

An evaluation of personality traits associated with job satisfaction among South African anaesthetists using the Big Five Inventory

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Background: Job satisfaction is a vital contributor to occupational well-being and may be instrumental in mitigating stress and the adverse effects thereof. This is particularly pertinent in anaesthesiology, which is an inherently stressful field. There are myriad factors, including personality traits, shown to influence job satisfaction. Personality testing is conducted in many industries prior to recruitment; however, this is not the case in medicine. Currently the prevailing tool for the aforementioned purpose is the Big Five Inventory based on the well-described Five Factor Model of personality.

Methods: A cross-sectional survey was utilised with electronic questionnaires distributed to all 1 509 members of the South African Society of Anaesthesiologists in 2016. Specialists, registrars, diploma-qualified and full-time general practitioner anaesthetists working in both the private and public sectors were included.

Results: A response rate of 31% was achieved. Statistical analysis demonstrated that Neuroticism was the strongest and most consistent negative correlate of job satisfaction, while Agreeableness was positively associated with job satisfaction. Encouragingly, a mean of 65.6% was recorded for job satisfaction using a visual analogue scale. Socio-demographic variables positively associated with job satisfaction included increasing age, male gender, private practice and specialist/diploma qualification.

Conclusions: Information gleaned from this study may prove useful in vocational counselling with the aim of improving occupational well-being, thereby reducing burnout and maladaptive behaviour among South African anaesthetists.

Keywords: anaesthetists, big five inventory, five factor model, job satisfaction, personality traits

Introduction

Anaesthesia is a stressful profession. Whether it is more stressful than other fields in medicine is contentious. What is certain is the unacceptable rates of burnout, substance abuse and suicide among anaesthetists worldwide.¹ Occupational well-being in anaesthesia is thus a growing concern. Research in this area identifies job satisfaction as a vital contributor to occupational health. High levels of job satisfaction may be instrumental in mitigating stress and the adverse effects thereof, as well as improving patient care and productivity.¹

In South Africa, career counselling with regard to choosing a speciality is lacking. Speciality choice is influenced by preconceived notions of the chosen discipline, the media, role models, personal interests, opportunities as well as financial and lifestyle goals. It is a difficult choice that requires self-knowledge and familiarity with the various specialities. This task is marred by inadequate clinical exposure to many disciplines (including anaesthesiology) during undergraduate years. Ill-conceived choices lead to a waste of time and financial resources, improper utilisation of talent, and may contribute to early career abandonment and the development of maladaptive behaviour.²

Although many factors associated with anaesthetist fulfilment and discontent have been well studied, the relationship between personality traits and job satisfaction among anaesthetists is less understood.^{3,4} Anaesthesia has been likened to aviation with regard to issues of stress and safety.⁵ Non-technical skills involving leadership, team work, decision-making, situational awareness, stress management and coping with fatigue are taught extensively in pilot training.^{5,6} While personality testing is instrumental in aviation, medicine continues to place an inordinate emphasis on intellect, and largely ignores these non-

cognitive aspects.⁷ Aviation has shown that certain elements of personality are linked to the ability to cope in specific work environments, for example, personality testing has been used in that industry to identify individuals more adept at managing stress and even to separate a group of pilots more accident prone than their peers.^{8,9} Personality testing during vocational counselling may encourage self-awareness and at the very least promote mindfulness of the non-technical skills required for performing well. The intended use of this information is not for discrimination by the recruiter, but solely to aid the prospective applicant in making a career choice with consequences affecting a lifetime.

Personality and the Five Factor Model

Although we use the word 'personality' intuitively in everyday life, psychology has yet to secure a consensus definition. A well-known description is that by Allport, which states that personality is the dynamic organisation within the individual of those psychosocial systems that determine his unique adjustment to his environment.¹⁰

Currently, the prevailing tool for personality testing is the Big Five Inventory (BFI) based on the well-described Five Factor Model (FFM) of personality. The five personality dimensions of the model, arrived at by independent researchers, are Neuroticism, Extraversion, Openness, Agreeableness and Conscientiousness. The FFM has been shown to have validity and applicability across cultures. Enduring over decades, it has eluded replacement by its most ardent critics.^{11–14} Extensive investigation into the development of these dimensions suggest that around half of the variance is inherited and the other half acquired through experience, particularly in early childhood. Though major life crises occasionally produce shifts in some

personality dimensions, most changes in adulthood tend to be gradual and limited. The five dimensions summarised in Table 1 can be perceived as either negative or positive.¹⁴ On their own they do not connote personality disorders or psychiatric diagnoses. If psychopathology does exist, it is to be found at the polarised extremes of trait spectra.

Neuroticism is similar but not identical to popular-culture notions of neurosis. Some psychologists prefer to replace neuroticism with the term emotional instability (or inverted to emotional stability) to lessen historically unsavoury associations.¹⁴

With this background in mind, the primary aim of this study was to examine the influence of personality traits on job satisfaction among South African anaesthetists. The secondary aim was to examine the influence of socio-demographic variables on job satisfaction in this population.

Methods

An observational analytical study in the form of a cross-sectional survey was conducted. The study population comprised members of the South African Society of Anaesthesiologists (SASA) practising in both the public and private sectors. This included specialists, registrars, diploma-qualified and general practitioner anaesthetists. Incomplete questionnaires were excluded.

No sampling technique was utilised as all members of SASA were invited to participate in the study, i.e. a census was conducted. This population is highly representative of South African anaesthetists at the time: Official 2014 data from the Health Professions Council of South Africa (HPCSA) showed that there were 1 500 specialist anaesthesiologists practising at that time, of whom 1 100 were SASA members. There were a further 3 000 diploma-qualified anaesthetists in the country.

Data management

Questionnaires were sent electronically using a REDCap (Research Electronic Data Capture) tool hosted by Safe Surgery South Africa. Anonymity and confidentiality were maintained. REDCap is a secure, web-based application designed to support data capture for research studies.¹⁵ The REDCap system facilitated exportation of data to the STATA 14 statistical package (StataCorp LLC, College Station, TX, USA). All data and study conclusions were stored electronically in a password-protected manner.

The questionnaire consisted of three sections, namely:

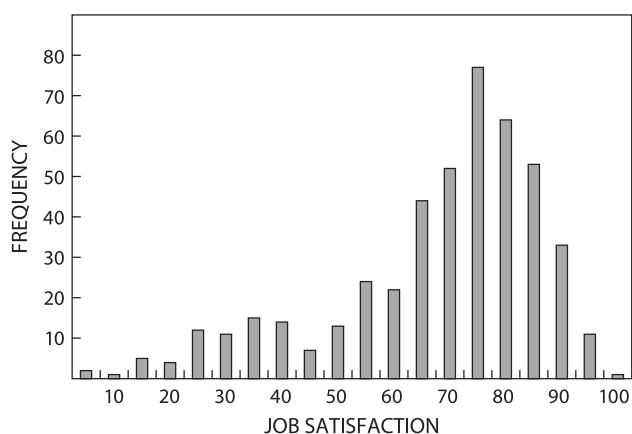


Figure 1: Histogram of job satisfaction.

- Demographics: Data including age, gender, relationship status, qualification and work circumstances were captured.
- Job satisfaction: Participants were required to rate overall job satisfaction on a scale of 1 to 100 (1 = least satisfied, 100 = most satisfied). They were then required to state if they would, in retrospect, have chosen a different speciality or different career entirely. They also were encouraged to comment on factors that enhance and hamper their career experience. In this way, common themes were identified.
- Five Factor personality assessment: Personality testing was conducted with the self-administered Big Five Inventory, which consists of 44 statements that respondents are required to rate on a Likert scale.

Statistical analysis

The STATA 14 statistical package was used to conduct the analysis. Tests were done at a 5% level of significance.

Results

Questionnaires were emailed to 1 509 eligible participants, of whom 463 participated yielding a realistic 31% response rate. There were five incomplete questionnaires that were discarded.

Demographic data

The mean age of participants was 45.8 years, the median was 43 years with a range of 28 to 80 years. Of the 463 respondents, 196 (42.3%) were female and 267 (57.7%) were male. With regard to the respondents' relationship status, 75.6% were married, 11.5% were single and 6.2% were co-habiting. Divorced and widowed individuals represented 4.7% and 1.9% of the respondents respectively. Regarding qualification, 81.2% were specialist anaesthetists, 15.4% were registrars, 2.6% were diploma anaesthetists and 0.9% were general practitioner anaesthetists. Furthermore, 95.7% of respondents indicated that most of their time is spent providing anaesthesia while only 2.8% indicated that most of their time is spent on administrative or educational work. The remaining respondents designated that most of their time is spent in the intensive care unit, consulting with patients and in pain clinics (0.85%, 0.43% and 0.21% respectively). The private sector accounted for 60% of responses, with the remaining 40% coming from the public sector. The total years of experience ranged from 2 to 49 years, with a mean of 17 years (CI 16.19–18.22) and a median of 14 years.

Job satisfaction

The request to rate job satisfaction on a linear scale between 0 and 100 (0 = resigning and 100 = fantastic), resulted in a negatively skewed distribution with a mean of 65.6 (CI 63.8–67.3) and a median of 71. As can be seen in Figure 1, the results tend to reflect a positive outlook on job satisfaction. The second peak at 30, however, worryingly depicts a group of anaesthetists who are quite dissatisfied with their career. Subgroup analysis showed that 14% of private sector and 25% of public sector anaesthetists rated job satisfaction less than 50.

In keeping with the above notion, only 14.5% and 22.4% of respondents would retrospectively have chosen a different speciality and a different career, respectively.

Common themes

Common themes are summarised in Tables 2 and 3. Of the 463 respondents, 90 (19.4%) provided comments. Of these comments, many were negative and shed light on sources of occupational discontent:

Table 1: Big Five personality traits¹⁴

Big Five dimension		Personality traits	Can be perceived as:
Neuroticism	High	Resilient, calm	Unconcerned, uninspiring
	Low	Reactive, excitable	Unstable, insecure
Extraversion	High	Sociable, assertive	Attention-seeking, domineering
	Low	Reserved, reflective	Aloof, self-absorbed
Openness	High	Creative, receptive	Unpredictable, unfocused
	Low	Pragmatic, data-driven	Closed-minded, dogmatic
Agreeableness	High	Compassionate, cooperative	Naive, submissive
	Low	Competitive, challenging	Argumentative, untrustworthy
Conscientiousness	High	Persistent, driven	Stubborn, obsessive
	Low	Flexible, spontaneous	Sloppy, unreliable

Table 2: Positive comments

Positive comments			
Private sector:		Public sector:	
Comment	Frequency	Comment	Frequency
Enjoy job	16	Enjoy job	14
Time for other pursuits	3	Time for other pursuits	2

Table 3: Negative comments

Negative comments			
Private sector:		Public sector:	
Comment	Frequency	Comment	Frequency
Limited resources	5	Limited resources	17
System problems/socio-political issues		Bureaucracy/administrative and managerial difficulties	7
Long hours/little control over time/high workload	10	Long hours/little control over time/high workload	4
Under-remunerated	6	Under-remunerated	2
Stressful	3	Registrar expectation overwhelming	2
Undervalued/disempowered	4	Undervalued/disempowered	1
Poor communication with colleagues	4	Examination pressure	4
Patient demands	1	Patient demands	1
Medical aid companies	5		

- In the public sector, frustration stems largely from: lack of resources concerning both equipment and staff, increased pressure on the health system, delays between cases, diminished motivation and a sense of poor prospects for career progression.

- Long work hours, time pressure and little control over planning one’s day contribute to dissatisfaction.
- Many feel undervalued (‘constantly having to fight for one’s worth’) and believe themselves to be held in poor regard, with many comments relating to inflated egos of and derogatory attitudes from colleagues, as well as a general lack of recognition.
- There is a sense of high expectation all round. Consultants in academic positions feel overwhelmed by expectations from registrars. Registrars experience stress from looming examinations and there is constant pressure to meet patients’ demands of safe, complication-free anaesthesia.
- Coupled to this is the awareness of inadequate remuneration. Some expressed feelings of unhappiness with general practitioner and diploma anaesthetists practising for the same rewards without specialising.
- Many experience frustration when dealing with medical aid companies.
- Some voice the clinically stressful nature of the profession and find medicolegal aspects discouraging.

Five Factor personality assessment

The Big Five Inventory was used to ascertain each individual’s predisposition towards Neuroticism, Extraversion, Openness, Agreeableness and Conscientiousness. The five sub-themes of the BFI were measured by the sum of the respective item responses, and summarised using mean and median values with 95% confidence intervals (see Table 4 and Figure 2).

From the data the following can be summarised:

- Surveyed South African anaesthetists tend slightly toward Extraversion. Accordingly, the typical anaesthetist here would lean toward being gregarious, assertive, energetic, adventurous, enthusiastic and outgoing.⁷
- They also tend toward Agreeableness rather than antagonism. The typical anaesthetist here would be cooperative and warm as opposed to cold and hostile.⁷
- They are highly conscientious individuals who are hardworking, organised, dependable and persevering as opposed to lazy, disorganised and unreliable.⁷
- They exhibit both Neuroticism and emotional stability in about equal amounts. This leads to the understanding that anaesthetists here vary from insecure, anxious, depressed and emotional to calm, self-confident and cool.⁷
- This population of anaesthetists tends toward Openness to experience. The typical anaesthetist here would likely be creative, curious and cultured as opposed to practical with narrow interests

Primary aim

Regression analysis, employed to examine the influence of personality traits on job satisfaction among South African anaesthetists, showed that Neuroticism is negatively correlated with job satisfaction ($p < 0.001$) and Agreeableness is positively correlated with job satisfaction ($p = 0.025$).

Secondary aims

The Kruskal–Wallis test was employed to examine the influence of socio-demographic variables on job satisfaction among South African anaesthetists. Significant results are detailed below and summarised in Table 5.

Table 4: Personality Trait summary values

Personality traits	Mean	Confidence interval	Median	Range
Extraversion	25.78	25.13–26.42	26	9–40
Agreeableness	36.36	35.85–36.86	37	15–45
Conscientiousness	39.4	38.98–39.83	40	23–45
Neuroticism	19.38	18.82–19.94	19	8–38
Openness	35.05	34.48–35.61	35	11–49

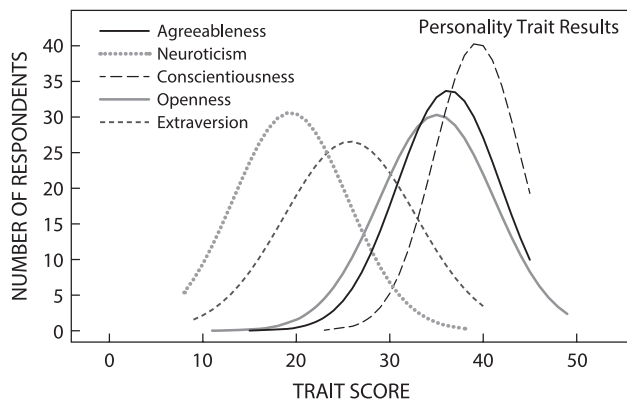


Figure 2: Five Factor personality assessment of South African anaesthetists.

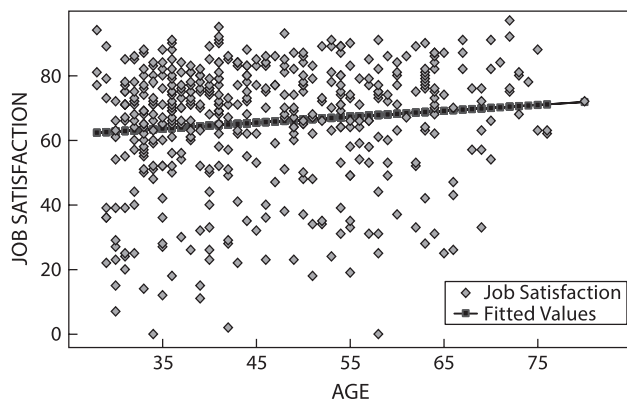


Figure 3: Job satisfaction vs. age regression line fit.

- Male anaesthetists tend to be marginally more satisfied with anaesthesia than their female colleagues.
- Diploma anaesthetists have the highest level of job satisfaction, followed by specialist anaesthetists, then general practitioner anaesthetists and finally registrars. It must be noted that diploma anaesthetists account for only 2.6% of participants.
- Compared with anaesthetists who work in the public sector, private sector practitioners tend to be more satisfied with their career in anaesthesia.
- Individuals who indicated that they retrospectively would not have changed specialities or a career in medicine have higher levels of job satisfaction.
- Relationship status does not appear to influence job satisfaction in this setting.

Regression analysis was conducted to identify the relationship between age and job satisfaction. The results indicate that job satisfaction increases a little with age, as can be seen in Figure 3 ($p = 0.013$). The correlation is slight with a positive coefficient of 0.183 (CI 0.038–0.328).

Other findings

Associations between personality traits and socio-demographic variables were investigated using the Kruskal–Wallis test. Combinations where differences were significant are described further below:

- Neuroticism appears to be influenced by an individual's gender ($p < 0.001$). Female anaesthetists tend to have marginally higher scores than their male counterparts with means of 21 and 18, respectively (see Figure 4).
- Openness seems to be influenced by an individual's gender ($p = 0.0065$): males tend to possess more open personalities than females.
- Conscientiousness scores differ significantly between the two sectors of practice ($p = 0.0106$): private practitioners tend to have more conscientious personalities than public sector practitioners.
- Conscientiousness scores differ significantly for qualification ($p = 0.0041$): specialist anaesthetists tend to be most conscientious, followed by diploma anaesthetists, then registrars and finally general practitioner anaesthetists.
- There is a link between neuroticism and the decision to retrospectively select a different speciality ($p = 0.0426$). Individuals who indicated that they would retrospectively change specialities possess a more neurotic personality when compared with individuals who indicated they would not.
- Individuals who would retrospectively change careers are more neurotic, less extraverted, less agreeable and less conscientious (all with $p < 0.05$).

Discussion

Level of job satisfaction among South African anaesthetists

South African anaesthetists tend to have high levels of job satisfaction, with a mean value of 65.6% and median of 71% as assessed by a visual analogue scale. There are, however, outlying values depicting extreme dissatisfaction. This is in keeping with similar studies conducted in first world countries such as Canada, Australia, Switzerland, Austria and France.^{16–20}

Another indication of job satisfaction is the respondents' answers to whether or not they would retrospectively have chosen a different speciality or career path. To both questions the majority of respondents (> 75%) indicated that they would do neither. More people would change their career than would change their speciality, which suggests disappointment with medicine in general rather than the speciality of anaesthesiology.

Scrutiny of the comments provided by participants showed that possible contributors to diminished job satisfaction include limited resources in the public sector, little control over planning one's time, long work hours, time pressure, lack of recognition, unpleasant relationships with surgical colleagues, high expectations, inadequate remuneration, clinical problems and frustration with medical aid companies. Apart from issues relating to the overburdened public health system, which

Table 5: Job satisfaction related to demographic variables

Factor		Job satisfaction Mean	95% confidence interval	p-value
Gender	Male	67.14	64.91–69.37	0.0224
	Female	63.47	60.69–66.24	
Qualification	Specialist	67.03	65.15–68.91	< 0.001
	Registrar	57.83	52.74–62.92	
	Diploma anaesthetist	68.27	62.94–73.61	
	GP anaesthetist	61	45.57–76.42	
Practice	Private sector	69.02	66.99–71.06	< 0.001
	Public sector	60.41	57.42–63.40	
Different speciality	Would change	53.8	51.11–56.49	< 0.001
	Would not change	67.54	64.16–70.92	
Different career	Would change	56.06	53.26–58.86	< 0.001
	Would not change	68.34	64.92–71.76	

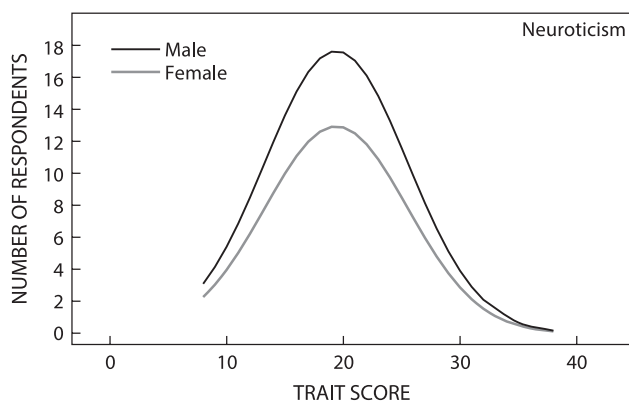


Figure 4: Neuroticism results for males and females.

features prominently in the South African context, all remaining factors are well described in studies conducted in developed nations.^{16,17,20} The negative aspects of the anaesthetic profession are therefore fairly generalizable. Given that many complaints seemingly relate to the commodity of time, it is anecdotally interesting that many people join the profession in the hope that they will have more time for other pursuits. This further highlights the misconceptions concerning the speciality.

Personality traits associated with job satisfaction

Regression analysis revealed that Neuroticism and Agreeableness negatively and positively influence job satisfaction, respectively. In the meta-analysis by Judge et al., Neuroticism emerged to be the strongest and most consistent negative correlate of job satisfaction.²¹ Because of neurotics essentially negative nature, they experience more negative life events than other individuals. This includes negative events experienced at work. Individuals who score higher for Agreeableness tend to experience increased levels of job satisfaction. This makes intuitive sense, in that agreeable individuals have greater motivation to achieve interpersonal intimacy, which should lead to increased well-being.²¹

Increasing age and its association with higher levels of job satisfaction

Regression analysis showed that job satisfaction tends to increase slightly with age. In this regard, the literature is

equivocal. Afonso *et al.* presented contrary evidence, demonstrating that advancing age had no statistically significant effect on career satisfaction among American anaesthetists.²² Chiron *et al.* do, however, concur with the findings of this study: junior anaesthetists in France were more affected by emotional exhaustion, low levels of personal accomplishment and higher incidences of burnout syndrome as compared with their senior colleagues. Remuneration and a sense of professional achievement ranked as leading reasons as to why senior anaesthesiologists experience a higher level of job satisfaction.¹⁹

Gender difference with regard to job satisfaction and personality traits

Evidence suggests that in South Africa and abroad, male anaesthetists tend to experience higher levels of job satisfaction than their female counterparts. The studies by Chiron *et al.*, Gardner *et al.*, Kluger *et al.*, Cooper *et al.* and Clarke *et al.* show that females experience lower levels of job satisfaction and higher levels of stress due to domestic commitments and their role as caregivers.^{16,17,19,20,23} Family and work requirements are often mutually incompatible for female anaesthesiologists as both require a significant amount of dedicated time.^{19,23}

Even though the findings above support the notion that females experience reduced levels of job satisfaction, a higher number of females indicate that they would not change their speciality (89.4%) as compared with males (82.6%). This could be attributed to a number of factors including the perceived increased time investment of other specialities.

Moreover, this study of South African anaesthetists showed that female anaesthetists tend to have marginally higher Neuroticism scores, thereby further substantiating the finding that they experience lower levels of job satisfaction as described above. This finding is controversial, in part due to nomenclatural nuances, but not unique. As reviewed by McCrae, cross-cultural research shows some patterns of gender differences with regard to personality traits. Women consistently report higher Neuroticism and Agreeableness, and men often report higher assertiveness (an Extraversion facet) and Openness to ideas.²⁴ Considerable debate surrounds these findings, and multiple biological and psychosocial theories are on offer. Evolution explains that gender-related trait differences are naturally selected for, due to conference of survival advantage. Slightly more provocative is the idea that hormonal differences may affect mood and personality. Psychosocial theorists argue for more direct and proximate causes, touting the notion that most gender differences are accounted for by the adoption of socially imposed gender roles which are internalised early in development.²⁴

Qualification and its effect on job satisfaction

In this study, diploma anaesthetists had the highest level of job satisfaction, followed by specialist anaesthetists, then GP anaesthetists and finally registrars. It is unsurprising that registrars experience the lowest levels of job satisfaction as they are expected to manage complex cases with limited compensation and a large proportion of their time is dedicated to academic commitments.

Another barometer of job satisfaction is the regret of choosing the current career path. From the results it is evident that specialist anaesthetists tend to be significantly more satisfied with their career as compared with anaesthesia providers with other levels of qualification.

Furthermore, it was noted that the majority of specialist anaesthetists (> 70%) work in private practice and registrars are found only in public practice. Private sector as opposed to public sector work is associated with higher levels of job satisfaction as described below.

Sector of practice and its influence on job satisfaction

A Kruskal–Wallis test was used to evaluate the difference between job satisfaction in the private versus public sector. It was noted that individuals who practise within the private sector have higher levels of job satisfaction compared with their colleagues in public service. Kinzl *et al.* listed salary and prospects for promotion as factors that correlate with job satisfaction.¹⁸ Individuals who work in private practice are able to influence their earnings according to the amount of work done. Individuals who work in public practice are reliant on a fixed salary regardless of effort. In this study, when participants were asked to give comments, the strongest and most frequent complaints were of being overworked and underpaid in the overburdened public sector.

Relationship status and job satisfaction

Relationship status was not found to influence job satisfaction in a statistically significant manner.

Study limitations

Study limitations include sources of bias:

- Volunteer bias: certain personality profiles might have been more likely to participate thereby rendering returned questionnaires over-representative of particular personality dimensions.
- Membership bias: anaesthetists who have SASA membership might have a greater interest in their specialty and may have inherently higher levels of job satisfaction.

Another limitation stems from the fact that the Five Factor Model, although currently the most widely accepted and validated tool of its nature, is not fully representative of personality. Furthermore, personality is not static but subject to change over time and in various situations, thus limiting the predictive ability of a cross-sectional study.

From this study, we are uncertain if the traits correlated with job satisfaction are specific to anaesthesia or applicable to other specialties, medicine as a whole, or indeed across professions, in which case this type of personality testing would not be useful in guiding career choice. Ideally, a control group would include a representative sample of doctors in South Africa spanning the various specialities.

Conclusion

This study found that Neuroticism is the strongest and most consistent negative correlate of job satisfaction, while Agreeableness is positively associated with job satisfaction. Encouragingly, relatively high mean and median values of 65.6% and 71%, respectively, were recorded for job satisfaction among South African anaesthetists. Socio-demographic variables positively associated with job satisfaction include increasing age, male gender, private sector practice and specialist/diploma qualification.

The utility of personality testing lies in career counselling with regard to choosing a speciality, in order to improve job

satisfaction and occupational as well as personal well-being. It could be used as a preventative strategy early in the process with a long-term goal of creating a healthier, happier workforce and a stronger health system that takes into account health-care users as well as providers.

Ethical considerations

Approval for this research was obtained from:

- The University of Pretoria Faculty of Health Sciences Research Ethics Committee
- The University of Pretoria Faculty of Health Sciences MMEC Committee

Informed consent

A cover letter explained the purpose of the study. Willingness to complete the questionnaire was taken as informed consent. Participants were assured of confidentiality and anonymity.

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