

The urological personality: is it unique?

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ENG MKH, MACNEILY AE, ALDEN L. The urological personality: is it unique? The Canadian Journal of Urology. 2004;11(5):2401-2406.

Objectives: To develop a preliminary characterization of the urological personality.

Methods: Thirty-four urology residents (29 male) from all eleven Canadian training programs anonymously completed the Revised NEO personality inventory (NEO-PI-R®), a commercially available validated personality assessment tool in which participants agree or disagree with a compilation of 240 statements. A score is generated in each of five character traits according to the five factor theory of personality: extraversion (E), openness (O), conscientiousness (C), agreeableness (A) and neuroticism (N). The group mean on each scale was compared to the normative mean for the general adult population using one-sample, two-tailed t tests.

Results: Urology residents scored significantly higher than the general population on three of the five personality

factors: extraversion (E) ($p < .001$), openness (O) ($p < .02$) and conscientiousness (C) ($p < .05$). There was no significant difference from norms in agreeableness (A) or neuroticism (N).

Conclusions: The high scores in 'extraversion' reflect the social, warm, active and talkative nature of urology residents. As well, urology residents tend to be willing to entertain new ideas and are purposeful and determined based on their high scores on 'openness' and 'conscientiousness' respectively. Canadian urology residents possess a distinct personality in comparison to the general population. These provocative findings should be interpreted with caution. If confirmed on a wider basis, the data may be helpful in career counseling and resident selection. Future studies examining differences between the urological personality and other surgical subspecialties may further refine applications of the data.

Key Words: surgical personality, urology residents, NEO PI-R

Introduction

Several studies have found that a distinct personality exists among surgeons in comparison to the general population. For example, Thomas¹ conducted a

survey of nonsurgical personnel, which included anesthesiologists and nurses, and found that 90% of respondents felt that surgeons shared similar personality traits. Other studies have revealed that surgeons as a group demonstrated the clearest and most consistent personality profile in terms of interpersonal style, lifestyle, motivational and temperament levels in comparison to other specialty groups.² As a group, surgeons tended to be more extroverted, adjusted, practical, social, structured and competitive.

Accepted for publication August 2004

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The U.S. Air Force has employed standardized personality testing of applicants since 1994 as part of their pilot selection process.³⁻⁵ Before urology residency training programs can begin to adopt such an initiative, further characterization of the urological personality is necessary. This study was performed as a preliminary examination of the urological personality, which is anecdotally regarded to be unique amongst the medical and surgical specialties.

Methods

Research instrument

We used the revised NEO Personality Inventory (NEO PI-R®)³ to measure the personality attributes of a sampling of Canadian urology residents. The NEO PI-R® gives a concise measure of the major five factors of personality: extraversion (E), openness (O), conscientiousness (C), agreeableness (A), and neuroticism (N). (The original inventory was developed to measure neuroticism, extraversion, and openness; hence the name NEO.) Each of these five factors is further subdivided into six facets, for a total of 30 personality domains. This self-reported inventory consists of 240 short statements answered on a five-point rating scale (strongly agree, agree, neutral, disagree, and strongly disagree) and can be completed in 30-40 minutes. A score can then be generated in each personality domain. 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.³

Subjects

Institutional behavioral research ethics board approval was obtained. Forty-one urology residents with representation from all eleven Canadian training

programs were invited to anonymously complete the NEO PI-R® in February 2003. Thirty-four of the 41 (83%) responded (29 male and 5 female). Of these, 24 were final year residents attending the annual QUEST exam preparatory course,⁶ and the remaining 10 were at all levels of training in the University of British Columbia urology residency program. Average participant age was 30.4 (range 23 - 34 years). Raw scores for each resident were compared to age and gender appropriate norms for the general population and converted to percentile scores which reflect where that score fell relative to the appropriate standardization sample. The group mean on the percentile scores were compared to the adult standardization sample mean using one-sample, two-tailed t-tests.

Results

As a group, the residents differed significantly from the general population on three of the five factors. They were significantly higher on Extraversion, $t(33) = 7.09$, $p < .001$, Openness, $t(33) = 2.48$, $p < .02$, and Conscientiousness, $t(33) = 2.22$, $p < .05$. In terms of categorical descriptions, their average percentile scores can be characterized as high on openness and conscientiousness, and very high on extraversion. See Table 1.

Although the relatively small number of subjects precludes drawing strong conclusions from the six facets that contribute to each factor score, the following analyses provide some guidance as to the characteristics that contributed to the residents' unique personality traits. To avoid type one errors due to multiple analyses, the alpha level for the facet scales was adjusted according to the Bonferroni procedure. Only analyses significant at $p < .001$ were interpreted. The findings, therefore, highlight the personality facets on which residents were most

TABLE 1. Mean percentile scores for the five major personality factors

Trait	Percentile score		Mean difference	95% confidence interval	
	Mean	(SD)		of the difference	
				Lower	Upper
Extraversion	77**	(22.4)	27.2	19.4	35.0
Openness	62*	(27.6)	11.8	2.1	21.4
Conscientiousness	61*	(29.8)	11.4	1.0	21.7
Agreeableness	51	(30.8)	.9	-9.9	11.6
Neuroticism	44	(27.5)	-6.1	-15.6	3.5

*Denotes statistical significance $p < .05$, (** denotes $p < .001$) All scores compared to normative mean for the age-adjusted general North American adult population. SD = Standard Deviation. Mean difference = mean difference of group from normative mean.

distinct from the general population. See Table 2.

Extraversion factor analyses

The residents differed significantly from the general population on four of the extraversion facet scores, including Gregariousness, $t(33) = 6.58$, $p < .001$,

Activity, $t(33) = 7.00$, $p < .001$, Excitement seeking, $t(33) = 5.94$, $p < .001$, and Positive Emotions, $t(33) = 4.82$, $p < .001$.

Openness factor analyses

The residents obtained a significantly higher mean

TABLE 2. Facet analyses for the five major personality factors

Trait	Facet	Percentile score Mean (SD)		Mean difference	95% confidence interval of the difference	
					Lower	Upper
Extraversion	Warmth	62%	(28.9)	11.6	1.6	21.7
	Gregariousness	77%*	(23.6)	26.6	18.4	34.9
	Assertiveness	63%	(28.2)	13.3	3.4	23.1
	Activity	76%*	(21.4)	25.7	18.2	33.2
	Excitement-seeking	74%*	(23.8)	24.2	15.9	32.5
	Positive emotions	70%*	(24.7)	20.4	11.8	29.0
Openness	Fantasy	56%	(31.2)	6.2	- 4.7	17.1
	Aesthetics	52%	(33.4)	1.9	- 9.8	13.5
	Feelings	63%	(28.0)	13.2	3.4	22.9
	Actions	70%*	(26.7)	19.5	10.2	28.8
	Ideas	60%	(23.3)	9.7	1.6	17.9
	Values	75%*	(24.9)	24.5	15.8	33.2
Conscientiousness	Competence	61%	(30.4)	11.3	0.7	21.9
	Order	57%	(29.2)	6.6	-3.6	16.8
	Dutifulness	65%	(28.0)	15.3	5.6	25.1
	Achievement-striving	78%*	(23.1)	27.8	19.7	35.8
	Self-discipline	54%	(32.5)	3.6	-7.7	15.0
	Deliberation	54%	(30.3)	3.8	- 6.7	14.4
Agreeableness	Trust	55%	(32.2)	5.1	-6.1	16.4
	Straightforwardness	47%	(30.3)	- 2.6	-13.2	7.9
	Altruism	58%	(29.5)	7.9	-2.4	18.1
	Compliance	50%	(32.1)	0.3	-10.9	11.5
	Modesty	58%	(24.7)	7.9	-0.7	16.5
	Tender-mindedness	55%	(29.7)	5.1	-5.2	15.5
Neuroticism	Anxiety	53%	(28.2)	3.4	- 6.5	13.2
	Angry hostility	47%	(28.4)	-2.8	-12.7	7.1
	Depression	49%	(25.8)	-.7	- 9.7	8.2
	Self-consciousness	49%	(28.0)	-1.4	-11.2	8.4
	Impulsiveness	48%	(27.4)	-1.6	-11.1	8.0
	Vulnerability	36%	(30.2)	-13.6	-24.1	- 3.0

*Denotes statistical significance ($p < .001$). All scores compared to normative mean for the age-adjusted general North American adult population. SD = Standard deviation. Mean difference = mean difference of group from normative mean

score than the general population on two facets of openness, Actions, $t(33) = 4.26$, $p < .001$, and Values, $t(33) = 5.74$, $p < .001$.

Conscientiousness factor analyses

The residents obtained significantly higher scores on one of the facets that underlie conscientiousness, Achievement-striving, $t(33) = 7.00$, $p < .001$.

Agreeableness factor analysis

The residents did not differ significantly from the general population on any of the six agreeableness facets.

Neuroticism factor analyses

The residents did not differ significantly from the general population on any of the six Neuroticism facets.

Interpretation

The five NEO PI-R® factors reflect the five major dimensions of personality. Compared to the normative sample of North American adults, this group of urology residents obtained significantly higher scores on Extraversion, Openness, and Conscientiousness. The implication of elevations on each of these dimensions follows.³

Extraversion

Individuals who obtain high scores on Extraversion are typically observed to be social, warm, assertive, active, and talkative. The facet scores reveal that the residents obtained higher than average scores on four aspects of extraversion, each of which will be described in turn. People who obtain high scores on Gregariousness typically enjoy the company of others. High Activity scores generally reflect a sense of energy. Excitement-seeking reflects the tendency to seek excitement and stimulation and Positive Emotions reflects a capacity to experience emotions such as joy and happiness. People who score high on the latter facet tend to be cheerful and optimistic. It is notable that high scores on Positive Emotions are associated with psychological adjustment and a sense of personal well being.

Openness

Individuals who score high on Openness to Experience tend to be willing to entertain new ideas and unconventional values. The overall elevation on this dimension was due to high scores on two facets, those reflecting greater than average openness to

Actions, and Values. Openness to Actions reflects an interest in trying new activities and hobbies. Openness to Values reflects a willingness to reexamine social, political and religious values and is thought to be the opposite of dogmatism.

Conscientiousness

High scores on Conscientiousness are generally found in people who are purposeful and determined. On the positive side, high scorers tend to be academic and occupational achievers; on the negative side, they can be workaholics. The residents obtained high scores on one aspect of this dimension: Achievement-motivation which reflects ambition, determination, confidence and industriousness.

Agreeableness

Agreeableness describes a general interpersonal tendency to feel sympathetic toward others and an eagerness to help people. The urology residents did not differ from the population norm on agreeableness. High scores on Agreeableness implies dependency and non-assertiveness, whereas low scores reflects being quarrelsome and argumentative. Disagreeable people are usually disliked by professional colleagues as they have difficulty being a team player. Therefore, an average score on Agreeableness may be desirable for a urologist.

Neuroticism

People with high scores in this facet tend to be unhappy and impulsive in their actions. Low scores mean that individuals are calm, even-tempered, able to relax and able to face stressful situations without becoming upset or rattled. The urology residents were average on Neuroticism, which appears to be desirable for a surgical specialist.

Discussion

The study of personality was not formalized until the 1930s when Gordon Allport reviewed and evaluated the roughly 50 definitions of personality in existence and proposed the following: "Personality is the dynamic organization within the individual of those psychophysical systems that determine his unique adjustment to his environment"⁷ Raymond Cattell extended Allport's studies in natural language trait terms to a factor theory of personality that was subsequently developed into the Five Factor Model by Tupes and Christal.⁸ The five factors of extraversion, openness to experience, conscientiousness, agreeableness, and neuroticism were recurrent in analyses of the majority

of personality ratings, self-reports, theoretically-based questionnaires, in natural languages, in children, college students, older adults, men and women. Each of these five factors can be subdivided into six facets for a total of 30 measurable domains of personality. As such, the Five Factor Model provides a complete characterization of the person on a global level. The NEO PI-R[®] was specifically designed to evaluate the five factor model and is particularly attractive because it is designed to describe normal personality characteristics—not psychopathology. Research into the personality profile of U.S. Air Force pilots has shown that testing for psychopathology is of limited benefit while measures of normal personality characteristics are useful.^{4,8} The NEO PI-R[®] has been used to measure normal personality traits of new pilots in the U.S. Air Force since 1994 as well as surgical residents in a study by McGreevy and Wiebe.^{5,9} The NEO PI-R[®] was adopted in this study because of its accepted reliability, validity and widespread use in both clinical and research applications.

Our findings in urology residents were similar to those in general surgery residents in McGreevy and Wiebe's study; both groups scored higher in extraversion, openness and conscientiousness in comparison to the general population. However, the male general surgery residents had scored lower in neuroticism whereas the urology residents were average. Urology residents had a higher percentile score in extraversion and openness factors, however, we are unable to determine if this is a statistically significant difference without their raw data for comparison. To date, no studies directly comparing personalities of different surgical specialties have been performed. However, possible differences between surgical versus non-surgical specialties have been explored. For example, Schwartz et al found that a surgical group consisting of general surgeons and other surgical specialists demonstrated the clearest and most consistent profile compared to other broad physician groupings such as primary care and other "controllable lifestyle" specialties.² Likewise, other studies have demonstrated that surgeons form a distinct and homogeneous group compared to other non-surgical specialties.^{2,10} This may explain why the initial stages of the decision making process in specialty selection in medical school often involves differentiating between surgical and non-surgical paths.¹ With the exception of McGreevy's study, previous cited investigations on the surgical personality employed a variety of personality assessment tools, none of which are as comprehensive as the five-factor model measured with the NEO PI-R[®].

Several potential biases in our study should be addressed: Individual residency programs may have particular preferences in the selection of their candidates. However, the effect of institutional-related differences in personality should be decreased with our sampling from all Canadian training programs. Still, any commonality in personality characteristics of our study group may reflect the unconscious choices of selection committees to recruit candidates with particular common characteristics. Second, since the majority of participants were senior residents from various programs across Canada, it could be argued that personalities might be different if more junior residents had completed the inventory because one's traits might change over the course of a 5 yr residency. However, longitudinal studies have shown that results on the NEO PI-R[®] are stable across the adult life span.¹¹ Therefore, the differences between junior and senior residents should be minimal. In addition, one could criticize comparisons to age-adjusted norms from the general population without reference to educational level. (i.e. residents are not chosen from the general population, but from a highly select group – Physicians.) However, the only factor that has been shown to correlate with education and intelligence is Openness, and those correlations are modest at best. Educational level per se will not skew NEO PI-R[®] assessments in either direction.¹¹

The possible existence of a distinct "surgical personality" has lead to the consideration of using personality assessment in the selection and evaluation of residents. It has been postulated that those who lack the surgical personality may be more prone to fail in completing residency, but this has been difficult to evaluate given the complexity of these situations. Characteristics related to personality have been cited as a major contributing factor in non advancement to chief resident, or non certification and personality traits accounted for 23% of the reasons for dismissal from surgical programs.¹² Despite the lack of widespread utilization of a validated personality measurement tool in surgical education, 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.¹² Unfortunately, such evaluation continues to be problematic as it is highly subjective.

More objective measures in the form of validated personality measurement tools have become a regular component of pilot evaluations. Although the NEO PI-R[®] is used to test all pilot candidates in the US Air Force, the military literature on personality testing is

inconclusive. For instance, although personality measures are a poor predictor of completion of initial training, they may have utility in predicting performance after completion of training as well as for retention of US Air Force pilots.⁵ Ideally, residency evaluation should be of predictive value for not only completion of residency but also ultimate success in practice. Consequently, further studies examining the personality traits of those who fail to complete residency as well as successful residents and faculty are necessary to improve the interpretation and efficacy of resident personality evaluation.

Should testing of psychological traits be part of the residency selection process? For the most part, the interview process already constitutes a preliminary, subjective assessment of the candidate's personality characteristics. This may partially explain why a study of two medical school classes in the mid-1980's found that students entering the specialties of surgery, obstetrics, psychiatry and pediatrics each possessed distinctive personality profiles.¹⁰ Whether unconscious or not, the "like attracts like" model in which committees recruit candidates with similar personal traits may be at work during the selection process. Likewise, candidates may be attracted to mentors that suit their personality. This hypothesis was partially supported by the finding in one study that surgical residents and faculty had similar views on which personality traits were important to possess.¹³ At the very least, personality testing could provide an improved understanding of the attributes of positive role models in urology. This information would be valuable because it could shed light on the personal qualities of those who were likely to successfully complete their training, and potentially go on to mentor their future colleagues.¹⁴

Conclusions

This preliminary study found a significant difference in normal personality characteristics between a sampling of Canadian urology residents and the general population. These provocative results should be interpreted with caution. Even if there are differences between urologists and other physicians, there currently are no data to suggest that these differences make for better urologists. Further characterization of personality traits of residents in different surgical specialties is underway to identify distinguishing factors that may be of potential use for career counseling and in the residency selection process. Furthermore, assessment of faculty personality characteristics is required to determine if

there are traits that may predict completion of residency training and success in practice. □

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