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# Personality testing may identify applicants who will become successful in general surgery residency



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## ABSTRACT

**Background:** Identification of successful general surgical residents remains a challenging endeavor for program directors with a national attrition of approximately 20% per year. The Big 5 personality traits and the Grit Scale have been extensively studied in many industries, and certain traits are associated with professional or academic success. However, their utility in surgery resident selection is unknown.

**Methods:** We performed a retrospective review of all categorical surgery residents ( $n = 34$ ) at the University of Texas Medical Branch from 2015 to 2017. Current residents were classified into low performing ( $n = 12$ ) or non-low performing ( $n = 22$ ) based on residency performance and standardized test scores. Groups were assessed for differences in both conventional metrics used for selection and Big 5 and grit scores using bivariate analysis and Pearson's correlation coefficient. Personality testing was administered to recent resident applicants ( $n = 81$ ). Applicants were ranked using conventional application information. We then examined the applicants' personalities and their rank position with personality characteristics of non-low-performing residents to determine if there was any correlation. **Results:** The Big 5 personality test identified significantly higher extroversion, conscientiousness, and emotional stability scores in those residents classified as non-low performers. There was no significant difference in conventional metrics or in grit scores between non-low performers and low performers. Our final rank does not correlate well with personality traits of non-low performers.

**Conclusions:** The Big 5 test may prove to be a useful adjunct to the traditional residency application in identifying applicants who may become successful in general surgery residency.

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## Introduction

Over the past 4 decades, the attrition rate for general surgery residency has been higher than that for any other medical specialty, with 14%-32% of residents leaving general surgery to pursue other specialties.<sup>1-7</sup> Although the surgeon lifestyle is the most commonly cited reason for leaving general surgery,<sup>7</sup> the elimination of the pyramidal system and the implementation of duty hour regulations have failed to improve the attrition rate.<sup>1</sup> This suggests that lifestyle alone is insufficient to account for the high rate of attrition seen in general surgery programs.

Every year, program directors are challenged with identifying and selecting general surgery applicants most likely to succeed in their residency program(s). Among program directors, it is considered one of the more daunting tasks.<sup>8</sup> Traditionally, standardized tests, letters of recommendation (LORs), honorary society membership induction into Alpha Omega Alpha, and short, unstructured interviews have provided the basis for which applicants are selected. However, multiple studies have shown this process to be ineffective.<sup>9-11</sup> If we were able to identify the best-fit applicants for general surgery programs, attrition rates should decrease.

The desire to identify the best-fit applicants is not unique to surgery: other high-stress careers, such as aviation, have studied the use of personality tests in applicant selection.<sup>12,13</sup> The Big 5 factor structure of personality allows for the standardization and comparative analysis of personality traits by categorizing personality into five traits: extroversion, agreeableness, conscientiousness, emotional stability, and openness (Table 1).<sup>14</sup> Several studies have shown a relationship between specific personality characteristics and workplace performance or academic success.<sup>15-18</sup> Prior investigations using the Big Five Inventory (BFI) in surgery have predominantly focused on identifying the characteristics associated with surgeons but have not sought to elucidate the difference between the personalities of successful and unsuccessful residents.<sup>15,19-23</sup> In addition, grit is a noncognitive trait described in psychology literature as perseverance and

passion for long-term goals.<sup>24</sup> Higher grit tends to be associated with individuals who will complete set goals despite obstacles and setbacks.<sup>25</sup> Grit was found to be a better predictor than either the Big 5 or demographic variables when evaluating retention in multiple settings including the military, workplace sales, high school, and marriage.<sup>24,26</sup> Furthermore, there is initial evidence that grit scores may be predictive of residents at risk of attrition in general surgery.<sup>24,27,28</sup>

However, the data are lacking on how these tests may be used to identify and select successful surgery residency applicants. We hypothesized that personality testing would provide valuable additional information to help identify candidates best suited for surgery residency when compared with conventional application information alone.

## Methods

### Study design and sample

#### Current surgical residents

In 2015, our department sought to improve the applicant selection process. As such, we implemented questionnaires as part of our residency application process to attempt to identify applicants who would fit best in our program. We found that the questionnaires improved our overall application process and sought to report our findings. We discussed our intentions with our institutional review board. Based on our discussions, our institutional review board deemed this study to be a quality improvement project aimed at improving our applicant selection process and not human subjects research. Next, a retrospective review of all categorical general surgery residents ( $n = 34$ ) at the University of Texas Medical Branch from 2015 to 2017 was performed. The personality traits of current residents were evaluated using a combination of an application score (used to measure conventional metrics) with BFI testing and grit scores. The application score was calculated for each resident by a single observer, the program director.

**Table 1 – The Big 5 inventory domains.**

The Big 5	Personality trait	Descriptive terms
Extroversion	The tendency to seek out activity and the company of others—People with high levels of extroversion tend to be assertive and often seek leadership positions.	Gregarious, assertive, energetic, adventurous, enthusiastic, outgoing
Agreeableness	How oriented toward community someone is—People with high levels of agreeableness tend to exhibit greater levels of altruism, trust, and modesty.	Cooperative, trustworthy sympathetic
Conscientiousness	The tendency to regulate and control impulses to reach our goals—People with high levels of conscientiousness tend to delay gratification and are good at prioritizing tasks.	Organized, self-discipline, deliberate, efficient, goal-directed
Emotional stability (neuroticism)	How prone someone is to experience negative emotions —People with high levels of neuroticism tend to be anxious, tense, and experience more depression. Lower levels are associated with higher emotional stability.	Self-confident, even-tempered
Openness	Open to experience—People with high levels of openness tend to be more creative, with multiple different interests, always seeking to learn new things	Curious, imaginative, artistic, unconventional, inspirational, seek knowledge

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