total of 165 females (49.3%) participated and 131 males (39.1%). Data on gender were not available for 39 participants (11.6%). The majority of participants were Irish ( $n=230$ ; 68.7%) although 14 (4.2%) were from other European Union countries and 50 (14.9%) from non-European Union countries. Data on nationality were not available for 40 participants (11.9%). For analyses, participants were categorised by level of training and medical speciality choice or interest. For level of training, participants were divided into two groups: basic medical training respondents<sup>12</sup> (BMTR) which comprised medical students and interns, or post-internship respondents (PIR) which included all physician grades senior to interns. Participants were also categorised on the basis of their speciality choice, in the case of PIR, or their intended speciality choice, in the case of BMTR. Medical speciality categorisation was based on that of Taber and Colleagues<sup>10</sup> whose classification system describes person-focused specialities as "specialties with an inclination towards people and the entire patient" and includes general practice, internal medicine, obstetrics and gynaecology, paediatrics, and psychiatry among these. Other specialities, such as anaesthesiology, dermatology, pathology, radiology, or surgery, are described as technique-focused or "focus[ed] on technical skills, instruments, and techniques related to patient care". In the case of BMTR, it was also possible to report "no strong preference" for medical speciality.

The NEO Five Factor Index<sup>13</sup> (NEO-FFI) was used to assess personality. This instrument consists of 60 items which assess neuroticism, extraversion, openness, agreeableness, and conscientiousness. Neuroticism refers to an individual's tendency to experience negative emotions such as anxiety, depression, or anger<sup>13</sup>. Extraversion refers to an individual's engagement with others and the outside world<sup>13</sup>. Openness relates to an individual's interest in the outside world and new experiences<sup>13</sup>. Agreeableness refers to an individual's ability to co-operate with, and relate to, other people<sup>13</sup>. Conscientiousness is related to an individual's reliability, organisation, and dutifulness<sup>13</sup>. NEO-FFI items are rated on a 5-point likert scale which ranges from 0 (strongly disagree) to 4 (strongly agree). The construct validity and reliability of the instrument have been demonstrated<sup>13</sup>. Participation in this study was voluntary. For medical students, the opportunity to participate was presented during class time. GPs and GP trainees were invited to participate during GP training day sessions which took place during the recruiting period. Hospital doctors were invited to participate via email. The researchers then distributed copies of the questionnaire among those that expressed an interest in participating. Across all recruitment methods, the response rate was found to be 26.1%. Ethical approval was obtained for the research, and all participants provided written informed consent.

**Table 1 Means and Standard Deviations For Each Trait Among The Whole Sample, Basic Medical Training Respondents, Post-internship Respondents, and British Norms Reported By Egan And Colleagues (2000).**

	Neuroticism		Extraversion		Openness		Agreeableness		Conscientiousness	
	M	SD	M	SD	M	SD	M	SD	M	SD
<b>Whole sample</b>	20.6	7.8	31.2	6.7	32.3	7.0	32.8	6.1	32.5	6.7
<b>Basic Medical Training Respondents</b>	21.1	8.1	31.1	6.6	32.4	6.6	33.1	5.8	31.4	6.7
<b>Post-internship Respondents</b>	19.9	7.5	31.3	6.9	32.2	7.7	32.6	6.4	33.8	6.5
<b>British Norms<sup>14</sup></b>	19.5	8.6	27.1	5.9	26.5	6.5	29.7	5.9	32.1	6.6

## Results

As outlined in Table 1, respondents scored in the average ranges of neuroticism, extraversion, agreeableness, and conscientiousness, while scoring in the high ranges for openness, as per NEO-FFI norm values<sup>13</sup>. However, respondents did not comprise a homogenous group; instead, t-scores (standardized scores on each dimension with 50 representing the mean score on that dimension) on all NEO-FFI dimensions spanned from the absolute minimum to the maximum possible. Differences in personality between the various subgroups, see Table 2 for information on these, within the sample were subsequently examined in an attempt to elucidate potential sources of the observed heterogeneity.

**Table 2 Participants' Level of Training and Medical Speciality Interest or Choice**

	<b>Basic Medical Training Respondents</b>	<b>Post-internship Respondents</b>
<b>n</b>	177	157
<b>Person-focused speciality</b>	27	88
<b>Technique-focused speciality</b>	6	86
<b>No strong preference or data not provided</b>	144	1

**Table 3 Summary Of Comparisons Conducted via Independent t-test and Statistical Outcomes**

Comparison	Trait	Outcome
Basic medical training respondents and post-internship respondents	Neuroticism	ns
	Extraversion	ns
	Openness	ns
	Agreeableness	ns
	Conscientiousness	Pre-registration doctors: $M=31.4$ , $SD=6.7$ Registered doctors: $M=33.8$ , $SD=6.5$ <b><math>t(331)=-3.31</math>, <math>p=.001</math>, <math>d=.36</math></b>
Females with basic medical training and males with basic medical training	Neuroticism	ns
	Extraversion	ns
	Openness	ns
	Agreeableness	Female pre-registration doctor: $M=35.7$ , $SD=5.3$ Male pre-registration doctor: $M=30.6$ , $SD=5.2$ <b><math>t(137)=-5.56</math>, <math>p&lt;.001</math>, <math>d=.96</math></b>
	Conscientiousness	Female pre-registration doctor: $M=32.8$ , $SD=6.9$ Male pre-registration doctor: $M=29$ , $SD=6.3$ <b><math>t(137)=-3.31</math>, <math>p=.001</math>, <math>d=.58</math></b>
Post-internship females and post-internship males	Neuroticism	ns
	Extraversion	ns
	Openness	ns
	Agreeableness	Female registered doctor: $M=33.8$ , $SD=6.7$ Male registered doctor: $M=31.2$ , $SD=5.8$ <b><math>t(155)=-2.66</math>, <math>p=.009</math>, <math>d=.42</math></b>
	Conscientiousness	ns
Post-internship respondents working in person-focused specialties and post-internship respondents working in technique-focused specialties	Neuroticism	ns
	Extraversion	ns
	Openness	ns
	Agreeableness	ns
	Conscientiousness	ns
Post-internship respondents working in person-focused specialties and basic medical training respondents intending to pursue person-focused specialties	Neuroticism	ns
	Extraversion	ns
	Openness	ns
	Agreeableness	ns
	Conscientiousness	ns
Basic medical training respondents intending to pursue person-focused specialties and basic medical training respondents with no strong preference	Neuroticism	Person-focused: $M=17.6$ , $SD=8.4$ No strong preference: $M=22.1$ , $SD=7.8$ <b><math>t(174)=-2.85</math>, <math>p=.005</math>, <math>d=.56</math></b>
	Extraversion	Person-focused: $M=33.7$ , $SD=3.6$ No strong preference: $M=30.4$ , $SD=6.8$ <b><math>t(85.22)=3.85</math>, <math>p&lt;.001</math>, <math>d=.51</math></b>
	Openness	ns
	Agreeableness	ns
	Conscientiousness	Person-focused: $M=35.2$ , $SD=5.7$ No strong preference: $M=30.5$ , $SD=6.6$ <b><math>t(174)=3.7</math>, <math>p&lt;.001</math>, <math>d=.73</math></b>

As outlined in Table 3, a series of independent *t*-tests were used to examine differences in personality between the subgroups in our sample. The limited number of BMTR intending to pursue technique-focused specialties prevented the comparison of this subgroup with others. With all comparisons, a Bonferroni correction was applied to control for the use of multiple univariate comparisons and alpha was set at .01. A number of significant differences in the five personality factors were identified between BMTR and PIR, males and females, and between BMTR intending to pursue person-focused medical specialties and BMTR reporting no strong preference (see Table 3). Further, PIR who were identified as outliers, scoring either very high or very low as per the NEO-FFI *t*-score interpretation guide, on any of the personality dimensions were further examined in order to determine whether any of these strong personality traits were related to medical speciality. However, a chi-square analysis revealed that those scoring very high or very low on any of the traits did not appear to cluster in any speciality type.

### Discussion

While research has consistently demonstrated a link between personality and academic and clinical performance<sup>3-6</sup>, the relationship between personality and medical speciality choice has been less clear<sup>1</sup>.

The current study examined whether personality differed according to medical speciality, level of training, or gender, among a sample of doctors and medical students. While a number of the analyses were limited by the small number of participants in some of the subgroups (e.g., BMTR intending to pursue technique-focused specialities), and the high proportion of BMTR expressing no strong preference with regards medical speciality, a number of significant findings were nonetheless observed. It is perhaps surprising to find that the sample was so heterogeneous in personality. A comparison of PIR and British norms for the NEO-FFI<sup>14</sup> revealed few notable differences although PIR did score several points higher on extraversion, openness and agreeableness. Given the years of training required to qualify, and the responsibilities of a senior doctor, the similarity in conscientiousness levels between PIR and British norms is perhaps unexpected. However, previous research has also suggested that medical students or doctors do not have particularly different personality profiles from other occupational groups<sup>15,16</sup>. Comparisons such as these suggest that there is not a unique “doctor” personality but that those working in the field are largely similar to other adults.

A key finding of the current paper is the significant difference in conscientiousness between PIR and BMTR. Conscientiousness has been implicated as the personality trait most strongly related to successful medical study and practice<sup>1</sup> and has been found to be correlated with professionalism<sup>17</sup>. Given that this dimension comprises traits such as self-discipline, sense of duty, and behavioural regulation, it is perhaps unsurprising that PIR would score highly and surprising that BMTR would not. Previous research by Mustafa and colleagues<sup>18</sup> demonstrated improvements in medical students’ conscientiousness across the years of medical school. The authors proposed that medical school may shape personality, rather than simply attracting individuals with a similar personality types in the beginning<sup>18</sup>. Such findings are important as Lievens et al<sup>19</sup> have demonstrated that the predictive validity of conscientiousness for academic performance increases throughout medical school. The authors hypothesised that conscientiousness becomes of greater importance when a student begins to work in clinical settings as a variety of traits associated with conscientiousness, including dependability, persistence, attention to detail, are highly important when engaging in patient care. Jin and colleagues<sup>20</sup> have also suggested that medical practice, and the social pressures involved, may shape or reconstruct the identity of surgeons, strengthening adaptive traits for surgical practice. In this way, conscientiousness may be shaped by the changing requirements of medical school and the emergence of the new demands and requirements of clinical placement. Such suggestions may explain why PIR in our sample, caring for patients daily, differ from BMTR, some of whom may were in the early years of medical school where the focus is primarily on theoretical learning. These results suggest that the targeting of conscientiousness during medical training may lead to increases in this trait, in academic and clinical performance, and professionalism.

The findings of higher agreeableness and conscientiousness among female BMTR, and higher agreeableness among female PIR are also of interest. Previous research has also identified higher agreeableness and conscientiousness among female medical students than among their male counterparts<sup>18</sup>. British Norms for the NEO-FFI<sup>14</sup> also indicate higher scores on agreeableness for females than males which suggests that the findings of the current study are not unique to our sample. The findings of a significant gender differences in conscientiousness for BMTR but not PIR further supports the suggestion that conscientiousness develops over the course of medical training. Our data, which suggest little correspondence between personality and medical speciality choice, contribute to the body of evidence suggestive of little association between these variables<sup>1</sup>. While Borges and Savickas<sup>11</sup> review suggested some potential associations between specific medical specialities and personality, the authors emphasised that there appeared to be greater intra-speciality variation than inter-speciality differences. Findings of significant personality differences between BMTR intending to pursue person-focused specialities and those reporting no preference with regards medical speciality are difficult to explain. Given the lack of differences between PIR working in the different types of specialities, it is likely that there are factors unrelated to personality which mediate the relationship observed. Previous research has identified a myriad of factors which impact upon medical speciality choice<sup>21</sup>. Further, the BMTR category included individuals studying at a variety of levels. In this way, it may be that those who report an intention to pursue person-focused specialities, as opposed to those who had no strong preference, were at a later stage of training, possibly involving greater degrees of patient care which may impact on personality<sup>19</sup>, and that this may account for personality differences. Overall, the results of the current study suggest that there is not a personality profile which is common to all doctors, or to particular medical specialities. The results suggest that the use of personality measures to “select” medical students or interns may be misguided. Instead, it is perhaps more appropriate to seek the skills which are requirements for the job. For example, those seeking to pursue surgical careers should have leadership skills and perform optimally under pressure. The current study also revealed that conscientiousness, a key predictor of academic and clinical performance and professionalism, appears to develop throughout medical training. Interventions targeting conscientiousness may thus be a potential means of improving academic performance and clinical practice.

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