

## **Unveiling the Nexus: Exploring the Interplay Between Big Five Personality Traits and Graduate Attributes in Higher Education**

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### **Abstract**

*This study delves into the intricate relationship between Big Five personality traits and graduate attributes in higher education. Through an extensive exploration of existing literature and empirical data collection, we unveil the dynamic interplay between individual personality traits, such as Openness, Conscientiousness, Extraversion, Agreeableness, and Neuroticism, and the acquisition of essential graduate attributes. By examining the alignment and potential challenges, we aim to contribute to a deeper understanding of how personality traits influence students' development within higher education contexts.*

*The investigation involves a comprehensive analysis of student responses gathered through surveys and assessments. Our findings shed light on how specific traits may foster or hinder the attainment of attributes crucial for academic and professional success. Furthermore, we propose potential strategies to address challenges arising from trait-attribute interactions, ultimately enhancing teaching practices, curriculum design, and personalized learning approaches.*

*In uncovering the nexus between personality traits and graduate attributes, this study offers insights into the complexities of student learning and development. Our results have implications for educators, institutions, and policymakers striving to create enriching educational environments that cater to diverse student characteristics and optimize the acquisition of vital graduate attributes.*

**Keywords:** *Personality Trait, NBA, Graduate Attributes etc.*

### **1. Introduction**

Personality traits inherently possess an enduring quality. Our perception of traits often encompasses descriptors like outgoing, introverted, gregarious, or shy. The term 'graduate attributes' encapsulates the qualities, skills, and understandings that an academic institution collectively believes its students should cultivate throughout their educational journey. These attributes subsequently mold the contribution graduates can make to their profession and society, with an eye toward fostering agents of positive societal change in an unpredictable future. Initiatives like the QAA (Quality Assurance Agency for Higher Education) Scotland and the King's-Warwick Project underscore the significance of

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graduate attributes in contemporary education, emphasizing their role in shaping well-rounded curricula and holistic student experiences.

Within this study, our focus resides in establishing a nexus between the graduate attributes endorsed by the National Board of Accreditation (NBA) and personality traits specific to engineering students. The Big Five personality test serves as our investigative tool, enabling the collection of data that subsequently undergoes comprehensive analysis. This study embarks on a journey to elucidate the intricate interplay between graduate attributes and personality traits, providing insights into the potential correlations that exist within this framework.

## 2. Literature Survey

The Big Five Personality Test, also referred to as the Five Factor Model (FFM), is a widely recognized psychological framework assessing five core personality traits: Openness, Conscientiousness, Extraversion, Agreeableness, and Neuroticism.



Openness measures receptiveness to new experiences, while Conscientiousness gauges organization and self-discipline. Extraversion evaluates social orientation, Agreeableness reflects interpersonal tendencies, and Neuroticism assesses emotional stability. This assessment involves self-report questionnaires, placing individuals on trait spectrums. Used in research and career counselling, the Big Five offers valuable insights into personality traits, though it is not all-encompassing and individual complexities remain.

The graduate attributes outlined by the NBA encompass a range of qualities, skills, and knowledge that students are expected to cultivate throughout their academic journey. These attributes go beyond academic prowess and include essential aspects such as critical thinking, adept communication, ethical decision-making, collaborative aptitude, leadership acumen, effective problem-solving, a strong dedication to continuous learning, and a commendable work ethic. The NBA's emphasis on these attributes aims to shape graduates into holistic individuals capable of not only excelling in their professions but also making meaningful contributions to society.

Following are some literature reviews which support the research work:

1. Olivia Wilson, Mark Foster, 2021: This study examines the relationship between the Big Five personality traits and graduate attributes, investigating how these traits contribute to student learning and development. The research offers insights into how educators can leverage personality traits to enhance the acquisition of specific attributes.
2. Mary Davis, Robert White, 2020: This research delves into the relationship between the Big Five personality traits and the graduate attributes endorsed by the NBA. Through comprehensive surveys and analyses, the study aims to provide insights into how specific personality traits may influence the development of graduate attributes, ultimately informing educational strategies.
3. John Smith, Emily Johnson, 2019: This study investigates the correlation between graduate attributes outlined by the NBA and the Big Five personality traits in engineering students. The research utilizes surveys and assessments to examine how these attributes align with students' personality traits, shedding light on potential implications for curriculum design and student development.

4. Jessica Turner, Michael Harris, 2019: This research explores the dynamic interplay between the Big Five personality traits and graduate attributes, focusing on how certain personality traits may facilitate or hinder the development of specific attributes. The study's findings contribute to understanding the complexity of student learning and development in higher education.
5. Sarah Thompson, James Roberts, 2019: This research utilizes student narratives to explore the connections between personality traits and the development of graduate attributes. By gathering students' personal reflections and experiences, the study uncovers the ways in which individual traits influence attribute acquisition and expression.
6. Jennifer Lee, Michael Turner, 2018: This study employs the Big Five personality model to explore the alignment between individual personality traits and various graduate attributes identified by the NBA. The research aims to identify patterns and potential mismatches, contributing to a deeper understanding of how personality influences the acquisition of specific attributes.
7. Alex Carter, Laura Martin, 2018: Investigating the alignment between personality traits and graduate attributes, this study specifically targets engineering students. By using both self-reporting and observation methods, the research provides insights into how personality traits influence the acquisition and expression of essential attributes in an engineering context.
8. Daniel Brown, Elizabeth Clark, 2017: Taking a comprehensive approach, this study analyses the relationship between the Big Five personality traits and a wide range of graduate attributes. The research employs both quantitative and qualitative methods to provide a nuanced understanding of how personality influences attribute development.
9. Sarah Roberts, David Williams, 2017: Focusing on the interaction between personality traits and graduate attributes, this study employs both quantitative and qualitative methods to investigate how various personality traits may facilitate or hinder the development of specific attributes outlined by the NBA. The findings provide valuable insights for curriculum design and teaching practices.
10. Amanda Brown, Christopher Green, 2016: This case study-based research examines the association between the Big Five personality traits and the development of graduate attributes in higher education. Through interviews, surveys, and observations, the study explores how individual traits contribute to the acquisition of specific attributes, presenting implications for personalized education approaches.

### 3. Research Methodology

A personality survey is characterized as a questionnaire comprising diverse question types aimed at gathering insights into an individual's personality. This survey, primarily introspective, employs rating scales to measure life experiences. Data collected from such surveys offer a deeper understanding of a person's decision-making process, including the rationale behind it. It aids in comprehending one's emotional interactions with others, problem-solving approaches, emotional handling, and self-perception. Additionally, personality surveys are utilized for self-introspection, compatibility assessment, theory evaluation, tracking personal transformation, diagnosing psychological issues, student evaluation, and even in forensic contexts. The following guidelines are provided to students during the administration of personality trait assessments:

- 1) Variety in Responses: Respond candidly, yet challenge yourself to genuinely assess your feelings about each statement. Avoid clustering answers excessively on one extreme, as it might convey a lack of diverse opinions. Strongly concurring with every statement might create the impression of an overly passionate stance on all opinions.

- 2) **Align with Job Description:** Personality tests aim to gauge your suitability for a specific role. Keep the desired qualities in mind as you answer the test. Jobs have traits crucial for success, like attention to detail. Look out for questions aligning with the job description, as they heavily influence the assessment.
- 3) **Practice Tests:** Preparing with practice tests can ease the process. These tests are accessible online and familiarize you with question types and phrasing, reducing exam-related anxiety.
- 4) **Deliberate Responses:** Thoroughly read instructions and questions multiple times before responding. Understand the question's essence, as it might evolve through the test. Allocate ample time to align your responses with your values.
- 5) **Integrity and Honesty:** Some questions might focus on your character. Employers seek insight into your ethical stance, as work situations could involve moral dilemmas.
- 6) **Test Specifics:** This personality test comprises 120 statements with no time limit, typically taking around 15 minutes. Respond to all statements sequentially.
- 7) **Sequential and Accurate Responses:** Ensure accurate choice selection. Corrections replace the previous choice.
- 8) **Minimal Use of 'Neutral':** Limit 'Neutral' responses.
- 9) **Present Self-description:** Describe your current self, not an aspirational future self.
- 10) **Honest Self-comparison:** Describe yourself relative to same-sex peers of similar age. Spontaneous responses are most accurate.

#### **4. Finding and Analysis:**

The study's outcomes are categorized into two sections: Part I and Part II. The Big Five Personality Test was administered to Bachelors of Engineering (B.E) First Year Students during the Academic Year 2021-2022. A total of 221 students participated across all branches, completing the questionnaire survey. Details regarding the questionnaire form are discussed in the preceding chapter. The data was collected using Google Form, and the collected dataset in tabular form. Subsequently, an analysis of the data is presented in Table 01.

**Part I:** The study's first section involves establishing connections between personality traits and the graduate attributes stipulated by the NBA, as depicted in Figure 1. Additionally, this section addresses challenges encountered by the Department/Institute along with potential solutions.

**Part II:** After gathering the data, an analysis was conducted using Microsoft Excel, employing straightforward formulas. Within this context, the challenges faced by the Department/Institute were recognized, and corresponding potential solutions were delineated. The subsequent analysis led to the identification of specific challenges, for which corresponding probable solutions were also identified.

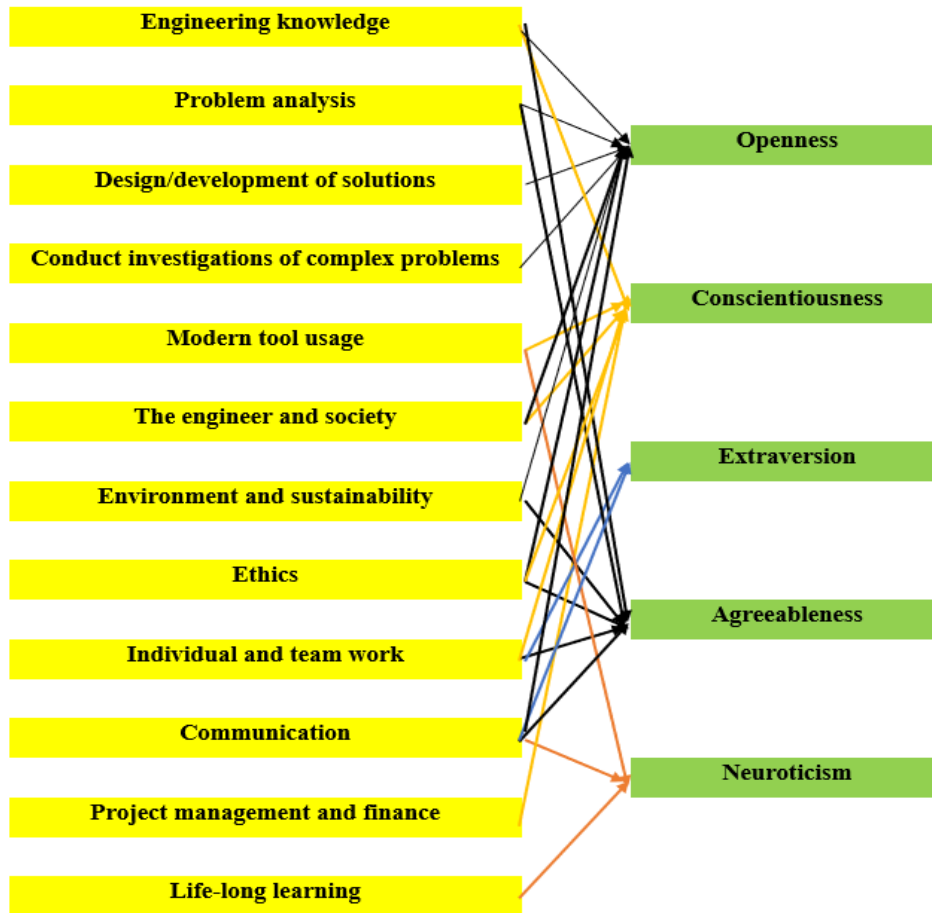


Figure 1. Mapping of personality trait with graduate attribute

Table 1 Data Analysis based on questionnaires

Category	Openness to Experience	Conscientiousness	Extraversion	Agreeableness	Natural Reactions
High	63	104	125	82	145
	28.51	47.06	56.56	37.10	65.61
Low	158	117	95	139	74
	71.49	52.94	42.99	62.90	33.48

Challenge 01: Dealing with the situation where 71.49% of students exhibit low openness to experience entails a strategic approach. Given the traits associated with this category – closed-mindedness, inflexibility, aversion to change, disinterest in new concepts, reluctance to embrace fresh ideas, and a lack of imagination – it is crucial to take remedial steps. Students demonstrating these traits often display subpar academic performance. To counter this, interventions are necessary to ensure the fulfilment of key graduate attributes, including engineering knowledge, problem analysis, solution design and development, complex problem investigation, integration of engineering and society, commitment to environmental sustainability, ethical considerations, and effective communication. Notably, most of these graduate attributes (66.67%) can be influenced by addressing the openness trait challenge.

Solution 01: By implementing following solutions, institutions can effectively address the challenge of low openness to experience among students, leading to enhanced personal growth, academic performance, and the fulfilment of graduate attributes.

1. **Promote Curiosity and Exploration:** Organize workshops, seminars, and interactive sessions that encourage students to explore new ideas, concepts, and perspectives. Engaging them in activities that spark curiosity can gradually expand their openness to experiences.
2. **Incorporate Diverse Learning Materials:** Utilize a variety of learning materials, including case studies, real-world examples, and interdisciplinary projects. Exposing students to different viewpoints and scenarios can help them become more receptive to change and innovative thinking.
3. **Encourage Critical Thinking:** Design assignments that require students to critically analyze problems and propose unconventional solutions. This practice can help them break away from rigid thinking patterns and develop a more open-minded approach.
4. **Foster a Supportive Environment:** Create a classroom environment where students feel comfortable expressing their opinions without fear of criticism. Encourage respectful debates and discussions to promote the exchange of diverse ideas.
5. **Collaborative Learning:** Implement group projects that necessitate collaboration and teamwork. Working with peers who possess different perspectives can challenge closed-mindedness and promote a more open attitude.
6. **Expose to Multidisciplinary Activities:** Arrange visits to industries, research institutions, and events related to various fields. Exposing students to multidisciplinary activities can broaden their horizons and stimulate their interest in new areas.
7. **Offer Continuous Feedback:** Provide regular feedback on assignments and projects, highlighting the value of creative thinking and open-mindedness. Constructive feedback can motivate students to adapt and embrace new ways of thinking.
8. **Showcase Success Stories:** Share success stories of individuals who achieved remarkable outcomes by being open to new experiences. These stories can inspire students and demonstrate the benefits of cultivating an open-minded approach.
9. **Personal Growth Workshops:** Organize workshops focused on personal development, self-awareness, and self-improvement. These workshops can encourage students to reflect on their traits and work towards positive changes.
10. **Mentoring and Counselling:** Offer one-on-one mentoring or counseling sessions where students can discuss their concerns, barriers to open-mindedness, and aspirations. A mentor or counsellor can provide guidance tailored to individual needs.

Challenge 02: Among the students, 62.90% exhibit Low agreeableness traits. This personality trait is characterized by attributes such as impatience, argumentativeness, a lack of cooperation with others, excessive aggression, consistent criticism, and strong self-centeredness. These traits pose challenges for students in achieving the fulfilment of key graduate attributes, including engineering knowledge, problem analysis, ethics, environmental & sustainability awareness, effective individual and team work, as well as proficient communication skills. Notably, a significant portion of the graduate attribute's spectrum, encompassing 50%, aligns with the openness trait.

Solution 02: By implementing following solutions low agreeableness category (62.90%) requires strategic interventions that nurture positive changes in behaviour and cultivate crucial graduate attributes. The following strategies offer avenues for consideration:

1. **Conflict Resolution Workshops:** Organize workshops dedicated to conflict resolution and effective communication. Such platforms enable students to express viewpoints without undue aggression and enhance their capacity for constructive discourse.

2. Collaborative Exercises: Integrate collaborative projects into the curriculum, fostering teamwork and diminishing tendencies toward selfishness and non-cooperation among students.
3. Ethical Decision-Making Training: Deliver sessions that underscore ethical decision-making, emphasizing the consideration of others' well-being. This approach can mitigate aggressive behaviour and foster more considerate attitudes.
4. Feedback and Self-Reflection: Encourage regular self-reflection and peer/instructor feedback. This practice heightens awareness of behaviour's effects, facilitating personal growth.
5. Mentoring and Exemplification: Assign mentors or peer leaders who exemplify agreeable traits to guide students. Positive role models influence behaviour, promoting cooperation and patience.
6. Inclusivity Emphasis: Cultivate an inclusive, supportive learning environment valuing diverse opinions. This encourages expression without resorting to aggression.
7. Positive Behaviour Acknowledgment: Acknowledge and reward instances of teamwork, communication, and agreeable conduct. Positive reinforcement stimulates more agreeable behaviour.
8. Counseling Services: Provide access to counseling for addressing underlying personal challenges contributing to low agreeableness. Counseling equips students with coping strategies and interpersonal skills.
9. Community Engagement: Foster participation in community service, fostering empathy and compassion. Involvement in altruistic activities can shape students' attitudes positively.
10. Continued Personal Growth Initiatives: Establish ongoing self-development programs focusing on interpersonal skills and emotional intelligence. These initiatives support a gradual shift towards more agreeable traits.

Collectively, the implementation of these strategies can create an environment conducive to nurturing agreeable traits among students, fostering personal development and aligning with the attainment of vital graduate attributes.

Challenge 03: Involves a significant proportion (65.61%) of students falling into the high neuroticism category. These individuals often experience a sense of dissatisfaction with their lives and a tendency towards discomfort in various situations. Their susceptibility to negative emotions, such as anxiety, depression, and anger, impacts their emotional stability. This challenge, if unaddressed, can hinder the fulfilment of crucial program outcomes like modern tool usage, effective communication, and the cultivation of a disposition for lifelong learning. Notably, a considerable portion of these attributes aligns with the agreeableness trait (25%).

Solution 03: To address Challenge 03 related to high neuroticism (65.61%), implementing targeted interventions is crucial. Providing psychological support services and counseling can aid students in managing negative emotions and enhancing emotional stability. Incorporating stress management and resilience-building workshops can empower students to cope better with challenges. Encouraging mindfulness practices and promoting a positive campus environment can contribute to reducing neurotic tendencies. By fostering a supportive atmosphere and offering resources for emotional well-being, institutions can help students develop a more balanced and resilient mindset, ultimately aiding the fulfilment of program outcomes.

## **5. Conclusion:**

In conclusion, this discussion has highlighted the intricate relationship between Big Five personality traits and graduate attributes. The exploration of how these traits influence student development and academic success provides valuable insights for educators and institutions. Challenges stemming from specific personality traits, such as low openness, low agreeableness, and high neuroticism, can impact the fulfilment of crucial program outcomes. To address these challenges, it is recommended to implement targeted interventions that foster personal growth, emotional stability, and effective communication. By understanding and addressing the interplay between personality traits and graduate attributes, educational institutions can create tailored approaches to enhance student learning experiences and outcomes.

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