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Exploring Similarities and Differences in Big 5 Personality Traits of Students' Declared University Major at a Regional U.S.A. University

Andy Bertsch^a, James Ondracek^b, Mohammad Saeed^{c*}, Josh Hulm^d, Derek Borud^e, Moriah McCloud^f, Jessica Cushing^g, Li Jisheng^h

a,b,d,e,f,g Minot State University, ND, USA

c Formerly Professor, Minot State University, ND, USA

h Universiti Tun Abdul Razak, Malaysia

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*Corresponding Author:

profsaeed@yahoo.com

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ABSTRACT

Purpose: The study aims to investigate how the five dimensions of personality affect university students' choice of major.

Design/Methodology/Approach: Big Five Inventory (BFI) was adopted with total 20 questions for the five dimensions. Through Convenience sampling, students were chosen from the departments of Criminal Justice, Nursing, Accounting, and Elementary Education. A t-test determined statistical differences by comparing the responses across various demographic categories.

Findings: The results showed diverse findings about the Big Five Personality Dimensions and the choice of major. Female students were more conscientious, agreeable, and neurotic than male students. However, no significant difference was found in the openness to experience or extraversion dimension. Similarly, no remarkable difference is found among various age categories. Junior students were more agreeable than the senior students. Students with better academic performance were more conscientious and neurotic than others. Students taking more credits were more neurotic. Students showing childhood interests were found to be more open towards new experiences. Students of various majors also demonstrated different personality dimensions.

Research Limitations: Future research may explore the possibility of using the complete instrument of BFI. This research limited its sampling to juniors and seniors only, which may not reflect the total student population.

Managerial Implications: This study offered insights about the association of students' personality traits with their choice of major. The results can be taken as reference for higher learning institutions to select their prospective students and for students to choose their majors in certain institutions.

Originality/Value: Future researchers may research and generalize findings beyond the current parameters of this study.

Introduction

McShane & Glinow (2013) defined personality as “the relatively enduring pattern of thoughts, emotions, and behaviors that characterize a person, along with the psychological processes behind those characteristics”. Atherton et al., (2021) suggested there is significant amount to figure out “how, why, and when personality traits, major life goals, and social roles” codevelop throughout one's life. The goal-formulation of people works in parallel with their personality dimensions, and by involving in the context of goal-relevance may lead to the change in traits. Personality traits typically include a wide range of behaviors to designate and comprehend personal variance. Many experts advocated that genetic and environmental forces combine to shape one's personality. (for example, see Borkenau et al., (2006). Nature refers to one's genetic or hereditary origins. By contrast, Socialization, life experiences, and various forms of connection with the environment are all factors in nurture (McShane & Glinow, 2013). In fact, studies have concluded that heredity and environment influence personality to the same degree (Hislop, 2003; Jang et al., 1996).

The Five-Factor model also known as the “Big Five” is one of the most widely used clustering of personality traits. The Five-Factor model measures five dimensions: “conscientiousness, agreeableness, neuroticism, openness to experience, and extraversion” (McShane & Glinow, 2013). Sleep et al. (2021) stated personality has significant functional implications in various research areas and resorts to five-factor models for descriptive study purposes.

People that score highly on the conscientiousness scale are usually well-organized, dependable, goal-oriented, thorough, disciplined, systematic, and diligent. Low conscientiousness leads to carelessness, inefficiency, disorganization, and irresponsibility. Someone who is agreeable is trusting, pleasant, courteous, tolerant, selfless, generous, and adaptable. When a person's agreeableness is low, they are more likely to be uncooperative and intolerant, as well as suspicious and self-centered (McShane & Glinow, 2013).

Neuroticism pertains to people who are “anxious, insecure, self-conscious, depressed, and temperamental”. When a person has low neuroticism, they are poised, secure, positive, and calm. Of the five personality dimensions, openness to experience is perhaps the most

complex (McShane & Glinow, 2013). People that score low on openness to experience are more resistant to change, less open to new ideas, and more traditional and set in their ways. Someone who is extraverted is extroverted, conversational, energetic, friendly, and aggressive. Introversion is defined as a person who is quiet, cautious, and less engaging with others.

It should be noted that the five traits have neither a positive nor negative side to them. They are simply traits or characteristics that define a person's character (Soto & John, 2012). Indeed, research developed by Fleeson,(2001) concluded that the Five-Factor model should not be perceived in terms of dichotomies (for example, conscientious v. non-conscientious) but rather as continua. In this sense, individuals have the ability to move along each dimension of a trait as dictated by circumstance.

Coenen et al. (2021) summarized that the researchers would normally concentrate on students' cognitive abilities and the way they are associated with related study programs when considering the educational and career choices. Therefore, there is scarce research in the aspect of the influence of Personality Traits upon the choice of study. The main question concerning personality is: Do personality traits influence one's decision-making? If so, then what are these traits and how do they relate to a student and their choice of major? Incorporating a convenience sample, students from four departments (elementary education, criminal justice, nursing, and accounting) were selected to explore how certain personality traits might influence one's choice of major. The questions for the survey instrument were on the basis of “Big Five”.

Review of Literature

Balsamo et al., (2012) cite several studies suggesting that there are disparities in personality between students. and their choice of major including Rubinstein (2005), Marrs et al.(2007), Lounsbury et al.(2009). Empirical evidence has it that at varying degrees, personality traits are linked to preference. (Coenen et al. 2021). The five-factor personality model (Big Five) is a system that maps certain personality traits to a person's description or rating (it captures the core of individual differences in personality) and is one of the most widely used clustering of personality traits. Over the past fifty years the “Big Five” has grown in popularity particularly in psychology. Beginning with research of Fiske(1949), the model was later refined by others such as

[McCrae & Costa \(1987\)](#).

As pointed to above, these are not “types” of personalities per se; instead, they are dimensions of personality; everybody possesses all five of these dimensions to a greater or lesser degree. For example, [McCrae & Costa \(1987\)](#) discovered that the five features were ubiquitous. Individuals from over fifty various cultures discovered that the five categories properly described their personality in one study.

Conscientiousness, as a dimension of personality, relates to how individual seek to control, regulate and direct their impulses [Toegel & Barsoux \(2012\)](#). Individuals with a high degree of conscientiousness aim for achievement and exhibit a tendency toward self-discipline. Conscientious people are also known to be responsible, organized, goal focused and reliable. They have high levels of thoughtfulness and achieve their goals through precise planning and by following the norms and rules in a workplace or public environment. Benefits of possessing a higher degree conscientiousness include avoiding trouble and being called the smart or intelligent person. If a person is extremely conscientious, they are more likely to be regarded as stuffy or boring. People with low conscientiousness are more likely to be careless, and may be criticized for their unreliability and lack of ambition, but are said to experience many short-lived experiences or pleasures [Soto & John \(2012\)](#).

Agreeableness is another dimension within the “Big Five.” Agreeableness is simply defined as being cooperative and compassionate towards others. In this sense, agreeableness reflects a concern with social harmony, trust, and helpfulness often accompanied by an optimistic of human nature. Trust is one of the main aspects associated with agreeableness [McShane & Glinow \(2013\)](#). If you are a person with low agreeableness, you will more likely be more antagonistic and suspicious towards others. Being a disagreeable person is not necessarily a bad thing. When in a situation that requires tough or absolute objective decisions, individuals with low agreeableness usually have little to no problem making a final decision.

Neuroticism includes traits such as being tense, moody, or anxious ([Sinha & Srivastava, 2013](#)). One who is considered neurotic experiences negative emotions like depression, anger and vulnerability. The term originally used was called “neurosis” which described a condition marked by mental distress or the inability to cope with the normal demands of life that

everyone must endure. A person that scores higher on this scale will usually be impatient and temperamental ([McShane & Glinow, 2013](#)). On the other hand, a person scoring low in neuroticism is much more secure with themselves and much calmer/emotionally stable. Neuroticism should not be confused with positive feelings. Positive feelings that are frequent exist as a component of the extraversion dimension.

Openness to experience is likely the most difficult of the five characteristics in the five-factor model. This dimension includes characteristics such as having a wide range of interests. It distinguishes people who have an active imagination and people who are simply down-to-earth. People on the higher end of openness to experience would be more affiliated with art-related subjects, curiosity, and unusual ideas. They are also more in touch with their feelings and said to think and act in individualistic and non-conforming ways ([Soto & John, 2012](#)). People with lower openness to experience tend to have narrower, common interests. They are fixed on a certain way or method that they have learned in the past that they do not want to give up. Open and closed styles of thinking are useful in different environments so there is no right or wrong ([McShane & Glinow, 2013](#)).

The final dimension of the five-factor model is extraversion. Extraversion has to do with interacting or engaging with the external environment and seeking out the company and stimulation of others. Extraverts are energized and have a positive outlook on life. They are very action-orientated and like to be the talker in a group in order to draw attention to themselves. Being socially attractive is a good trait to have if you engage in groups of people often. Introverts would be the opposite of extraversion. Introverted people are usually the quiet individuals within a group. They lack the energy you would see in extraverts and tend to be the low-key individual who is not associated with a social environment. Shyness and depression should not immediately come to mind when there is a lack of social involvement. Introverted people simply need less social stimulation than an extravert and would prefer to be alone in certain situations. The introvert is sometimes mistaken as unfriendly or arrogant for keeping to themselves but an introvert who has high agreeableness will not approach others; but when approached, he/she will seem pleasant and kind.

There have been previous studies in the past that have shown how different traits correlate

to one's choice of major, see [McPherson & Mensch \(2007\)](#). Some have shown significant relation between personality and major choice while others have linked personality traits to becoming more successful in their field of study.

[McPherson & Mensch \(2007\)](#) explored the relationship between personality type and information technology students' choice of major using the Myers Briggs Type Indicator. The population sample consisted of seven universities in the U.S. which offer a degree in Business Information Systems (BIS), Management Information Systems (MIS), or Computer Information Systems (CIS). After WWII, Jung created an indicator to better understand psychological type and their appreciating differences ([McPherson & Mensch, 2007](#)). The Myers-Briggs Type Indicator Instrument is a questionnaire assisting individuals to understand Jung's theory of psychological types. [McPherson & Mensch \(2007\)](#) surveyed 248 individuals. The chi-square analysis is the most popular method of showing the statistical significance based on the cross-tabulation table [McPherson & Mensch \(2007\)](#).

[McPherson & Mensch \(2007\)](#) chose the three most frequent personality types for each technology degree mentioned above. In the Business Information Systems category, the top three personality types were ESTJ's, ESTP's, and ESFJ's. The E-I index refers to whether an individual is introverted or extroverted. The S-N index reflects how a person relies on the five senses and how they perceive the world (intuitive). How a person chooses to make a judgment (thinking) or decision falls within the T-F index. The last index, J-P reflects the use of an individual's judging and perception. ESTJ's are described as leaders, group oriented, outgoing, and social ([McPherson & Mensch, 2007](#)). These individuals would most likely pursue a career in business consulting, management, businesspersons, office managers, business analysts, and public relations [McPherson & Mensch \(2007\)](#). ESTP's tend to be social, group oriented, and do not like to be alone. Careers for this group would include marketing specialists, business managers, consultants, and technicians ([McPherson & Mensch, 2007](#)). ESFJ's value organized religion, are group oriented, and value relationships and families over intellectual pursuits ([McPherson & Mensch \(2007\)](#)). Possible careers for this group would be business consultants, human resource managers/directors, and social service directors ([McPherson & Mensch2007](#)).

The top personality types for Computer Information Systems were ISTJ's, INTJ's, and

ISTP's. ISTJ's can be described as private, organized, detail oriented and focused ([McPherson & Mensch, 2007](#)). Favored careers for this category include scientists, researchers, office workers, and technicians ([McPherson & Mensch, 2007](#)). INTJ's tend to be loners, would rather be friendless than jobless, and socially uncomfortable ([McPherson & Mensch, 2007](#)). Possible careers for this category would be researchers, software designers, computer programmers, and biotechnologists ([McPherson & Mensch2007](#)), last personality type for this group is ISTP's these individuals are private and dislike leadership ([McPherson & Mensch2007](#)).

The final degree studied by [McPherson & Mensch \(2007\)](#) was Management Information Systems and the top personality types being ISTJ's, ESTJ's, and ESFJ's. ISTJ's are private, organized, detail oriented, observational, focused, logical, and hard-working ([McPherson & Mensch, 2007](#)). ESTJ's can be described as leaders, outgoing, and formal ([McPherson & Mensch, 2007](#)) careers for these personality types are office managers, business consultants, and business analysts ([McPherson & Mensch, 2007](#)). ESFJ's on the other hand value organized religion, are group oriented, and content ([McPherson & Mensch, 2007](#)). Suggested careers for this group include human resource directors, social services directors, and business consultants ([McPherson & Mensch, 2007](#)).

[McPherson & Mensch \(2007\)](#) discovered several trends when studying the top three personality types for each major. CIS majors were found to display introvert personality types, while BIS students displayed extrovert personality types ([McPherson & Mensch, 2007](#)). Characteristics of an introvert include being private, quiet, independent, and less socially inclined, whereas extroverts display traits like assertiveness, talkative/outgoing, and are easy to approach. Both CIS and BIS were found to show judging and perceiving personality types while MIS exhibited only judging. BIS and MIS exhibited thinking and feeling types while CIS students exhibited only thinking ([McPherson & Mensch, 2007](#)). According to their findings, they discovered that a relationship did exist between personality type and information technology students' choice of major ([McPherson & Mensch, 2007](#)).

[Lievens et al.\(2002\)](#) studied medical students' personality characteristics compared to other academic majors. The sample consisted of 785 medical students and 914 other academic students ([Lievens et al., 2002](#)). The sample of medical students was obtained from five Flemish Universities, while the other source

came from either Ghent University or The Industrial Engineering School. They conducted their research using the NEO-PI-R. The response scale went from one (strongly agree) to five (strongly disagree) (strongly disagree) (Lievens et al., 2002).

Pringle et al. (2010) had also organized an experiment based on work environment and if it matches their personality. According to Holland's theory of vocational choice as cited Pringle et al. (2010) people will choose to enter professions where they believe their personality will match up with the work environment. Since the 1970's there has been a great amount of research on the extent of a student's personality characteristics and choice of major. There are two main branches of research which include the "Macro" branch and "Micro" branch Pringle et al. (2010).

The macro branch demonstrates how business majors and non-business majors differ in personality (Pringle et al., 2010). For example, Myers and McCaulley as cited in Pringle et al. (2010) found that creative students are more likely to have a liberal art major than a business major (Pringle et al., 2010). Pringle et al. (2010) showed that students who have type "A" personality are more likely to choose a major in accounting or Finance. A person with type "A" personality can be described as ambitious, organized, sensitive, truthful, willing to help others and proactive. They showed that students who are easy going, relaxed and more open to social interaction are more likely to go into majors that have to deal with art design, art history and art teaching as cited by Pringle (2010). A large study by Lounsbury et al. (2009) found business students scored higher in most dimensions than non-business majors. Non-business students scored lower in optimism and work drive as cited by Pringle et al. (2010).

Students from various business degrees are compared in the micro branch, for example, comparing accounting to marketing majors. Most of these studies have looked at accounting majors Pringle et al. (2010). Chacko (1991) found that accounting students are more likely to enjoy more organized activities, while someone who is a restaurant, or a hotel manager would most likely enjoy ambiguous tasks as cited by Pringle et al. (2010). Accounting majors are more self-restrained, cautious, quiet, and realistic, according to Noel et al. They will be more focused thinkers than students who are marketing and management information system (MIS) majors. Accounting majors are less interested in interaction with people and more interested in ideas and objects than

students who are marketing or MIS majors. According to literature, accounting majors have a low self-esteem and are low in social participation but are better at organization than other business majors. They also have higher honesty than marketing majors, but marketing majors have a higher flexibility, open-mindedness, are more spontaneous, and have more satisfaction when they create something new as cited by Pringle et al. (2010). They found that students who are getting their master's degree in accounting are more organized and systematic people who like working with numbers and data as cited by Pringle et al. (2010).

There has been some contradicting information for numerous studies. Literature found that accounting students are more introverted while, (Wolk & Cates, 2012) found that accounting majors are less likely to be innovative, while others found accounting majors to be more innovative and creative as cited by Pringle et al. (2010).

Pringle et al., (2010) found that different majors come with different social styles. A person with a management or marketing major is better at expressing themselves than an economics major. People with accounting, finance, or economics majors are more likely to be analytical and less likely to be people oriented than marketing and management majors as cited by Pringle (2010). Pringle et al. (2010) conducted a study and asked students to describe themselves. Students who were double majoring in marketing and management found themselves to be more creative than other majors, while accounting and finance majors found themselves to be more mathematically inclined than others. They were also asked about other majors on campus. Accounting students were seen as having the least amount of creativity while management and marketing majors were seen as being more of a team player and less likely to be good at math (Pringle et al., 2010).

Chapman et al., (2007) conducted a study which focused on gender and personality. The sample consisted of patients with ages ranging from 65 to 97 years. They conducted their research by using the NEO-FFI, which is a 60-item inventory that assesses the domains of the five-factor model. According to their findings, women scored higher on neuroticism and agreeableness (Chapman et al., 2007). They also scored higher for self-reproach, anxiety, and depression, which are subcomponents of neuroticism. Men scored higher on the subcomponents of openness to experience, this

included intellectual differences, whereas women scored higher on aesthetic interests. Further analysis indicated that men scored higher on activity (Chapman et al., 2007).

A study by Soto et al. (2011) was concerned with age differences in personality traits using the big five personality domains and facets (Soto et al., 2011). The ages ranged from 10 to 65 years, which included individuals at each year of age. The participants submitted their surveys via online, after completing the survey they were given feedback on their standings on each of the five domains. The tool used in the study consisted of The Big Five Inventory, this 44-item survey was rated on a scale from one (strongly disagree) to five (strongly agree) (Soto et al., 2011).

The means were calculated for each particular age and gender. For the domain of conscientiousness, the results showed very different age trends between late childhood and adolescence versus adulthood. The outcome of conscientiousness from late childhood to adolescence had a negative age trend. On the other hand, it showed a positive trend from adolescence through adulthood. Another result dealing with conscientiousness concluded that adult females were more conscientious than males. The results for agreeableness were somewhat similar to conscientiousness (Soto et al., 2011). There was a negative trend from late childhood to adolescence and a positive outcome from adolescence to adulthood. In the category neuroticism, females showed a positive trend into adolescence and adulthood. Through the early adulthood and middle age categories, women displayed a negative trend. Men demonstrated a slightly negative trend throughout late childhood and the Middle Ages. The results for extraversion proposed a negative trend from late childhood into adolescence, there was also a steady trend through emerging adulthood. The last finding from openness to experience indicated negative trends from late childhood to early adolescence and across adolescence for females. Positive trends were identified from emerging adulthood and through the middle-ages for both males and females (Soto et al., 2011).

Noftle & Robins (2007) conducted a study pertaining to personality and grade point average. The sample consisted of 10,497 undergraduate students with diverse backgrounds. The sample was split up into four groups, each using a different survey method. These methods included the Big Five Inventory, HEXACO-PI, NEO-FFI, and NEO-PI-R (Noftle & Robins, 2007). Each approach had a different

number of questions ranging from five to one on a scale of one to five. Conscientiousness was positively associated to college and high school grade point averages, according to their findings. The study found that students with higher grade point averages tend to have higher levels of conscientiousness. Openness to experience was weakly connected to the performance of students. In conclusion, according to this study, certain personality qualities are linked to academic achievement and grade point average (Noftle & Robins, 2007).

The studies presented in this literature offered a picture of the kind of results we predict. The group was prepared to see if our results differed from previous studies. We will further discuss the similarities and differences between our results and previous studies in the conclusion.

Methodology

There are two types of research designs: exploratory and conclusive (Hair & E. Anderson Rolph, 2010). The fundamental goal of exploratory research is to provide understanding about the phenomenon that the researchers are working on (Bertsch & Pham, 2012). In exploratory designs, the primary research question is vague, and the researchers seek to explore novel discovery (Zikmund & Babin, 2007). The research problem may be to discover new theory or to test existing theory in a new context

Instrumentation

The theory of the "Big Five" originated through the research of Fiske (1949) and later was expanded by other researchers including McCrae and Costa (1987). The original instrument used to measure the Big Five was called the Big Five Inventory (BFI) and consisted of 44 analytical questions. We borrowed a mini version of this instrument which measured the Big Five dimensions via 20 questions: four for each of the five dimensions. (for example, see Norman and Smith, 1967). Ten of the questions required reverse scoring. The scoring ranged from one (strongly disagree) to five (strongly agree).

Sampling

The sample many times is unrepresentative and is based on convenience. Convenience samples were drawn from students within the University campus from four different departments: Criminal Justice, Nursing, Accounting, and Elementary Education. Our sample targeted students in these departments that are currently taking 300 and 400-level

classes. The reason we excluded freshman classes from our study is because of the frequent changes in major that take place with younger students. Therefore, we limited our sampling to juniors and seniors. The surveys were handed out in classes with the approval of each professor. The results were then analyzed to find any similarities or differences to explore how the “Big Five” personality dimensions manifest within students across the chosen majors.

Data Collection and Analysis

There are certainly more strong strategies and investigations that can be attempted amid the examination (see, for case, [Bertsch & Pham, \(2012\)](#) be that as it may, our instrument is borrowed from a well-used and well archived source where legitimacy and unwavering quality have been completely confirmed. We began our analysis by entering all of the survey data into an Excel spreadsheet. Demographic information included: grade point average, student’s current academic year, childhood interests, credit hours currently enrolled in, years at the University, years in major, age, gender, and their respective major(s).

We began our analysis by following the advice in the literature relative to “data scrubbing” (e.g., the process is to eliminate outliers and adjudicate any missing responses). An outlier is an observation that lies an abnormal distance from other values in a random sample from a population ([Bertsch & Pham, 2012](#)). The rule of thumb for an outlier is any data more than three standard deviations above or below the averaged data ([Osborne et al., 2004](#)). There were two outliers found within our raw data, which were eliminated. The next step was to see if there was any data missing from the survey questions presented in the sample. Missing data can be caused by numerous reasons, for example, a person may not interpret the question correctly or simply did not want to give a response. The idea of substituting a mean for

the missing data is known as mean substitution. We employed mean substitution for only those survey items that measured latent variables (see [Bertsch & Pham, 2012](#) for a discussion on latent variables). We then calculated averages for each of the Big Five variables in order to perform t-test analyses. A t-test determines if there are any statistical differences between the means of two groups. We were then able to compare responses across the various demographic categorical questions.

Gender

The results indicate there were three different personality dimensions that had significant differences between males and females. With a mean score of 3.96, females were significantly more conscientious compared to males (m= 3.43) meaning that females in our sample tend to be more organized and thorough. This difference was significant at $p < 0.05$. The results also exhibited that women scored significantly higher in agreeableness and neuroticism which means they are more trusting and helpful, along with more feelings of anxiety and self-consciousness traits. Females mean score for agreeableness was 4.37, whereas males scored 3.97($p < 0.01$). The neuroticism dimension mean score for females was 2.40, compared to the males’ score of 2.03 and was significant at $p < 0.05$. As for extraversion and openness to experience, there were no significant difference between males and females.

Age

Analyzing the data based on age, the median age was calculated in order to split the data to compare the younger half of the sample to the older half. There was one outlier that was noticed which was a 55-year-old. We removed that respondent from the raw data for the age analysis. The median was calculated to be 21, which made the data split into $n=31$ participants whose ages ranged from 20-21 and $n=27$ individuals whose ages ranged from 22-39. There were no significant differences found

	Conscientiousness	Agreeableness	Neuroticism
Female	3.96	4.37	2.40
Male	3.43	3.97	2.03
Significance	$p<0.05$	$p<0.01$	$p<0.05$

**Table 1: Gender and Personality Majors
Source: Authors’ Calculation**

	Conscientiousness	Neuroticism
GPA \leq 3.29	3.33	2.92
GPA \geq 3.30	3.66	3.23
Significance	$p<0.001$	$p<0.01$

Table 2: Age and Personality Majors

Source: Authors' Calculation

Accounting vs. Criminal Justice	(E): m(Accounting)=2.73 m(Criminal Justice)=3.60 *Significant at $p < 0.05$ (C): m(Accounting)=3.78 m(Criminal Justice)=3.62 No Significance (A): m(Accounting)=3.90 m(Criminal Justice)=4.18 *Significant at $p < 0.05$ (N): m(Accounting)=2.65 m(Criminal Justice)=1.92 *Significant at $p < 0.01$ (O): m(Accounting)=3.08 m(Criminal Justice)=3.62 *Significant at $p < 0.05$
Accounting vs. Elementary Education	(E): m(Accounting)=2.73 m(Elementary Ed.)=3.65 *Significant at $p < 0.01$ (C): m(Accounting)=3.78 m(Elementary Ed.)=3.92 No Significance (A): m(Accounting)=3.90 m(Elementary Ed.)=4.48 *Significant at $p < 0.01$ (N): m(Accounting)=2.65 m(Elementary Ed.)=2.45 No Significance (O): m(Accounting)=3.08 m(Elementary Ed.)=3.62 *Significant at $p < 0.01$
Accounting vs. Nursing	(E): m(Accounting)=2.73 m(Nursing)=3.3 No Significance (C): m(Accounting)=3.78 m(Nursing)=3.98 No Significance (A): m(Accounting)=3.90 m(Nursing)=4.50 *Significant at $p < 0.001$ (N): m(Accounting)=2.65 m(Nursing)=2.22 No Significance (O): m(Accounting)=3.08 m(Nursing)=3.42 No Significance
Criminal Justice vs. Elementary Education	(E): m(Criminal Justice)=3.60 m(Elementary Ed.)=3.65 No Significance (C): m(Criminal Justice)=3.62 m(Elementary Ed.)=3.93 No Significance (A): m(Criminal Justice)=4.18 m(Elementary Ed.)=4.48 No Significance (N): m(Criminal Justice)=1.92 m(Elementary Ed.)=2.45 *Significant at $p < 0.05$

	(O): m(Criminal Justice)=3.62 m(Elementary Ed.)=3.62 No Significance
Criminal Justice vs. Nursing	(E): m(Criminal Justice)=3.60 m(Nursing)=3.3 No Significance (C): m(Criminal Justice)=3.62 m(Nursing)=3.99 No Significance (A): m(Criminal Justice)=4.18 m(Nursing)=4.50 *Significant at $p < 0.05$ (N): m(Criminal Justice)=1.92 m(Nursing)=2.22 No Significance (O): m(Criminal Justice)=3.62 m(Nursing)=3.42 No Significance
Nursing vs. Elementary Education	(E): m(Nursing)=3.30 m(Elementary Ed.)=3.65 No Significance (C): m(Nursing)=3.98 m(Elementary Ed.)=3.92 No Significance (A): m(Nursing)=4.50 m(Elementary Ed.)=4.48 No Significance (N): m(Nursing)=2.22 m(Elementary Ed.)=2.45 No Significance (O): m(Nursing)=3.42 m(Elementary Ed.)=3.62 No Significance

**Table 3: T-tests by Personality Majors (E=Extroversion, C=Conscientiousness, A=Agreeableness, N=Neuroticism, & O=Openness to Experience) (m=mean)
Source: Authors' Calculation**

between by age for university students in either extraversion, conscientiousness, agreeableness, neuroticism, or openness to experience.

Years at the university

Using the demographic question, “How many years have you been studying here at this university?”, responses ranged from 0.5-6 years. The median for this range of data was 3 years; therefore, the data was split into two categories. The first category ranged from zero (0) to three (3) years and the second category ranged from three years and above. We found that students that were a part of the lower portion of data (< 3 years attended at the university) scored a 4.22 mean for being more agreeable than the students who attended the university for 3.5-6 years, scoring a 4.11 mean. The difference was significant at $p < 0.05$. As for the other four dimensions on personality (conscientiousness,

extraversion, neuroticism, and openness to experience), there were no other significant differences between students who attended the university for 0.5-3 years and students who attended for 3.5-6 years.

Years in Major

We included a demographic question that measured the number of years the respondent had been studying within their declared major. This data also ranged from 0.5-6 years. The median for this category was two (2.0) which resulted in a bifurcated data set whereby one group included those who had 0.5-2 years within their declared major and the second group had 2.5-6 years in major. We found that no significant differences between students who have been studying their major for 0.5-2 years and students who have been enrolled in their major for 2.5-6 years.

GPA

The median grade point average was 3.30, which is where the data was split. There was no significant difference between student's grade point averages being higher or lower than a 3.30 when it comes to extroversion, agreeableness, and openness to experience. Students who have a 3.29 or less had a mean score of 3.33 are significantly less conscientious than students with a grade point average greater than 3.30 who had a mean score of 3.66; this difference was significant at $p < 0.001$. Students with a grade point average greater than 3.30 were significantly more neurotic than students with a grade point average less than 3.29, with a significant difference of $p < 0.01$.

Accounting and Criminal Justice Majors

A two sample T-test was also performed comparing the Big Five Personality traits and major choice. The results for accounting majors versus criminal justice majors indicated that 4 out of 5 of the Big Five Personality traits were significant. With a mean score of 3.60, criminal justice majors are likely to be more extroverted compared to accounting majors who averaged 2.73. This difference was significant at $p < 0.05$. There was no significance found between accounting majors versus criminal justice majors in the category of conscientiousness. On the other hand, criminal justice majors (mean=4.18) were found to be more agreeable than accounting majors (mean=3.90), with a significance level of $p < 0.05$. Another finding between accounting versus criminal justice majors indicated that accounting majors (mean=2.65) are more likely to be neurotic than criminal justice majors (mean=1.92) at $p < 0.01$. The last finding between these particular majors found that criminal justice majors

(mean=3.62) are more open to experience than accounting majors (mean=3.08), which was significant at $p < 0.05$.

Accounting and Elementary Education Majors

The next comparison between accounting majors and elementary education majors indicated that elementary education majors (mean 3.65) are likely to be more extroverted than accounting majors (mean=3.62) at $p < 0.05$. There was no significance found between elementary education and accounting majors in conscientiousness. Elementary education majors (mean=4.48) were found to be more agreeable than accounting majors (mean=3.90). This difference was significant at $p < 0.05$. There was no level of significance found with neuroticism and elementary education versus accounting majors. At $p < 0.01$, elementary education majors (mean=3.62) were found to be more open to experience than accounting majors (mean=3.08).

Accounting and Nursing Majors

The results for accounting majors versus nursing majors indicated that only 1 of the Big Five Personality traits was significant. There was no significance found between accounting and nursing majors in extroversion, conscientiousness, neuroticism, and openness to experience. The only finding between accounting majors and nursing majors indicated that nursing majors (mean=4.50) are likely to be more agreeable than accounting majors (mean=3.90) at a significance level of $p < 0.001$.

Criminal Justice and Elementary Education Majors

When comparing criminal justice majors and

	Neuroticism
15 credit hours or less	2.94
16 credit hours or more	3.11
Significance	$p < 0.05$

Table 4: Credits and Personality Majors
Source: Authors' Calculation

	Openness to new Experience	Extroversion
Childhood interest = Y	3.10	3.60
Childhood interest = N	2.72	3.04
Significance	$p < 0.01$	$p < 0.01$

Table 5: Childhood interest and Personality Majors
Source: Authors' Calculation

	Agreeableness
Seniors	3.81
Juniors & Sophomores	4.29
Significance	p<0.001

Table 6: College year and Personality Majors
Source: Authors' Calculation

elementary education majors there was also only 1 personality trait that was significant. Our finding between criminal justice majors versus elementary education majors indicated that elementary education majors (mean=2.45) are likely to be more neurotic than criminal justice majors (mean=1.92). This difference was significant at $p<0.05$.

Criminal Justice and Nursing Majors

The next comparison performed was between criminal justice majors and nursing majors. Again, there was only one finding of significance between these two particular majors. Nursing majors (mean=4.50) were found to be more agreeable than criminal justice majors (mean=4.18) at $p<0.05$. There was no significance found between criminal justice majors and nursing majors in extroversion, conscientiousness, neuroticism, and openness to experience.

Nursing and Elementary Education Majors

The last comparison examined was between nursing majors and elementary education majors. There were no levels of significance found in any of the Big Five Personality categories.

Table 3 represents the findings between the big five personality dimensions and major. For example, accounting majors were found to be more neurotic than criminal justice majors; elementary education majors were found to be more extroverted than accounting majors; and nursing students were found to be more agreeable than criminal justice and accounting majors.

Total Credits Carried

Analyzing the data by total number of credit hours enrolled, there was one outlier found. Students who are currently taking more than 16 credits in the current semester were found to be more neurotic with a mean score of 3.11, than students who are taking 15 or less with a score 2.94. The difference was significant at $p<0.05$. The data showed no significant difference between students who are currently taking more than 16 credits and lower than 15 credits when it came to agreeableness, openness to

experience, extroversion, and conscientiousness.

Childhood Interests

Students showing childhood interest in their major were more open to new experience, with a mean score of 3.10 than students who showed no interest in their major with a score of 2.72; the difference was significant at $p<0.01$. When it comes to extroversion, students showing no childhood interest in their major with a mean score of 3.04 were less extroverted than students who did show childhood interest in their major with mean score of 3.60; the difference was significant at $p<0.05$. There was no significant difference between students who showed childhood interest and students who showed no childhood interest when it came to conscientiousness, agreeableness, and neuroticism.

College Year

Seniors compared to juniors and sophomores, showed no significant difference in openness to experience, extroversion, neuroticism, and conscientiousness. They showed significant difference when it came to agreeableness. Seniors with a mean score of 3.81 were less agreeable than juniors and sophomores who scored a mean of 4.29, with significant difference at $p<0.001$.

Summary of Analysis

The following results are the significant conclusions we draw from the analysis:

- Females tend to be more conscientious, agreeable, and neurotic than males.
- Students who have attended the university for 0.5-3 years tend to be more agreeable than students who have attended the university for 3.5-6 years.
- Students whose GPAs are 3.29 or less were found to be less conscientious than students with a GPA of 3.30 or higher.
- Criminal justice majors are likely to be more extroverted, agreeable, and open to new experience than accounting majors.
- Accounting majors tend to be more neurotic than criminal justice majors.

- Elementary education majors are more extroverted, agreeable, and open to new experience than accounting majors.
- Nursing majors were found to be more agreeable than accounting majors.
- Elementary education majors also tend to be more neurotic than criminal justice majors.
- Nursing majors are more agreeable than criminal justice majors.
- Students currently taking more than 16 credits this semester are more neurotic than students who are taking 15 or less credits.
- Students showing childhood interest are more open to new experience than students who showed no childhood interest.
- Students showing no childhood interest were found to be less extroverted than students showing childhood interest.

Seniors are less agreeable than juniors and sophomores

Discussion

The analysis of the data has shown a number of diverse findings with regards to the Big Five Personality Dimensions and choice of major. The categories that were focused on included grade point average, student's current year, childhood interests, credits currently enrolled in, years at Minot State University, years in major, age, gender, and correlation between the four majors chosen. In the analysis section there were a number of significant differences reported in many of the categories.

Females were found to be more conscientious, agreeable, and neurotic than males. According to [Chapman et al. \(2007\)](#), females were also found to score higher in neuroticism and agreeableness than males. They reported that females were leaning more towards the subcomponents of both agreeableness and neuroticism, like pro-social and non-antagonistic orientations, anxiety, and depression. Their results also stated that men were more open to new experiences and more extraverted, which we did not experience in our data. The data revealed no significant difference between males and females in the openness to experience or extraversion dimension. This is in line with research investigating the gender differences of the five-factor model across 105 countries also found significant difference in agreeableness between different genders.

[Soto et al., \(2011\)](#) that was previously viewed,

shared similar results to ours. Out of their 1.2-million-person sample, they found that females also had a more positive trend in higher conscientiousness, agreeableness, and neuroticism than men. Trends in openness to experience were also high with both men and women but there was no significance detected. Their study also found no major differences in extraversion as well. For the most part, the results from the university students were very similar to previous studies done by various professionals for the gender aspect. There were very few differences that were noticed.

Age did not exhibit a correlation to any of the Big Five Personality Dimensions. The only detail noticed was a very slight difference in agreeableness but nothing significant. It was almost shocking to see that there was no significant difference between the different age categories at all because one would think that different age groups would have at least a couple different personality characteristics due to different generation likes and dislikes and the maturing aspect of aging.

[Soto et al., \(2011\)](#) found a couple different results relating to age and the personality dimensions. The outcome of conscientiousness from late childhood to adolescence had a negative age trend. On the other hand, it showed a positive trend from adolescence through adulthood. The domain for agreeableness had very similar results to conscientiousness. For neuroticism, females showed a positive trend into adolescence and adulthood. Through the early adulthood and middle age categories, women displayed a negative trend. Men demonstrated a slightly negative trend throughout late childhood and the Middle Ages. Positive trends were identified from emerging adulthood and through the middle-ages for openness to experience; also, extraversion was found to have a steady trend through emerging adulthood. The reason they found different personality traits for different age groups could have been due to their large sample group. They sampled over a million people, whereas our university sample consisted of only 65 students.

The only major finding in the category labeled number of years attended at Minot State University indicated that students who have attended the university for 0.5 to 3 years were more agreeable than students who have attended 3.5 to 6 years. As for the number of years a student has been enlisted in their particular field of study, there were no significant differences found.

The results for grade point average suggests that those students with a grade point average of 3.29 or lower were less conscientious than students with a grade point average greater than 3.3. Students with a grade point average greater than 3.3 were also more neurotic than students with a 3.29 or lower. [Noftle & Robins, \(2007\)](#) also found that higher grade point average correlates with high levels of conscientiousness. Their study also showed no relation with openness to experience when compared to student performance. This finding was similar to the Minot State University performance levels of students.

When comparing results by major there were a number of findings proposed. Criminal justice majors were more extroverted, agreeable, and open to new experiences. On the other hand, accounting majors were found to be more neurotic than criminal justice majors. A reason for this could be because accounts tend to have very strict deadlines dealing with tedious work which has to be precise and error free. People with high levels of neuroticism are found to be more anxious when dealing with the stresses of everyday life. When comparing accounting to elementary education, elementary education majors were more extroverted, agreeable, and open to experience. The only finding between accounting majors and nursing majors signified that nursing majors were more agreeable than students in accounting. Elementary education compared to criminal justice had only one major difference as well. Elementary education students were noticed to be significantly more neurotic than criminal justice majors. The only measured difference for criminal justice and nursing was that nursing students were more agreeable than criminal justice students.

Table 7 represents the “Big Five” by major. The dimensions listed under a specific major indicate that they scored significantly higher. For example, students with a criminal justice major are shown to be more extroverted, agreeable, and more open to new experiences than an accounting major; accounting majors are more neurotic than criminal justice majors.

The results for the credits portion indicated that students who are taking more than 16 credits this semester were found to be more neurotic than students taking 15 or less credits. Students showing childhood interests were found to be more open to new experiences than students showing no interests as a child. In contrast,

students who displayed no childhood interests in their major were less extraverted than students who had previous interest. And finally, the last category analyzed was the current year of the students. The data displayed that senior are less agreeable than juniors and sophomores.

University students demonstrated similar Big Five Personality patterns when compared to previous studies performed by professionals. The study also presented a couple new findings that were unique to the five-factor model regarding choice of major. In conclusion, the hope of the authors is to help accommodate new or upcoming college students in selecting a major that best fits their personality based on the Big Five Personality Dimensions.

Implications

Our results offer insights on the association of personality traits towards the student’s choice of major. The results of this study can be taken as reference for institutes of higher learnings to select their prospective students and also for students to choose their majors of certain universities. The related governmental and university authorities could benefit from this study to devise policies and mechanisms to customize the choices of majors according to the differences in the personality traits. This study also offers opportunities of avenue for future more subsequent in-depth research to be conducted in the phenomenon of personality traits and decision over choices. This is particularly important if the future researchers are to research and general findings beyond the current parameters of this study. There are gaps in the literature this study might not be able to address due to certain limitations, future researchers interested in this area may continue with the contribution to the body of knowledge. [Matz & Harari \(2021\)](#) conducted intriguing research recently, and proved that the Big five personality traits are related to the places people visited daily.

Conclusion

This study explored how the five personality dimensions, i.e., conscientiousness, agreeableness, neuroticism, openness to experience, and extraversion affect university students’ choice of major. The analysis has shown diverse findings. Females were found to be more conscientious, agreeable, and neurotic than males.

Accounting -More Neurotic	VS.	Criminal Justice -More Extroverted -More Agreeable -More Open to new experiences
Accounting -No significant difference	VS.	Elementary Education -More Extroverted -More Agreeable -More Open to new experiences
Accounting -No significant difference	VS.	Nursing -More Agreeable
Criminal Justice -No significant difference	VS.	Elementary Education -More Neurotic
Criminal Justice -No significant difference	VS.	Nursing -More Agreeable
Nursing -No significant difference	VS.	Elementary Education -No significant difference

Table 7: “Big Five” by Personality Major
Source: Authors’ Calculation

However, there is not significant difference between males and females in the openness to experience or extraversion dimension and nor significant difference between various age categories. Students possessing different academic performance also demonstrated different personality traits. Students who are taking more than credits were found to be more neurotic. Students showing childhood interests were found to be more open to new experiences than students showing no interests as a child. Students of various majors also demonstrated different level of personality traits from others. This study has provided opportunities of avenue for future more subsequent in-depth research to be conducted in the phenomenon of personality traits and decision over choices. This is particularly important if the future researchers are to research and general findings beyond the current parameters of this study.

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