

The Interplay between Extraversion, Openness and Emotional Intelligence on the Academic Achievements among the Undergraduate Students of JOSTUM

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ABSTRACT This Paper aim to explore the Interplay Between Openness, Extraversion and Emotional Intelligence in Predicting Academic Achievement among engineering Undergraduates at JOSTUM, Benue State, Nigeria. Three objectives were raised. Undergraduates of school of engineering serves the population; in determining he sample size a research advisor (2006) was used. Correlation design and purposive sampling were employed respectively. A Big-Five personality inventory and Social Emotional Intelligence Scale (SEIS) serve instruments for gathering information while CGPA of the students is also use to measure academic achievement.

KEYWORDS: Academic Achievement, Emotional Intelligence, Extraversion, JOSTUM, Openness to experiences, Undergraduates.

I. INTRODUCTION

Academic achievement is an integral part of teaching learning process. It is an outcome of learning after a given period of time in which it assesses to ascertain the extent to which the learners acquire the knowledge, skills and proficiency expected by the teachers. Academic performance is commonly measured by examination through various testing processes and tools. Poor academic performance of students is becoming worrisome and disturbing among students, teachers, parents, administrators, institutions, policy makers, government and all stakeholders in educational sector. This problem manifests among undergraduates in school of engineering, Joseph Sarwuan Tarka University, and Benue State. Personality trait is a huge task as it states the distinguishing pattern of psychological characteristics- thinking, feeling, and behaving that differentiates us from others and lead us to act consistently across situations, and traits state a stable predisposition to act or behave in a certain way. According to trait psychologists, there are a limited number of these dimensions (dimensions like Extraversion, Conscientiousness, or Agreeableness), and each individual falls somewhere on each dimension, meaning that they could be low, medium, or high on any specific trait. Three of these traits were briefly reviewed as follows: McCrae and Costa, (1990) the Five Factor Model (FFM) ‘is an organization of personality traits, and in turn are dimensions of individual differences to show consistent patterns of thoughts, feelings and actions’ McCrae and Costa, (1990), further defines traits “endogenous basic tendencies that, within a cultural context, give rise to habits, attitudes, skills, beliefs, and other characteristic adaptations”. Thus, traits are relatively stable or enduring individual differences in thoughts, feelings and behaviors. Personality is a multiphase variable that explain varying aspect of human personality, they include; Neuroticism, Extraversion, Openness to experience, Agreeableness, Conscientiousness as measured and defined by Cattell, (1970), Neuroticism is defined as a general tendency to experience negative effects such as fear, sadness, embarrassment, anger, guilt, and distrust. Extraversion is regarded as a general tendency toward sociability, assertiveness, activeness and being talkative. Openness to experience is defined as the degree to which a person is imaginative and curious as openness to concrete minded and narrow thinking. Agreeableness encapsulates constructs of sympathy, cooperativeness, and

helpfulness towards others. It is described as the degree to which a person is good natured, warm and cooperative as opposed to irritable, uncooperative, inflexible, unpleasant and disagreeable. The final factor Conscientiousness may be described as a degree to which a person is persevering, responsible and organized as opposed to lazy, irresponsible, and impulsive.

It has been suggested that individual differences such as personality, intelligence, and skills can be used to explain not only variance in academic achievement but also the process by which traits influences examination outcome. Although some findings put forward other reasons for discrepancies in academic achievement with external factors like school atmosphere, teacher methods and working experiences as well the availability and use of instructional materials. Beside personality traits, emotional intelligence is another variable in this study. Emotional intelligence has recently attracted lot in the academic literature Recent Studies and Findings on Emotional Intelligence and Academic Performance: Research consistently shows a positive correlation between EI and academic success (e.g., Silkander et al., 2021), highlighting how EI contributes to motivation and self-regulation in students. Workplace Outcomes: Studies by Kotsou et al. (2019) found that EI significantly predicts job performance, leadership effectiveness, and team dynamics, leading to a general push toward EI training in organizational settings. At its core, emotional intelligence is about being in tune with our own emotions and the emotions of others. Foundational work by Mayer and Salovey, (1990) introduced the idea that EI involves the ability to perceive, use, understand, and manage emotions. Meanwhile, Daniel Goleman popularized EI, highlighting its components—self-awareness, self-regulation, motivation, empathy, and social skills. Imagine being able to recognize not only your feelings but also understanding those of your friends or colleagues. This understanding facilitates better interactions and relationships. this definition encompasses two subtypes of personal intelligence described by Gardner, (1983), Intrapersonal Intelligence (the ability to access on own feeling life) and Interpersonal Intelligence (the ability to read the moods, intentions and desires of other's). Emotional Social Intelligence is multidimensional and encompasses “no cognitive capabilities, competencies and skills that influence one's ability to succeed in coping with environmental demands and pressures”. Bar-On emphasizes that Emotional Intelligence differs from cognitive intelligence and it changes throughout life. This mean it can be improved through training and relate to potential for success in achieving one's aims. Such kind of conceptualization is associated with the ability, competency and skill to recognize, to understand, to express, to manage, to control, to change and to adapt personal and interpersonal emotions and feelings and with using understanding to generate positive effects and self-motivation.

Academic achievement as far as education is concern is something which requires a lot of concentration and experience in organization, which officially aims at encouraging and developing arts, skills and knowledge related to all subjects taught in schools. It is therefore crucial to study the two personality traits of undergraduates and how it may be associated with emotional intelligence and affect their academic achievement. It is also important to determine whether academic achievement among undergraduates is caused by personality traits or emotional intelligence? Emotionally intelligent students may be ranked high in academic achievement. It is also assumed nations with higher emotionally intelligent citizens have higher level of health, happiness, and these countries may also have lower crime rates.

Theoretical Framework.

Goldberg Big Five factor model of personality; The emergence of the five-factor model of personality provides a useful framework for examining the relationship between Personality construct and Academic performance. According to Garba, (2010) “the big five factors model of personality has been developed after years of testing by factor analyzing a number of personality traits. The big five model was commonly derived from the work of Cattell, (1973). Subsequently the next advance in the big five personality theory was made by Goldberg (1990) who advocated the lexical hypothesis that those individual differences that are most silent and socially relevant will come to be encoded into the natural language.” Below are the big five traits;

(1) Extroversion (2) Neuroticism (3) Agreeableness (4) Openness (5) Conscientiousness

An ability theory of Emotional Intelligence; “An ability theory “of emotional intelligence by Meyer, Salovey and Caruso (1997), Mayer & Salovey who coined the term EI in 1990 in which EI was defined as the type of social intelligence that involve the ability to monitor one’s own other’s feelings and use the information to guide one’s thinking and action (p.189), and was composed of five domains: self-awareness, managing emotion, motivating one self, emphases and handling relationship. The This research was set out to determining the Interplay Between Openness, Extraversion, emotional intelligence and achievement undergraduates in school of engineering, Joseph Sarwuan Tarka university, Benue state. The specific objectives of the study are:

- 1) To determine the interplay between openness to experience academic achievement among undergraduates in School of Engineering, Joseph Sarwuan Tarka University, Benue State
- 2) To determine the interplay between extraversion and academic achievement among undergraduates in School of Engineering, Joseph Sarwuan Tarka University, Benue State.
- 3) To determine the interplay between emotional intelligence and academic achievement among undergraduates in School of Engineering, Joseph Sarwuan Tarka University, Benue State.

Based on the objectives above, the following hypotheses were developed to guide the study:

- 1) There is no significant interplay between Openness to Experience and Academic achievement among undergraduates in School of Engineering, Joseph Sarwuan Tarka University, Benue State.
- 2) There is no significant interplay between Extraversion and Academic achievement among undergraduates in School of Engineering, Joseph Sarwuan Tarka University, Benue State.
- 3) There is no significant interplay between Emotional Intelligence and Academic achievement among undergraduates in School of Engineering, Joseph Sarwuan Tarka University, Benue State.

The study can be of immense significance to students, teachers, psychologists, researchers, parents and other professionals involved in educational placement of Students whose personality commensurate with their area of specialization towards promoting academic excellence. To students, it is general knowledge that school success does not entirely depend on intellectual abilities, but a result of both cognitive and non-cognitive abilities of the individual among which is personality disposition. For these reasons students need to be aware of their personality dimension so as to guide them in career choice. To teachers, knowledge gained from the study findings with respect to personality dimensions of students as well as their emotional Intelligence mechanism would provide a frame work for using strategic teaching methods that might yield a better result or increase performance among students with a corresponding proficiency and subject mastery, there-by curtailing incidences of producing graduates that can-not fit into the labor market or meet the yearnings and aspirations of Nigerian society. Psychologist might immensely benefit from findings of the present study on account of establishing the psychometric properties of the adapted Big-five personality measure as an additional index of its global acceptance and utility and this would further lend support and credibility to the lexical hypothesis of the existence, stability and variability of the dispositional personality traits or factors. Researchers need to add to their knowledge if they are to discharge their duties effectively. Hence, interpretations and deductions made from this study and similar alike on the relationship between traits, emotional intelligence would provide researchers with basic information, skills and technique necessarily needed for meaningful categorization and personality disposition of individuals. Parents who had a major concern upon the education attainment of their children would equally benefit from findings of the study if they are fully informed about the differential variations of individuals on personality traits, and the antecedents’ educational relationship with academic achievement. So doing would help to convert and minimize the menace of parental influence in choice of career for their children. Guidance and Counseling professionals need to have a versatile knowledge if they are to discharge their duties effectively. Hence, interpretations and deduction made from this study and similar alike on the relationship between Personality Traits and Academic Performance would provide the Guidance and Counseling masters with

basic information, skills and techniques necessarily needed for a meaningful and efficient counseling that would ensure a better career choice that would commensurate with an individual's personality trait. Furthermore, Policy makers and School administrators will as well benefit from the research with regards to personality differences and emotional variations among students thereby provide all the teaching-learning materials, skills and strategies for better academic achievement. The educational administrators and policy makers will be able to forge better partnership with teachers and be able to introduce new ideas and approaches in their schools with greater receptivity.

This study covers the Interplay Between Openness, Extraversion, emotional intelligence and academic achievement of level II undergraduate Students 2023/2024 session in college of engineering (with four departments i.e. mechanical engineering, agricultural and environmental engineering, electrical electronic engineering and civil engineering) Joseph Sarwuan Tarka University, Benue state, Nigeria and operationally academic achievement and academic performance are standing for each other, meaning an outcome of learning after a given period of time in which its assess to ascertain the extent to which the learners acquire the knowledge, skills and proficiency expected by the teachers as measured by examination through various testing processes and tools. This implies that all other Faculties such as Agriculture, Social and Integrated Science, Education, etc. are delimited from the study. Similarly, this study focuses on Goldberg's Big Five Factor Model of Personality, all other theories of personality were also delimited from this study. In the same vein, this study focuses on ability theory of emotional intelligence developed by Mayer and Salovey, (1997) all other theories of emotional intelligence were delimited from this study.

Furthermore, level 100, 300, 400 and 500 students, and spill over and post graduate Students in the college of Engineering were delimited from the study. Other Tertiary Institutions and University, Secondary and Primary School students are delimited from this study.

II. RELATED WORKS

Academic achievement can be defined as the extent to which an individual performs better in a given task that request the use of domain learning, it encompasses student ability and performance, it is multidimensional; it is intricately related to human growth and cognitive, emotional, social and physical development it reflects the individual, it is not related to a single instance, but occur across time and levels, through a student life in school and working life. (Ali, 2003). Since Binet's pioneering attempts to predict student academic achievement from their performance on intelligence test, psychologist and educators have been concerned with factors producing individual difference in student and scholastic attainment. Early researched addressed in this question is devoted to the role which general intellectual abilities played in academic achievement. More recently, educational researchers have concerned themselves with factors other than ability which might also contribute to performance differences. Personality variables such as achievement, motivation and anxiety have brought into the picture. The achievement need have been a center of concerned research effort by a number of investigators; e.g. Mc.Clelland and his colleagues. So, too, has anxiety been used as a predictor variable for intellectual and academic achievement? Introductory textbooks such as Woolfolk and Anita (2007) provide theoretical and empirical insight into the determinants of academic achievement and its assessment. However, as academic achievement is a broad topic, several textbooks have focused mainly on selected aspects of academic achievement, such as enhancing academic achievement or specific predictors of academic achievement. A thorough, short and informative overview of academic achievement was provided by Spinath and Birgit (2012). The researchers further emphasized the importance of academic achievement with regard to different perspectives (such as for individuals and societies, as well as psychological and educational research).

Gatzka, (2023), Openness and Academic Success in Postsecondary Education Doctoral thesis for obtaining the academic degree Doctor of Natural Sciences submitted by Thomas Johann Gatzka at the Faculty of Sciences Department of Psychology. Within the five-factor model of personality, openness describes an individual's general appreciation for new intellectual and cultural experiences. Encompassing traits such as

curiosity, open-mindedness, ingenuity, self-reflection, and thoughtfulness, it has often been theorized to be a major success factor in learning and education. However, empirical research conducted over the past several decades has yielded rather inconsistent results, and recent meta-analyses have found surprisingly small correlations between openness and postsecondary academic achievement. This intriguing discrepancy was the starting point for this dissertation. Its core consists of three original articles that examine the relationship between openness and several indicators of postsecondary academic success. A fourth supplemental article describe development of an alternative measure of a specific, academically relevant facet of openness, namely, openness to ideas. The first article is a meta-analysis that examined the relationship between openness and postsecondary academic achievement. It found that across 149 studies with a total sample of 50,449 undergraduate students, overall openness was indeed only weakly related to academic achievement. However, through meta-analytic structural equation modeling using 19 primary studies with a total of 5,861 subjects, it also demonstrated that openness comprises two distinct aspects, namely intellectual and senso-aesthetic openness, and that these two aspects have opposing effects on academic performance. The second article is a study that used a self-report measure specifically designed to assess the two openness aspects in order to examine their relationships with objective and subjective academic achievement. Regression analyses using cross-sectional data from 424 undergraduate students showed that intellectual openness was a strong positive predictor of both forms of academic achievement, while senso-aesthetic openness was a moderate negative predictor. Furthermore, the two aspects of openness showed considerably more incremental validity over two aspects of conscientiousness (i.e., industriousness and orderliness) than vice versa. The third article is a study that used a more comprehensive operationalization of academic success and a time-lagged research design. It analyzed self-report data from two measurement times to examine the predictive validity of the two openness aspects for future academic achievement, academic satisfaction, student persistence, and post-college career success. In a sample of 196 undergraduate students from 30 majors, intellectual openness predicted grade point average and satisfaction after an average of 27 months, while senso-aesthetic openness was a strong negative predictor of graduation likelihood. Furthermore, in a sample of 132 professionals from 25 occupational fields, intellectual openness did not predict objective career success after an average of 33 months, but it did predict several dimensions of subjective career success. Senso-aesthetic openness, on the other hand, was a negative predictor of future salary, a positive predictor of hierarchical job status, and largely unrelated to subjective career success. The fourth article describes the development and validation of a situational judgment test that measures, in addition to four other personality traits, openness to ideas. In a sample of 255 subjects the openness to ideas scale exhibited good internal consistency, the expected relationships with the five scales of the NEO PI-R, and a strong positive correlation with secondary school grade point average. This showed that the intellectual components of openness can be measured using an approach that is less prone to response bias and faking than the commonly used self-report measures. Overall, this dissertation demonstrates that openness is indeed a highly relevant personality trait in postsecondary academic success—when properly operationalized as a truly dichotomous construct. It also provides initial insight into the nature of the relationships between the two openness aspects and academic achievement, and highlights some promising avenues for further research on the role of openness in postsecondary academic success.

Xuechao et. al., (2018), Influence of Introversion and Extraversion Using MBTI Personality Model on Academic Performance, in this paper an empirical experiment was conducted in: (1) measuring Introversion/Extraversion personality types based on Myers-Briggs Type Indicator (MBTI); (2) defining scores of students' assignments as academic performance; and (3) using statistical analysis to verify our hypotheses about the linear relationship between personality types and academic performance. With the support of Independent T-test analysis, conclusions were found that introversion programmers outperformed extroversion programmers in their respective programming courses. In addition, the Pearson Correlation and regression analysis were utilized in order to assist educators in conducting more effective teaching styles in their programming courses, conclusion shows that there does exist a correlation and that academic performance can be predicted based on a student's personality preference. Our empirical experiment was conducted through the use of independent T-tests, Pearson correlation, and regression models in order to

provide an objective view on human personality. For example, if the Pearson correlation evaluation showed a value greater than 0.7 it was safe to conclude that a correlation existed between variables.

Apeh and Ezemaduka, (2015), studies the influence of extroversion-introversion and subject preference in the academic performance of secondary school students. It is a departure from traditional pattern where academic performance has been typically associated with intelligence rather than personality or subject preference. The specific objectives of this study include to find out possible differences in the subject preferences and academic performance of secondary school students who manifest different types of personality traits and to examine the possible differences in the subject preferences and academic performance of the two personalities along gender lines. Two research questions and six null hypotheses were formulated. The study sampled secondary school students in Nigeria using the descriptive survey design. The total population for this study is 14,189 students and the sample for this study was 375. Three different instruments were used for this study to assess personality, subject preference and academic performance of students. Psychometric properties of the instruments were determined and reliability coefficients of 0.74 and 0.78 were obtained for the SPQ and SSPI respectively. Mean scores, frequency counts, percentages and t-test statistics were used in the analysis of data that were collected. This study found significance of difference between subject preferences between students showing extroverted and introverted traits as well as significant difference between the academic performances of students due to personality type.

Siti et. al., (2023), Influence of Extraversion, Agreeableness and Learning Motivation on Learning Performance, A study was conducted to evaluate the learning performance of military officers who attended the G2 and G3 Staff and Tactics Courses at the Officers' College, Port Dickson. This study aims to examine the influence of individual factors such as extraversion and agreeableness personality factors and learning motivation on trainees' learning performance. The data was analyzed using SEM-AMOS (Structural-Equation Modeling- Analysis of Moment Structures). The findings of the study found that the three individual factors have a significant influence on learning performance. This shows that individual factors also affect the training effectiveness. Therefore, the responsible parties need to take individual factors into account when planning and designing a training.

Kassim, (2015) studies the relationship between personality trait and academic achievement of undergraduate of Bayero University Kano, limited to 200 level students, 365 students were selected and participated as samples, their performance was determined by PPMC indicates that extraversion personality traits positively correlate with the student's academic performance, i.e. the highest level of student's extraversion the higher his academic achievement. Ye et. al, (2024) studies the emotional intelligence impact on academic achievement and psychological well-being among university students: the mediating role of positive psychological characteristics, emotional intelligence with psychological well-being and academic achievement through positive psychological characteristics among university students in China. The study was conducted with postgraduate and undergraduate students. The integration of emotional intelligence theory and positive psychological theory was used in this study. The introduced framework included emotional intelligence as the main independent variable, self-efficacy, motivation, and resilience as three mediators, and psychological well-being and academic achievement as two dependent variables. A survey was conducted among 518 students, and structural equation modelling was used to analyze the data. The study found that emotional intelligence was positively related to positive psychological characteristics, psychological well-being, and academic achievement, and the effects were stronger among postgraduate students. Also, positive psychological characteristics, which include self-efficacy, motivation, and resilience, mediate the relationship between emotional intelligence and psychological well-being and academic achievement, and the relationship was stronger among postgraduate students. Proper coping strategies and mechanisms can be helpful to improve both psychological well-being and academic achievement at the same time among university students.

Dagne and Belay, (2024) studied the synergistic effects of emotional intelligence and achievement motivation. The main aim was to investigate the synergistic effects of emotional intelligence and achievement motivation on academic outcomes of university students. In order to address the research objectives, quantitative research design with the correlational approach was used. The data was collected from 126 students (with a response rate of 93.3%) using emotional intelligence and achievement motivation scales. The

collected data were analyzed using both descriptive statistics (mean, frequency and percent) and inferential statistics (independent sample t-test, Pearson product moment and multiple regressions). The findings revealed that students exhibited high levels of emotional intelligence, significantly exceeding the hypothesized mean, and demonstrated strong competencies across all emotional intelligence components. Additionally, students showed elevated achievement motivation, particularly in intrinsic motivation to know and extrinsic motivation identified, while a motivation was the least prevalent. Gender differences were evident, with female students outperforming males in both emotional intelligence and achievement motivation across all dimensions. Correlation analysis indicated a significant positive relationship between emotional intelligence and academic performance, particularly in managing one's own emotions and others' emotions, while achievement motivation also correlated strongly with academic performance. The coefficient of determination ($R^2 = .338$) suggests that approximately 33.8% of the variation in academic performance can be attributed to the combined effects of emotional intelligence and achievement motivation. These results underscore the importance of fostering both emotional intelligence and achievement motivation to improve academic success, suggesting that educational interventions should focus on developing these competencies among students.

Jane., Jacinta and Alice, (2020) studied the poor academic performance in public examinations among secondary school students in Kenya, has been attributed to environmental factors. The main objective of this study was to establish the relationship between emotional intelligence and academic achievement among public secondary school students in Kilifi County. Correlational research design was adopted. The target population was year 2018 form four students in public secondary schools in Kilifi County. Purposive, simple random and cluster sampling procedures were used in the selection of schools and students. The study sample size was 271, comprised of 145 girls and 126 boys. Data was collected using adapted Schutte Self-Report Emotional Intelligence Test. Students' academic achievements data was obtained from mean scores of ends of second term examination results. Data analysis was done using both descriptive and inferential statistical procedures. There was a strong positive relationship between emotional intelligence and academic achievement of the participants. Emotional intelligence domains were shown to relate significantly to academic achievement of the students. The study recommended that teachers, educators and stake holders in education should work together in enabling development of emotional intelligence of the students to enhance academic achievement. Curriculum developers should also consider incorporating emotional intelligence skills to the curriculum.

III. METHODOLOGY

This research is carried out among undergraduates in college of engineering, Joseph Sarwuan Tarka university, Benue State. Study Design and Data Collection; In conducting this study, the researcher employed correlation design, Correlation design involves collecting data or searching out records of specified population and ascertaining the relationships among the variable of interest, it further involves neither random assignment nor manipulation of an experimental variable, correlation design because both dependent and independent variables have already occurred or are naturally occurring. "The design is appropriate in bringing out possible antecedents of events that have happened and cannot be manipulated by the investigator" (Ahmad, 2010; Cohen, Manion & Morison, 2000). The researcher employed Correlation as he examined the relationship of variables base on the naturalistically occurred treatment rather than the artificially manipulating, or creating the treatment; the design allowed the researcher to explain the condition, effect or fact that already existed, i.e. personality traits, emotional intelligence and academic achievement which cannot be studied via experimental design or variable that can be manipulated. For the purpose of the study, the participants were divided into three groups, low and high achieving group. Low and high achieving groups. Low achieving groups refers to students who obtained Cumulative Grade Point Average (CGPA) of 2.49 and below, and high achieving group refers to students who obtained CGPA of 3.5 and above while students with CGPA 2.50-3.49 are refers to as average students. A version of UC Berkeley Big Five Personality Inventory Lab (2007-9) The Big-Five Inventory (BFI) is a self-report

inventory design to measure the Big-Five dimensions, it is quite brief for multidimensional personality inventory originally developed by Goldberg, (1992) is adapted for use in the study as a measure of students' personality traits, while State Emotional Intelligence Scale (SEIS) adopted from Saminu (2016), Ahmad, (2009) as developed by Shuttle, Haggerty, Cooper, Golden and Donhein (1998). The instrument is used to assess emotional intelligence based on self-report responses to 33 items tapping the appraisal and expression of emotion in self and other, and utilizations of emotions in solving problems. Participants indicate their extent of agreement with each of the statement, using four-point scale of: (strongly disagree); (somewhat disagree); (somewhat agree); and (strongly agree). The measure of academic achievement is students Cumulative Grades Point Average (C, G.P.A.) for student academic achievement, sourced from the college examination office.

A. Population and Sample of the Study

Population of the study comprised of level II students of in college of engineering, Joseph Sarwuan Tarka university, Benue State. According to the statistical data from college "as at 2023/2024 stand at one thousand eight hundred and thirty (1,900) as obtained from the Departments examination officers from the four respective departments, out of which one thousand and ninety-one (1,091) are male while eight hundred and nine (809) are female spread across all departments with different personality dimensions and emotions". The distribution of the population base on departments is shown in a table below:

Table 1: Population of the Study

| S/NO | DEPARTMENTS | POP.N. |
|--------------|---|-------------|
| 1. | Electrical electronic Department | 841 |
| 2. | Mechanical engineering Department | 402 |
| 3. | Civil engineering Department | 316 |
| 4. | Agric. And enviro. engineering Department | 341 |
| Total | | 1900 |

However, Departments of mechanical engineering, agricultural and environmental engineering, electrical electronic engineering and civil engineering, were used for the study as the population is more heterogeneous, it comprises both male and female students from different religious, ethnic groups and socio-economic backgrounds. Having determined the population, the researcher used proportionate sampling technique of each department among the four departments selected that is, the targeted students based on their level, the sample of each department is selected systematically.

$$\frac{TN}{TP} \times SS$$

Where TN = Total Population in the Departments, TP = Total Population of the Study, and SS = Sample Size.

Table 2: Distribution of level II Students According to Department

| Department | Pop. | Samples |
|-----------------------|-------------|------------|
| Electrical-electronic | 841 | 133 |
| Mech. Engineering | 402 | 65 |
| Civil engineering | 316 | 50 |
| Agric.& environmental | 341 | 54 |
| Total | 1900 | 302 |

A sample is precisely a portion or a part of population which the researcher used, thus sample of this research shared common characteristic with the entire population of the study, and served as a representative of the population. While determining the sample size a revised research advisor (2006) table was used. The appropriate sample size recommended for the study was three hundred and two (302) students drawn from four Departments, that is, Electrical electronic Department, Mechanical engineering Department, Civil engineering Department, Agriculture & environmental engineering Department.

B. Sampling Technique

Cluster and proportionate stratified random sampling techniques were employed in identifying the needed sample of the study. Cluster sampling technique was used because the subjects were clustered into different subject combinations where-as stratified sampling technique were used due to the fact that each cluster comprises of male and female students. However, in order to ensure unbiased and equal representation, the samples were drawn proportionately and at random as well. For instance: to calculate the sample using proportionate sampling, the number per each stratum divided by the total population and multiply by the sample size as recommended by research advisor will automatically give the researcher the sample expected. From the above sample: $841/1900 \times 301 = 133$

C. Data Collection Instruments

UC Berkeley Big Five Personality Inventory Lab (2009), it is a version of the Big-Five Inventory (BFI) a self-report inventory design to measure the Big-Five dimensions. It is quite brief for multidimensional personality inventory originally developed by Goldberg, (1992) was adapted for use in the study as a measure of students' personality traits. The instrument contains 44 items structured on a four-point Likert type scale of; Very accurate, moderately inaccurate, moderately accurate and very inaccurate. The items are structured to solicit information from respondents that are used to assess the presence of the two personality traits proposed by Goldberg, (1992) which includes: Extraversion and Openness to experience. Hence, since its development, the instrument is widely used in researches that aimed at assessing the above-mentioned personality traits. there are tests items in the questionnaire that measure the level of one's trait; there are items scored positive while the remaining items are score negative.

State Emotional Intelligence Scale (SEIS) Adopted from Saminu, (2016), Ahmad, (2009) as developed by Shuttle, Haggrenry, Cooper, Golden and Donhein, (1998). The instrument was used to assess emotional intelligence based on self-report responses to 33 items tapping the appraisal and expression of emotion in self and other, and utilizations of emotions in solving problems. Participants response indicated their extent of agreement with each of the statement, using four-point scale of: (strongly disagree); (somewhat disagree); (somewhat agree); and (strongly agree). Schutte (1998) reported a Cronbach alpha (α) of 0.90 for the internal consistency for adults with mean age of 29.3 (S.D. = 10.2) and $\alpha = 0.78$ for test-retest reliability after a two-week interval on the scale for a smaller group drawn from the sample. Schutte (1998) reported predicted validity of $r(63) = 0.32$ for first year GPA of college students, for discriminant validity they reported $r(41) = -0.06$ for the correlation between the scale and SAT scores, and $r(22) = -0.28$ to 0.54 for subscales of NEO Personality Inventory of scores of college students.

The validity of the instrument was reported to have construct validity, Schuttle (1998). This scale is adopted from Schutte (1998), and is used in this study. Measure of Academic Performance used here was students Grades Point Average (G.P.A.) for student academic achievement, sourced from the college examinations office

D. Validity and Reliability of the Instruments

Validity is the extent to which an instrument measure what it purposed to measure. The instrument used for data collection by present study (Goldberg Big Five Personality Test) was reported to have satisfactory convergent validity by the author as reported by Garba (2010). In addition, the content validity of the modified instrument is determined by subjecting it to three experts, one in psychology and two in Test & Measurement for their expertise observation, corrections and recommendations. All the identified corrections given by the experts were affected. Reliability is the degree to which instruments produces stable and consistent result. The instrument used for data collection for the present study was reported to have high reliability index across dimension. The dimension of traits used for the present study were reported to have the following reliability index of alpha as 0.72, 0.82, 0.86, 0.76 and 0.82 respectively for the five traits of agreeableness, conscientiousness, extraversion, neuroticism and openness to experiences (Goldberg 1999). According to Garba (2010) the alpha level of reliability coefficient of the personality measure stood at $\alpha=0.702$ across the five traits. This estimation was arrived using Cronbach Alpha Formula. The Second instrument, State of Emotional Intelligence Scale (SEIS) adopted from Ahmad (2009) as developed by Shuttle (1998) has been tested and found valid as reported by Furnhein (2000); to justify the validity of the instrument the researcher conducted a pilot test in the area of study the scales were administered to the randomly selected level II undergraduate students and reported a construct validity of 0.08. Reliability, the instrument State of Emotional Intelligence Scale (SEIS) adopted from Ahmad (2009) as developed by Shuttle et. Al., (1998), had demonstrated high internal consistency with Cronbach's alpha ranging from 0.87 to 0.90 as reported by shuttle (1998). To justify the consistency of the instrument adopted for collecting data in this study, the researcher conducted a pilot test. The questionnaire was administered by the help of research assistant applying wait and take method to the randomly selected level II undergraduate students in the area of study before the main data collection for the study. The result was 0.85.

E. Data Collection Procedure

The researcher solicited the permission of the departmental managements. The students were met in their respective lecture theatres and administered the instruments with the help of two research assistants, after administration collection was done immediately (wait and take). The students were gathered according to their respective program in groups as they are scheduled for their lectures for three days, immediately after their lectures, and both the two instruments were administered concurrently for both personality traits and emotional intelligence. The same method was applied to the remaining groups on the following days. However, records on academic performance were presently collected by the researcher from the departmental examination officers.

F. Data Analysis Procedure

The researcher analyzed the data collected using Pearson Product Moment Correlation (r) SPSS as statistical tool to analyze correlation in the six (6) hypotheses. However, Pearson Product Moment Correlation which is to measure the linear correlation (dependence) between two variable x and y, given a value between +1 inductive where 1 is total positive correlation, 0 is no correlation, while -1 is total negative correlation were used in testing the hypotheses at 0.05 level of significance for decision making. The analysis of data collected from the field on the interplay between openness, extraversion, Emotional Intelligence and Academic achievement of Undergraduates in college of engineering, Joseph Sarwuan Tarka university, Benue State. Pearson Product Moment Correlation (r) was used to test all the hypotheses. The result of analyses is presented in tabular form.

IV. RESULTS AND DISCUSSION

A. Hypotheses Testing

The three hypotheses raised and were analyzed in order to achieve the objectives of the study. Pearson Product Moment Correlation (r) were used to test the correlations in hypotheses.

Hypothesis One

There is no significance relationship between Openness to Experience and Academic achievement of Undergraduates in college of engineering, Joseph Sarwuan Tarka university, Benue State.

Table 3: Correlation Coefficient ' r ' of Openness to Experience and Academic Performance of the Undergraduates Students

| Variables | N | Mean | SD | df | R | P-value (2-tailed) | Remark |
|------------------------|-----|-------|-------|-----|------|-----------------------|-------------|
| Openness to experience | 229 | 79.39 | 11.93 | 227 | .656 | .000 | Significant |
| Academic Performance | 229 | 57.19 | 14.26 | | | | |

Table 2.1 above reveals that the correlation coefficient ' r ' between Openness to Experience and Academic Achievement of Undergraduates in college of engineering, Joseph Sarwuan Tarka university, Benue State is (.656) and p-value of (.000) at 0.05 level of significance. This implies that the null hypothesis which says there is no significant relationship between Openness to Experience and Achievement of Undergraduates in college of engineering, Joseph Sarwuan Tarka university, Benue State is rejected. This implies that, openness to experience significantly correlates with Academic Achievement of Undergraduates in college of engineering, Joseph Sarwuan Tarka university, Benue State.

Hypothesis Two

There is no significance relationship between Extraversion and Academic Achievement of Undergraduates in college of engineering, Joseph Sarwuan Tarka university, Benue State.

Table 3 above reveals that the correlation coefficient ' r ' between Extraversion and academic Achievement of Undergraduates in college of engineering, Joseph Sarwuan Tarka university, Benue State is (.586) and p-value of (0.001) at 0.05 level of significance. This implies that the null hypothesis which says there is no significance relationship between Extraversion and Academic Achievement of Undergraduates in college of engineering, Joseph Sarwuan Tarka university, Benue State is rejected. This shows that Extraversion significantly correlate with Academic Achievement of Undergraduates in college of engineering, Joseph Sarwuan Tarka university, Benue State.

Table 4: Correlation Coefficient ' r ' of Extraversion and Academic Achievement of the Undergraduates Students

| Variables | N | Mean | SD | Df | R | P-value (2-tailed) | Remark |
|----------------------|----|-------|------|----|------|-----------------------|-------------|
| Extraversion | 28 | 69.42 | 8.77 | 26 | .586 | 0.001 | Significant |
| Academic Performance | 28 | 62.75 | 7.53 | | | | |

Table 5: Correlation Coefficient ‘r’ of Emotional intelligence and Academic Achievement of the Undergraduates

| Variables | N | Mean | SD | Df | R | P-value (2-tailed) | Remark |
|------------------------|-----|-------|-------|-----|------|-----------------------|-------------|
| Emotional Intelligence | 138 | 70.91 | 15.73 | 136 | .723 | .000 | Significant |
| Academic Performance | 138 | 53.62 | 16.95 | | | | |

Table 2.3 above reveals that the correlation coefficient ‘r’ between Emotional intelligence and Academic Achievement of Undergraduates in college of engineering, Joseph Sarwuan Tarka university, Benue State is (.723) and p-value of (.000) at 0.05 level of significance. This implies that the null hypothesis which says there is no significance relationship between Emotional Intelligence and Academic Achievement of Undergraduates in college of engineering, Joseph Sarwuan Tarka university, Benue State is rejected. This shows that Emotional Intelligence correlate with Academic Achievement of Undergraduates in college of engineering, Joseph Sarwuan Tarka university, Benue State.

The study assessed the interplay between openness to experience, extraversion, Emotional Intelligence and Academic Achievement among Undergraduates in college of engineering, Joseph Sarwuan Tarka university, Benue State. The first finding of the study indicates that, there is significance relationship between openness to experience and academic performance of Undergraduates in college of engineering, Joseph Sarwuan Tarka university, Benue State is (.656) and p-value of (.000) at 0.05 level of significance. This finding is in-line with the findings of, Hui Wang et al (2023), Openness also affects academic achievement through a self-efficacy mediating effect and major identity to self-efficacy chain mediating effect. Gatzka T.J., (2023), Openness and Academic Success in Postsecondary Education Doctoral thesis, who found-out Openness describes an individual’s general appreciation for new intellectual and cultural experiences. Encompassing traits such as curiosity, open-mindedness, ingenuity, self-reflection, and thoughtfulness, it has often been theorized to be a major success factor in learning and education versa. The third article (Gatzka) study that used a more comprehensive operationalization of academic success and a time-lagged research design. It analyzed self-report data from two measurement times to examine the predictive validity of the two openness aspects (intellectual and senso-aesthetic openness) for future academic achievement, academic satisfaction, student persistence, and post-college career success. In a sample of 196 undergraduate students from 30 majors, intellectual openness predicted grade point average and satisfaction after an average of 27 months. Overall, (Gatzka’s second, third and fourth articles in this dissertation) demonstrates that openness is indeed a highly relevant personality trait in postsecondary academic success—when properly operationalized as a truly dichotomous construct. It also provides initial insight into the nature of the relationships between the two openness aspects and academic achievement, and highlights some promising avenues for further research on the role of openness in postsecondary academic success.

The similarity of the finding in this study and the findings of other scholars may not be unconnected with the fact that people with openness to experience are artistic, adventurous, curious and have extraordinary ideas which enhance their cognitive ability thereby making them to perform excellently in school. Another finding of this study revealed there is significance relationship between extraversion and academic Achievement of Undergraduates in college of engineering, Joseph Sarwuan Tarka university, Benue State. This study collaborates with the findings of Kassim (2015), Apeh, H.A., (ph.d), Ezemaduka, T.T., (2015), Siti Z. Z., et.

Al., (2023), Xuechao et. Al., (2018), Results of the study revealed that extraversion personality trait is a predictor of students' academic performance. The similarity between the finding in this study and the findings of other researches may be due to the fact that since extravert students are talkative and assertive, they associate freely with classmates and can organize and attend academic group discussion which in turn may give room for high academic performance. The last finding of the study is that, there is significant relationship between Emotional Intelligence and Academic Achievement of Undergraduates in college of engineering, Joseph Sarwuan Tarka university, Benue State. The above finding collaborates with the finding of Ye Shengyao et al (2024), The study found that emotional intelligence was positively related to positive psychological characteristics, psychological well-being, and academic achievement, and the effects were stronger among postgraduate students. Dagne T. & Belay T. (September 2024). The findings revealed that students exhibited high levels of emotional intelligence, significantly exceeding the hypothesized mean, and demonstrated strong competencies across all emotional intelligence components. Jane W. K., Dr Jacinta A. K. & Dr. Alice A. (2020), There was a strong positive relationship between emotional intelligence and academic achievement of the participants. Emotional intelligence domains were shown to relate significantly to academic achievement of the students. Ogudokun (2010), But the finding is contrary to the finding Chamundeswari (2013). The similarity of the above finding with the majority of the findings of the previous researches conduct on the topic under investigation may not be unconnected with the fact that human being is a social animal that requires high level skills on interpersonal relationships. Therefore, for a student to succeed academically he/she must be humble, easy going, emphatic, patience, and ability to manage his/her classmates well which enable him/her to effectively cross-fertilized ideas which in turn enhances academic performance.

V. CONCLUSION

The findings of this study are of immense influence to both students, teachers, psychologists, researchers, parents and other professionals involved in selection of candidates whose personality commensurate with their area of specialization towards promoting academic excellence. To students, it is general knowledge that school success does not entirely depend on intellectual abilities, but a result of both cognitive and non-cognitive abilities of the individual among which is personality disposition. For these reasons students need to be aware of their personality dimension so as to guide them in career choice. School counselors need to have a versatile knowledge if they are to discharge their duties effectively. Hence for this reason interpretations and deduction made from this study and similar alike on the relationship between personality traits and academic achievement would provide counselors with basic information, skills and techniques necessarily needed for a meaningful and efficient counseling that would ensure a better career choice that would commensurate with an individual personality trait. Furthermore, Policy makers and school administrators of Joseph Sarwuan Tarka University, Benue State especially and the nation at large will as well benefits from the research with regards to personality differences and emotional variations existing among students thereby provide all the teaching-learning materials, skills and strategies for better academic achievement. The educational administrators and policy makers will be able to forge better partnership with teachers and be able to introduce new ideas and approaches in their schools with greater receptivity.

Since there is significant relationship between Openness and academic performance of Undergraduates in college of engineering, Joseph Sarwuan Tarka university, Benue State, measures should be taken by university psychologist to inculcate artistic and creativity in the students in order to enhance students' academic performance. Since there is significant relationship between Extraversion and academic performance of Undergraduates in college of engineering, Joseph Sarwuan Tarka university, Benue State, some energetic and humanistic tendencies should be inculcated in students through guidance and counseling programs of the University. Since there is significant relationship between Emotional Intelligence and Academic performance classroom teachers and school counselors should use varieties of psychological techniques in boosting students' self-esteem.

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