

The surgical personality: comparisons between urologists, non-urologists and non-surgeons

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Abstract

Background: Our objective was to compare personality traits between urologists and other surgeons, as well as between surgeons and non-surgeons.

Methods: Eighty-six surgeons (57 faculty, 29 residents) completed the Revised NEO Personality Inventory (NEO PI-R), a validated measure of normal personality traits. Subjects agree or disagree with 240 statements to generate a score in each of the 5 major character traits: extraversion (E), openness (O), conscientiousness (C), agreeableness (A) and neuroticism (N). Each factor is subdivided into 6 component facets. Scores for urology faculty and residents were compared to the other surgical groups and 21 pediatricians.

Results: The 3 groups differed significantly on extraversion ($p < 0.001$). Post-hoc analyses indicated that urologists obtained significantly higher extraversion scores than other surgeons ($p < 0.05$) and non-surgeons ($p < 0.001$). Other surgeons also scored significantly higher than non-surgeons on the extraversion factor ($p < 0.05$). No significant differences emerged on openness, conscientiousness, agreeableness or neuroticism. Of the 6 extraversion facets, urologists obtained significantly higher scores on gregariousness and excitement-seeking ($p < 0.05$) than non-urologist surgeons, and significantly higher scores on gregariousness ($p < 0.05$), activity ($p < 0.01$), excitement seeking ($p < 0.001$), and positive emotions ($p < 0.05$) than non-surgeons. Non-urologist surgeons obtained significantly higher scores than non-surgeons on Activity and Excitement-seeking ($p < 0.01$). There were no significant differences in the facets of warmth or assertiveness.

Interpretation: Urologists appear to be more extraverted compared to other surgeons. Both groups of surgeons were more extraverted than non-surgeons. If these findings can be confirmed on a wider basis, the data may be helpful in resident selection, mentoring, evaluation and career counselling.

Résumé

Contexte : Notre objectif était de comparer des urologues à d'autres chirurgiens, ainsi que des chirurgiens avec des médecins non chirurgiens, sur le plan de certains traits de personnalité.

Méthodologie : Quatre-vingt-six chirurgiens (57 membres du personnel universitaire, 29 résidents) ont rempli le questionnaire NEO-PI-R (Revised NEO Personality Inventory), un instrument validé de mesure de traits normaux de la personnalité. Les sujets doivent indiquer leur accord ou désaccord avec 240 énoncés et obtiennent ainsi un score pour chacun des 5 principaux traits de personnalité : extraversion (E), ouverture (O), caractère consciencieux (C), personnalité agréable (A) et névrosisme (N). Chaque facteur est sous-divisé en 6 facettes. Les scores pour les urologues et les résidents ont été comparés à ceux d'autres groupes de chirurgiens et à ceux de 21 pédiatres.

Résultats : Les 3 groupes différaient de façon significative sur le plan de l'extraversion ($p < 0,001$). Les analyses ultérieures ont indiqué que les urologues avaient obtenu des scores significativement plus élevés sur le plan de l'extraversion que les autres chirurgiens ($p < 0,05$) et les médecins non-chirurgiens ($p < 0,001$). Les autres chirurgiens ont aussi obtenu des scores significativement plus élevés que les non-chirurgiens pour l'extraversion ($p < 0,05$). Aucune différence significative n'est ressortie quant à l'ouverture, au caractère consciencieux, à la personnalité agréable ou au névrosisme. Sur les 6 facettes de l'extraversion, les urologues ont obtenu des scores significativement plus élevés pour l'instinct grégaire et la recherche de stimulation ($p < 0,05$) par rapport aux chirurgiens non-urologues, et des scores significativement plus élevés pour l'instinct grégaire ($p < 0,05$), le niveau d'activité ($p < 0,01$), la recherche de stimulation ($p < 0,001$), et les émotions positives ($p < 0,05$) par rapport aux médecins non-chirurgiens. Les chirurgiens non-urologues ont obtenu des scores significativement plus élevés que les médecins non-chirurgiens quant au niveau d'activité et à la recherche de stimulation ($p < 0,01$). On n'a noté aucune différence significative pour les facettes de la personnalité chaleureuse ou de l'affirmation de soi.

Interprétation : Il semble que les urologues soient plus extravertis que les autres chirurgiens. Les deux groupes de chirurgiens étaient plus extravertis que les non-chirurgiens. Si ces résultats sont confirmés dans un échantillon plus important, les données pourraient

aider à la sélection des résidents, au mentorat, à l'évaluation et au counselling professionnel.

Introduction

It is often perceived that the presence of a distinct surgical personality plays an important role in the selection process of surgical residents and may help predict their success in a surgical residency and career. We previously reported data demonstrating that urology residents possessed distinct normal personality traits in comparison to the general population.¹ The question remains whether this difference persists in comparison to other types of surgeons or other non-surgeons. The purpose of this study was to compare differences in normal personality traits between urologists and non-urologist surgeons, as well as between surgeons and non-surgeons.

Methods and materials

Research instrument

We employed the Revised NEO Personality Inventory (NEO PI-R) to measure the personality attributes of a sampling of faculty surgeons and non-surgeons at the University of British Columbia (UBC). The details of the NEO PI-R have been explained previously.² In brief, it provides a concise measure of the major 5 factors of normal personality: extraversion (E), openness (O), conscientiousness (C), agreeableness (A) and neuroticism (N). Each of these factors is further subdivided into 6 facets, for a total of 30 personality domains. This validated, self-reported inventory consists of 240 short statements answered using a 5-point rating scale. This tool was developed explicitly to assess normal personality and, accordingly, norms have been developed for the non-clinical population of North American men and women.

Subjects

We obtained approval for this study from the institutional behavioural research ethics board. In February 2007, personality inventories were mailed out to all 16 UBC faculty urologists, 81 faculty surgeons and 51 general pediatricians in the lower mainland of BC. Stamped, self-addressed return envelopes were provided. The participation of UBC urology residents was voluntarily accumulated over the course of academic years, from 2002 to 2007.

Results

Owing to the small number of female faculty, only an analysis of male responses was performed. Overall, 86 surgeons (9

faculty urologists, 29 urology residents and 48 non-urologist surgeons from the UBC divisions of general, plastic, vascular, orthopedic, cardiac, otolaryngology and neurosurgery) anonymously completed the NEO PI-R, for a response rate of 68% (86/126); 21/51 pediatricians responded, for a response rate of 42%. Scores for urology faculty and residents were combined and compared to the other surgical groups, and to the non-surgeons.

Participants' raw NEO scores were converted to percentile scores based upon norms in the test manual that are computed from a large, representative sample of the general population. A multivariate analysis of variance (MANOVA) on the 6 NEO-PI percentile scores revealed a significant group effect ($F [10,199] = 3.50, p < 0.001$). Follow-up ANOVAs indicated that the between-group difference was due to a significant group effect on extraversion ($F [2,106] = 7.69, p < 0.001$). To determine how the 3 groups compared to each other, post-hoc least significant differences (LSD) analyses were conducted. These analyses indicated that urologists scored significantly higher on extraversion than non-urologist surgeons ($p < 0.05$) and non-surgeons ($p < 0.001$). The mean percentile scores were 74% versus 61% and 43% for the non-urologist surgeons and non-surgeons, respectively (Table 1). The non-urologist surgeons also scored significantly higher ($p < 0.05$) than the non-surgeons.

To elucidate which particular facets of extraversion explained the higher scores for surgeons, one-way (group) ANOVAs were conducted on the 6 extraversion scores. These analyses revealed significant group effects on gregariousness ($F [2,106] = 6.27, p < 0.01$), activity ($F [2,106] = 4.63, p < 0.05$), excitement-seeking ($F [2,106] = 12.95, p < 0.001$) and positive emotions ($F [2,106] = 3.50, p < 0.05$). No significant differences emerged on warmth or assertiveness (Table 2). Post-hoc LSD analyses indicated that the urologists obtained significantly higher scores than non-urologist surgeons on gregariousness and excitement-seeking ($p < 0.05$). The urologists obtained significantly higher scores than the non-surgeons on gregariousness, activity, excitement-seeking and positive emotions ($p < 0.01$). The non-urologist surgeons obtained significantly higher scores than the non-surgeons

Table 1. Means for urologists, non-urologist surgeons, and non-surgeons on their percentile scores for the 5 Neuroticism-Extroversion-Openness Inventory (NEO-I) personality scales

Personality factor	Urologists	Non-urologist surgeons	Non-surgeons
Extraversion*	74 ^a	61 ^b	43 ^c
Openness	53	58	56
Conscientiousness	62	71	63
Agreeableness	50	54	61
Neuroticism	47	41	44

Notes: Between-group effect $p < .001$; groups with different superscripts differ significantly; superscripts with same letters indicate non-significance.

Table 2. Means for urologists, non-urologist surgeons and non-surgeons on the percentile scores of the 6 Extraversion facet scales

6 Extraversion facet scales	Urologists	Non-urologist surgeons	Non-surgeons
Gregariousness**	69 ^a	53 ^c	42 ^c
Activity*	76 ^a	77 ^a	59 ^c
Excitement seeking***	66 ^a	52 ^b	26 ^c
Positive emotions*	66 ^a	57 ^{ac}	43 ^c
Warmth	61	47	50
Assertiveness	65	66	59

Note: denotes significant between-group effect at $p < .05^*$, $p < .01^{**}$, and $p < .001^{***}$. Groups with different superscripts differ significantly; superscripts containing same letters indicate non-significance.

on activity and excitement-seeking ($p < 0.01$). Controlling for age of respondents had no effect upon the results.

Discussion

The 5 NEO PI-R factors reflect the 5 major dimensions of personality. Compared to a peer group of surgeons, urologists scored significantly higher on extraversion than the other surgeons. Extraverts are typified by such characteristics as sociability, assertiveness and activity. They like excitement and stimulation, and tend to be upbeat, energetic and optimistic. Surgeons in general scored higher than non-surgeons in this factor as well.

The 4 facets of Extraversion distinguishing the surgical group from the non-surgical justify further explanation: gregariousness reflects the preference for other people's company. The mean score for urologists was higher than that of non-surgeons (69% vs. 42%, respectively) on this dimension. Both groups of surgeons obtained significantly higher scores on activity relative to non-surgeons (76% and 77% vs. 59%). High activity scores characterize people who have a rapid tempo, a sense of energy, a need to keep busy and who lead fast-paced lives. The 2 groups of surgeons also scored higher on excitement-seeking than non-surgeons (66% and 52% vs. 26%). Higher scores on this scale reflect enjoyment of excitement and stimulation. Finally, urologists were characterized by higher scores on the positive emotions facet of extraversion than non-surgeons (66% vs. 43%) This facet assesses the tendency to experience positive emotions, such as joy, happiness, love and excitement. People with such scores are typically cheerful, optimistic and high-spirited. It is notable that high scores on positive emotions are associated with psychological adjustment and a sense of personal well-being.

It is worth noting that the non-surgeon group also obtained a higher mean score on the activity facet than the general population, which suggests that they too are energetic and like to keep busy. The non-surgeon group obtained a lower

mean score on excitement-seeking relative to the general population. The latter scores indicate that, on average, non-surgeons feel little need for thrills and prefer a more routine life than others.

The United States Air Force has employed standardized personality testing of its applicants since 1994 as part of their pilot selection process.²⁻⁴ Research into the personality profile of pilots has shown that testing for psychopathology is of limited benefit, while measures of normal personality characteristics, such as the NEO PI-R, have been useful in providing career counselling to student pilots.³ Similarly, the possible existence of a distinct "surgical personality" has lead to the consideration of using personality assessment in the selection and evaluation of surgical candidates and residents. It has been postulated that those who lack the requisite personality may be more prone to fail in completing residency, but this has not been demonstrated. Despite the lack of widespread use of validated personality measurement tools in surgical education, the assessment of personality traits appears to be an important component of resident evaluations. In a national survey of surgical program directors, 27% of the factors considered in resident evaluation were related to personality traits, despite the fact that such evaluations continue to be highly subjective.⁵ Before residency training programs can begin to adopt the use of standardized personality measurement tools, further characterization of the personalities of various specialty groups is necessary.

This study was performed as a follow up to our previously reported preliminary assessment of the normal personality characteristics of Canadian urology residents. In that study, we demonstrated that compared to a normative sample of North American adults, urology residents obtained significantly higher scores on extraversion, openness and conscientiousness. However, resident trainees are drawn from a highly select population: physicians. Therefore, our current aim was to further characterize the normal personality traits of urologists, surgeons and a group of non-surgeons. Pediatricians were chosen to represent the non-surgical arm of the study as they are, arguably, one of the least procedurally oriented of all specialties.

Our current results suggest that urologists in particular and surgeons in general, differ from non-surgeons only in the extraversion facet of normal personality characteristics. There were no significant differences between groups in terms of openness and conscientiousness. This result is not surprising given that individuals who score high on openness tend to be willing to entertain new ideas and unconventional values, the opposite of dogmatism. One would anticipate that most physicians would possess this trait. Higher than average scores on conscientiousness are generally found in people who are purposeful and determined; high scorers tend to be academic and occupational achievers, a trait perceived to be common to all physicians.

Interestingly, our findings differ from those of Magee and colleagues.⁶ These authors applied the NEO PI-R[®] to a 4-year cohort of graduating medical school students from Tulane University in an attempt to correlate student personality traits with ultimate residency matching results. Although there were some differences among matched specialties in neuroticism, openness and agreeableness, there were no differences for extraversion or conscientiousness. In particular, students matching to pediatrics scored significantly higher than those matching to surgery on neuroticism, openness and agreeableness with no differences on extraversion. It is possible that their findings differ from ours because the authors assessed the input to residency (undergraduate medical students), while we studied the final product. It has been suggested that personality differences between specialists might intensify after residency and certain characteristics may be more or less pronounced over time, as medical students adapt to different training and practice environments specific to their specialty.⁷

Several limitations of this study warrant mention. Our subjects are all drawn from a convenience sample at only one institution. Any commonality in personality characteristics of our study groups may be a reflection of an institutional preference for individuals with certain personality characteristics. (In fact, it may be at the expense of selecting introverted candidates.) This “like attracts like” model in which institutions tend to recruit trainees and faculty with similar personality traits limits the acceptance and implementation of our findings without further multi-institutional assessments. In addition, it could be argued that the inclusion of residents (who are younger than faculty) in the urological arm of the study could have altered overall scores for urologists and surgeons. However, controlling for age had no effect on these results, and others have shown that results on the NEO PI-R are stable throughout adulthood.⁸ Although we have demonstrated some unique personality characteristics of urologists and surgeons, it would be premature to conclude from our findings that career satisfaction or success in surgery and/or urology depends on a particular personality profile. Finally, because there were so few female faculty members in the surgical arms of the study, we were unable to assess the influence of gender in the 3 groups. However, in general, the effect of gender upon the personality profiles of physician role models and medical students has previously been described as only modest.^{9,10}

It remains debatable whether psychological testing should be part of the residency selection process or for career counselling of medical students deciding on their choice of specialty. In fact, in a recent review of the literature on personal-

ity and specialty choice, the authors concluded that there is more variation in personality traits within medical specialties than between them. Personality assessment in career counselling was viewed as a tool for medical students to increase their self-knowledge and narrow the number of specialties to explore, but that more than one medical specialty would likely fit the personality of any particular medical student.⁷ For now at least, most institutions employ a standardized interview as part of candidate selection, which in and of itself is a subjective assessment of personality characteristics.

Conclusions

We have found a significant difference in the normal personality trait of extraversion between urologists and non-urologist surgeons. Both of these groups scored higher than non-surgeons on measures of extraversion. Further study is required before these findings can be applied to the process of candidate selection, evaluation, mentoring and career development.

Competing interests: None declared.

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