Concept of distinct surgical personality revisited. Personality traits and personal values as surgical specialty choice predictors

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Abstract

Purpose: The Distinct Surgical Personality (DSP) concept continues to arouse avid interest for two reasons, namely social prestige of the surgery and on-going development of personality diagnostic methods. The aim of the study is to verify the authors’ own proposition concerning the revision of the concept of a DSP. We postulate that the declared choice of surgery depends more on personal values (as defined in the Schwartz model) than on personality traits (as defined in the Five Factor Model).

Material/Methods: Conducted on 223 students from the Medical University in Lublin, the study employed the Polish versions of the Personality Inventory NEO-FFI and of the instrument to measure values by Schwartz.

Results: The results indicate the following predictors for the choice of the surgical specialty: conscientiousness and self-enhancement (positive predictor) as well as agreeableness (negative predictor). With an increase in conscientiousness

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and self-enhancement by 1 SD, the declared choice of the surgical specialty is up by 40% and 86% respectively. A similar rise in agreeableness translates into a drop in making this choice by 37%.

**Conclusions:** The present study justifies the inclusion of personality traits and personal values in the concept of Distinct Surgical Personality.

The relations between personality and specialty choice in the medical profession have long been the object of empirical studies. It is assumed that “fitting” one’s personality traits and specific characteristics of a job is key to one’s professional career [1]. Such an approach is best manifested in the concept of the Distinct Surgical Personality (DSP). An ever-growing interest in testing the DSP concept empirically is attributed to two factors. Social prestige associated with the surgery across cultures is one, and this is so irrespective of culture [2]. Also in Poland surgeons are held in the highest esteem among all kinds of physicians, which, in turn, is reflected in the level of trust [3]. The second reason is the continuous development of personality diagnostic methods. Early studies conducted since the 1970s utilised research techniques grounded in various theoretical standpoints. Their results led to the development of an additive juxtaposition of surgical personality traits: in the emotional sphere - immunity to stress and a general mental “toughness” [4], in the cognitive sphere – a realistic approach, the ability to make decisions quickly [5], and in the interpersonal sphere – low empathy, a general inclination towards domination as well as attention to one’s own social standing [6]. As modern research into the surgical personality intensified, a standardized theoretical framework was introduced in the early 1990s based on the five-factor personality model (FFM). A key concept adopted in the FFM is that of a personality trait, understood as a predisposition towards certain consistent patterns of feeling and action. The five-factor model has been operationalised as the *Five Factor Inventory* (FFI), a research tool evaluating the intensity of the following personality traits: *neuroticism* – refers to emotional stability versus instability, *extraversion* denotes intensity of inter-personal relations, a need for stimulation, and a level of activity; *openness to experience* encompasses search for activity and new experience; *agreeableness* refers to the quality of interpersonal relations ranging from sympathy to animosity and *conscientiousness* defines a tendency to organise oneself, his/her determination and motivation [7]. With an increased use of the FFI, it is possible to compare the results obtained using unambiguous personality trait categories. Such comparative studies are carried out largely along two schemes. In the first one, the control group for surgeons or students who declare the choice of the surgery is made up of non-surgeons or students declaring other career options [8]. In the other, comparisons are made with the findings determined for the general population [9]. Scholars report in unison a higher degree of extraversion and conscientiousness, and a lower degree of agreeableness of surgeons relative to the general population as well as to a more homogenous group of physicians, residents, and medical students. In conclusion, it seems justified to claim that the data obtained by means of the FFI employed as a research tool support the concept of DSP. This specificity manifests itself already at the stage of choosing the surgical specialty and, as Drosdeck et al. [10] contend, it increases on subsequent stages of the professional career.

Despite the high social standing of the surgical specialty and its perfect positioning as a potential career choice for medical school graduates, the only analysis pertaining to the concept of DSP available in Polish literature is our own research presented in a previous paper [11], which analysed the correlation between the personality of medical school students declaring the intention to specialise in surgery and the style of their future medical practice.

The object of the present study is to revisit the concept of DSP. We propose that the research on surgical personality conducted to date, and limited to a diagnosis of personality traits, has been hampered by the fact that although personality traits describe fairly accurately what people are like, they fail to explain why
people do what they do [12]. We postulate adopting a broader definition of personality that would also account for its motivational aspects manifested in the individual preference for particular values. Similarly to the FFM, which describes the universality of personality traits, there exists a theory of values that describes the universality of motives – that is the Schwartz model of values [13]. This theory defines ten basic values, i.e. self-direction, stimulation, hedonism, power, security, conformity, tradition, benevolence, universalism, and achievement. Basic values constitute four higher-level value types, brought together under two dimensions. The first one covers ‘openness to change’ (self-direction, stimulation) versus ‘conservation’ (conformity, tradition, security). The other dimension contrasts ‘self-transcendence’ (benevolence, universalism) and ‘self-enhancement’ (achievement, power). Despite their diversity, these traits and personal values affect one another. It follows that traits and values are key in predicting human choices. Moreover, the relative strength of the effect they have on such choices depends on whether they are made spontaneously or under intentional control. A particular effect of traits is manifested in habitual patterns of perception of reality. Where a decision falls under intentional control, it seems that values come to the fore [14]. In our past article [11] we postulated that the DSP concept include personality traits and personal values. We further assumed that considering the personality variables of a comparable level of universality, the choice of surgery as a preferred specialty is determined more by values than by personality traits. The assumptions were verified with regard to students declaring the choice of the surgical specialty, who constituted the study group in our previous research. Such a decision can be justified by referring to the reports indicating the stability of early declarations of the choice of surgery as well as the availability and distribution of resident positions specific to Poland. The results of many studies converge in showing surgery as one of the most stable career options declared by medical students, which tends to remain unchanged throughout university years [15].

In approaching the revisited DSP concept in the present article, we decided to modify our control group to include, for the purposes of this analysis, all students declaring the choice of a specialty other than surgery, rather than – as was the case in our earlier research [11] – exclusively students planning to choose one of the ‘people-oriented’ specialties. With this revision of the control group composition we aimed to impact the influence of the deliberate selection of respondents on our results.

Materials and methods

There were 223 fourth year students from the Medical University of Lublin who volunteered in the study (127 females and 96 males) aged 22-27 (M=23.19, SD=1.38). Individualised studies were conducted during the academic years 2012/2013 and 2013/2014. General surgery was the most frequently indicated preference (41.7% of the respondents, N=93). For the purposes of the presently reported study, the control group was composed of 130 respondents, of whom 70 declared preference for person-oriented specialties, and 55 declared the choice of other specialties, including neurology, cardiology, ophthalmology, dermatology, and gastroenterology. The Polish versions of the Personality Inventory NEO-FFI [17] and the Schwartz Value
Survey [18] were used. Given the type of studies, compliance with the Code of Ethics of the Polish Psychological Society was maintained.

**Results**

In order to determine the potential effect of the personality variables analysed in conjunction on the choice of surgery (that is personality traits and preferred values), a multi-variable logistic regression model was applied. The declaration of choice (dependent variable) was coded as: surgery = 1, other options = 0. In addition to all personality traits, only higher-level value types were introduced into the model. Such an approach was prompted by the need to maintain the relation between the size of the sample and the number of independent variables, as required in statistics [19], and Schwartz’s conviction that higher-level value types (and not individual basic values) are more efficacious to predict behaviour [20]. Relevant results are presented in the table presented below (Table 1).

On the basis of the odds ratio values (OR), there are three significant personality predictors of the choice of surgery: self-enhancement and conscientiousness (positive predictors) and agreeableness (negative predictor). The odds ratio is the ratio of the probability of a given phenomenon occurring to the probability of it not occurring [19]. An analysis of the odds ratio (the OR column in Table I) informs us that where the value of a given independent variable increases by 1 point, the odds for choosing the surgical specialty increases by 5% with respect to conscientiousness (OR=1.051) and almost doubles with respect to self-enhancement values (OR=1.875). As regards agreeableness, the opposite is the case: a rise by 1 point translates into a decrease in the odds for choosing the surgical specialty by over 7 % (OR=0.926). The independent variables introduced into the model are quantitative in nature. In such a case, the OR for a singular change will not visibly reflect the analysed effect. Therefore, Hosmer and Lemeshow [21] suggest calculating the OR for any change in the value of the predictor. Because in our own research a considerable range refers to personality traits and this range is significantly lower with respect to values, we decided to calculate the OR for a change by a single standard deviation (SD) in order to ensure comparability of results. The data presented in the last column in the table inform that where conscientiousness and

<table>
<thead>
<tr>
<th>Predictors</th>
<th>B</th>
<th>Wald (Z)</th>
<th>p</th>
<th>OR</th>
<th>OR for change by 1 SD¹</th>
</tr>
</thead>
<tbody>
<tr>
<td>Neuroticism²</td>
<td>−0.038</td>
<td>2.690</td>
<td>0.101</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Extraversion</td>
<td>0.009</td>
<td>0.112</td>
<td>0.738</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Openness to experience</td>
<td>−0.037</td>
<td>1.529</td>
<td>0.216</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Agreeableness</td>
<td>−0.077</td>
<td>5.391</td>
<td>0.020</td>
<td>0.926</td>
<td>0.628</td>
</tr>
<tr>
<td>Conscientiousness</td>
<td>0.049</td>
<td>3.896</td>
<td>0.048</td>
<td>1.051</td>
<td>1.395</td>
</tr>
<tr>
<td>SELF-ENHANCEMENT³</td>
<td>0.628</td>
<td>8.107</td>
<td>0.004</td>
<td>1.875</td>
<td>1.857</td>
</tr>
<tr>
<td>CONSERVATION</td>
<td>0.156</td>
<td>0.311</td>
<td>0.577</td>
<td></td>
<td></td>
</tr>
<tr>
<td>OPENNESS TO CHANGE</td>
<td>−0.384</td>
<td>2.202</td>
<td>0.138</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SELF-TRANSCENDENCE</td>
<td>0.270</td>
<td>0.598</td>
<td>0.439</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Constant</td>
<td>−1.112</td>
<td>0.410</td>
<td>0.522</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

¹Calculations as per formula: OR(SD) = exp (BxSD)
²Names typed in small print denote personality traits
³Names in capitals denote higher-level value types after Schwartz’s theory
Nagelkerke $R^2=0.311$
self-enhancement rise by 1 SD, the odds for a declared choice of the surgical specialty rises by 40% and 86% respectively. A similar rise in agreeableness causes a drop in the odds for a declared choice of surgery by 37%. The tested model, which contained personality traits and higher-level value types, proved well calibrated, as the Hosmer-Lemeshow test for goodness of fit confirms \((\text{chi}^2 = 4.98, p = 0.76)\). This procedure allows for the correct classification of 82.3% of students who declare the choice of surgery.

### Discussion

The present study confirmed our thesis that the choice of surgery as the path of professional development can be explained by self-enhancement values (the strongest positive predictor), conscientiousness (positive predictor) and agreeableness (negative predictor) if the potential artefact in the form of deliberate selection of control group members is eliminated. Both in the previous study [11] and the present analysis, we demonstrated a comparable explanatory power attributable to the higher-level value type: self-enhancement, which substantiated our assumption of the superiority of values over traits in predicting the choice of specialty. The findings of our own research indicated a two-fold advantage of the effect of values over traits on making such a choice intentionally. This again strongly justifies a need to include both facets of personality in contemporary studies on a DSP. The inclusion of personal values in the concepts of surgical personality developed heretofore allows for a more comprehensive explanation of psychological mechanisms in play while selecting one's professional career.

By considering the FFM perspective on personality traits, both of the performed analyses demonstrated that ‘agreeableness’ is a negative predictor with regard to choosing the surgical specialty. The same however, has not been confirmed for ‘neuroticism’. In the present study we were also able to observe that ‘conscientiousness’ is a positive predictor for the preference of the career path in question. To recapitulate, provided that selection of control group members relative to the study group is variable, the explanatory power is maintained by the metacategories of self-enhancement and agreeableness. The same signifies that the framework of the DSP concept, in light of the obtained results, is dominated primarily by values determining the adoption of goals related to achievement and power. This conclusion is consistent with the results of Polish research on career planning [22], which definitively identified the ability to advance one’s preferred values at work, as a significant factor determining a person’s compatibility with a given professional environment.

It would seem that the chief interpretative framework for the data presented above is provided by Albert Bandura’s theory of human agency [23]. In this perspective, the essence of humanity lies in the ability to assume control over one’s environment and one’s own life. This capacity is manifested through personality, understood as a system actively pursuing its own goals. Personal goals are defined by means of values which constitute an expression of what is subjectively desirable and motivate actions and choices. The value system of people with a preference for the surgical profession centres around activities related to empowering ‘self’, which means resorting directly to the emphasis of one’s own significance. Personality traits are instrumental under this theoretical perspective – they facilitate organization of activities offering a distinctively prestigious dimension. Consequently, the desirable traits include: self-discipline, prudence and sense of responsibility (constituents of ‘high conscientiousness’), and little regard for the interpersonal context of one’s actions (constituent of ‘low agreeableness’).

We are aware of the limitations of the present work, since the data analysed refer to students from one of 11 medical universities operating in Poland. Given the voluntary nature of the study, a mere 63% of the students took part from the academic years in question. Finally, the study did not target residents but only those who declared the choice of surgery.
Conclusions

1. The inclusion of personal values in the concept of DSP developed heretofore allows for a more comprehensive substantiation of psychological mechanisms in play while selecting one’s professional career.
2. Specific personality of prospective surgeons corresponds to the functional requirements of surgical treatment (the priority of technical and manual skill that conditions the safety of surgery; the requirement of the physician’s dominance that conditions *sine qua non* the performance of procedures involving pain, or violation of privacy), however, it may prove dysfunctional in doctor-patient communication and in the facet of teamwork (the issue of the social competence of surgeons as members of a therapeutic team, which conditions effective teamwork, e.g. in the context of complex, multi-specialty surgical interventions).

References

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