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Correlating Personality Types and Educational Attainment

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Walden University
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Abstract

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MBA, New York Institute of Technology, 2008

BS, Kaplan University, 2006

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Dissertation Submitted in Partial Fulfillment

of the Requirements for the Degree of

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Abstract

There was a gap in the current literature examining degree attainment, in that there was no research found on personality type and the highest degree level someone attains. The goal of this study was to understand if there was a correlation to an individual's personality classification as determined by their Myers Briggs Personality Inventory (MBTI) and the highest education level they achieve for the 225 people in the entire sample and 95 in the subsample (participants raised in poverty). The MBTI's theoretical foundation is based upon Dr. Carl Jung's personality typology and was later expounded upon by the tool's creators. Eight Mann-Whitney U tests were conducted to address each of the null hypotheses for each question. The 8 research questions asked if there were higher levels of degree attainment for those with a particular preference within the trait dichotomies as measured by the MBTI. The research questions asked if individuals classified as introverts (I), intuitive (N), judging (J) and thinking (T) within both groups would have higher levels of degree attainment than those classified as: extroverted (E), sensing (S), perceiving (P) and feeling (F). There was a statistically significant relationship between being extraverted (E) versus introverted (I) and the highest educational level achieved in the subsample. This result was opposite of the predicted relationship for this hypothesis. That is, individuals classified as extroverts (E) had higher degree attainment levels than those classified as introverts (I). None of the analysis for the other hypotheses were statistically significant. The social change implications may include strategies to develop marketing and recruitment programs that appeal to extraverts, to increase the likelihood that they will choose to attend their institutions.

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My study had several limitations. First the study was correlational, therefore no causal

conclusions can be made, and there may be a number of explanations consistent with the

findings. Another was the sources from which I recruited study participants. The study

participants were enlisted by posts featured on three groups on the LinkedIn® website who are

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Chapter 1: Introduction to the Study

Introduction

Researchers have hypothesized that higher education improves lives, makes the economy more efficient, and contributes to a more just society (Baum, Ma, & Payea, 2013). Postsecondary education is also correlated to individuals surpassing the socioeconomic status of their parents. Moreover, evidence suggests that without a college education, those born into poverty are more likely to remain there in adulthood (Ratcliffe, McKernan, & Urban, 2012).

With such potential benefits to obtaining a secondary education, much of the existing data on educational attainment indicates that despite greater access to higher education (National Center for Education Statistics [NCES], 2015) graduation rates among some groups in the United States have seen discouragingly slow growth rates, particularly at the level of master's or professional degrees. For example, according to the NCES (2015), between 1990 and 2014, the ratio of individuals ranging in age from 25 to 29 years old who received a bachelor's degree or beyond grew amongst Caucasians, African Americans, Hispanics and Asians/ Pacific Islanders. However, these growth ratios may be considered by some to be nominal. With the largest percentage of growth occurring amongst Asians and Pacific/Islanders at a rate of 18 %. This same marginal increase was also seen in the same age range and time period who were awarded masters or professional degrees. With Pacific Islanders also ranking highest in this category as having a growth rate of 7%.

Researchers across a range of disciplines have attempted to provide possible explanations for this sluggish growth in postsecondary educational attainment. Researchers have additionally revealed correlations between an individual's general educational success (and particularly college degree attainment) and factors such as socioeconomic background, first-generation student status, age, financial aid availability, major selection, sex, family dynamics, and personality type.

Although I performed a thorough examination of the existing body of psychological research it failed to reveal the existence of any studies that focus specifically on a possible correlation between personality classifications as measured by the Meyers-Briggs Type Inventory (MBTI) and the highest level of secondary education an individual achieves. This study attempted to contribute to closing this gap in psychological research.

It is my hope that this study contributes to the existing body of research regarding a hypothesized correlation between personality type as measured by the MBTI and the highest degree an individual achieves may also provide an opportunity for positive social change via the design of college recruiting marketing campaigns.

In this chapter I will provide an overview of the history and foundations of related research. Next, I explain the identified problem related to the study. In the subsequent sections of this chapter. I will also provide information regarding the overall nature of the study, study hypotheses, the research approach, possible limitations, and the study's purpose and implications for social change. Finally, I provided a summary of the ideas and discussion in this chapter.

Background of the Study

Many high-paying jobs require a college degree (Mitra, 2011). Thus, access to college and college-student retention are important areas of focus when considering education and its impact on wellbeing. Numerous researchers have documented persistent gaps between educational attainment and education access in the United States (Mitra, 2011).

To increase college completion, specifically degree attainment, much of this research has been conducted by college and universities. As noted earlier; however, in a search of the literature I failed to find existing studies that focus on degree-level attainment. Therefore, it has been necessary to examine the most significantly related research: research on college student retention as well as retention research that included the MBTI in its methodology.

Many institutions of higher learning employ standardized tests to help predict academic success. However, some researchers in this area argue that these measurements are less accurate than claimed in predicting college degree completion. Kobrin, Patterson, Shaw, Mattern, and Barbuti, (2008) stated that regular measurements like the SAT and ACT are tests of a student's highest mark of performance and will not accurately portray a student's normal academic standards. In contrast, personality has been purported to accurately predict academic outcomes (Poropat, 2009). Conscientiousness has been repeatedly reported as the personality trait that has the most significant positive correlation to high GPA scores and high college completion rates (Noftle & Robins, 2007).

A significant body of research examining possible correlations of personality types on college retention, degree completion, and major selection does exist. For example, Styron (2010) reported that students with sensing (S) personality types in his retention study were most likely to persist until graduation as compared to students with an intuitive (N) personality type.

DiRienzo, Das, Synn, Kitts, and McGrath (2010) examined the link between students' major selection and grade performance across all offered disciplines at a private university. The researchers found that participants with a judging (J) personality type tended to have a higher GPA than participants with a perceiving (P) classification.

Researchers have indicated significant data measuring personality types as well as family income level and their correlation with college success, more specifically college completion. The available data from previous studies documents several variables additional to the MBTI measurement, including gender, GPA, student type (traditional or nontraditional), ACT scores, race, and academic major. Researchers have not yet followed any population to the point of college completion in order to measure the highest level of education obtained. More specifically, the present research explores the personality classifications as measured by MBTI, specifically seeking to identify any correlation between personality classifications and the highest academic degree achieved by study participants. In this way it helps to address the gap in this area of research.

Problem Statement

Researchers across disciplines have examined the reasons why an individual either drops out of an institution of higher learning or continues to degree completion.

Some of the most important findings from these efforts have been successfully employed by institutions to help increase graduation rates (Bailey & Danarski, 2011).

Though this research includes some studies that examine possible correlations between personality types as measured by the MBTI and completion or withdrawal, these do not specifically examine what the highest degree achieved is among these student persisters. Hence this study hopes to advance the body of current retention and persistence research.

Additionally, this area of study includes data on graduation rates among those raised in poverty as opposed to those who were not (Woosley & Shepler, 2011). Like the above-mentioned research, this work too fails to specifically examine the highest degree level obtained in the latter population. Therefore, a separate analysis of degree levels attained by participants raised in poverty was conducted to further contribute to retention rates among the economically disadvantaged (Ratcliffe, 2012).

Purpose of Study, Research Questions, and Hypotheses

In this quantitative study I attempted to identify whether certain personality types are correlated with the highest education level an individual achieves, utilizing the MBTI (1998). An additional analysis was also conducted for the subset of participants from a generational poverty background, as available research results indicate that these individuals have lower graduation rates than those not from such a background (Woosley & Shepler, 2011). The design of the study involved one nominal-level variable with two

groups and an ordinal-level variable. The research questions, hypotheses, and analysis were all consistent with the scale of measurement.

Additionally, I addressed the prevalence of personality types at each educational level. The MBTI as well as the degree level a participant achieves (no degree, certification, associate's degree, bachelor's degree, master's degree, or doctoral or professional degree) served as the variables.

The research questions in this study consisted of a single practical question and corresponding demographic information along with a series of theoretical questions; these theoretical questions focused on the entire sample as well as specifically on participants from an impoverished background. These questions are presented below:

Practical Question

What are the most frequently seen personality types at each educational level (no college degree, certification, associate's degree, bachelor's degree, master's degree, or doctoral or professional degree)?

Research Questions, Research Hypotheses, and Null Hypothesis

Research question #1) Do people classified as extraverts (E) have higher or lower educational levels than people who are classified as introverts (I)?

Research hypothesis #1) Individuals classified as introverts (I) will have higher levels of degree attainment than those classified as extraverts (E).

Null hypothesis #1) There is no difference between degree levels attained by participants classified as introverts (I) and by those participants classified as extraverts (E).

Research question #2) Do people from impoverished backgrounds classified as extraverts (E) have higher or lower educational levels than people who are classified as introverts (I)?

Research hypothesis #2) Individuals from impoverished backgrounds classified as introverts (I) will have higher levels of degree attainment than those classified as extraverts (E).

Null hypothesis #2) There is no difference between degree levels attained by participants from impoverished backgrounds classified as extraverts (E) and by those classified as introverts (I).

Research question #3) Do people who are classified as sensing (S) have higher or lower educational levels than people who are classified as intuitive (N)?

Research hypothesis #3) Individuals classified as intuitive (N) will have higher levels of degree attainment than those classified as sensing (S).

Null hypothesis # 3) There is no difference between degree levels attained by participants classified as intuitive (N) and by those classified as sensing (S).

Research question #4) Do people from impoverished backgrounds who are classified as sensing (S) have higher or lower educational levels than people who are classified as intuitive (N)?

Research hypothesis # 4) Individuals from impoverished backgrounds classified as intuitive (N) will have higher levels of degree attainment than those classified as sensing (S).

Null hypothesis # 4) There is no difference between degree levels attained by participants from impoverished backgrounds classified as intuitive (N) and by those classified as sensing (S).

Research question #5) Do people who are classified as judging (J) have higher or lower educational levels than people who are classified as perceiving (P)?

Research hypothesis # 5) Individuals classified as judging (J) will have higher levels of degree attainment than those classified as perceiving (P).

Null hypothesis # 5) There is no difference between degree levels attained by participants classified as judging (J) as compared to those attained by those classified as perceiving (P).

Research question #6) Do people from impoverished backgrounds who are classified as judging (J) have higher or lower educational levels than people who are classified as perceiving (P)?

Research hypothesis #6) Individuals from impoverished backgrounds classified as judging (J) will have higher levels of degree attainment than those classified as perceiving (P).

Null Hypothesis # 6) There is no difference between degree levels attained by participants from impoverished backgrounds classified as judging (J) and by those classified as perceiving (P).

Research question #7) Do people who are classified as feeling (F) have higher or lower educational levels than people who are classified as thinking (T)?

Research hypothesis # 7) Individuals classified as thinking (T) will have higher levels of degree attainment than those classified as feeling (F).

Null hypothesis # 7) There is no difference between degree levels attained by participants classified a thinking (T) and those classified as feeling (F).

Research question #8) Do people from impoverished backgrounds who are classified as feeling (F) have higher or lower educational levels than people who are classified as thinking (T)?

Research Hypothesis #8) Individuals from impoverished backgrounds classified as thinking (T) will have higher levels of degree attainment levels than those classified as feeling (F).

Null hypothesis # 8) There is no difference between degree levels attained by participants from impoverished backgrounds classified as thinking (T) and those classified as feeling (F).

Theoretical Framework

The most prominent research in the field of personality typing was pioneered by Dr. Carl Jung. Jung's main premise divided personalities into two categories: introverted (I), meaning focused internally; or extraverted (E), defined as concentrated on external surroundings. From these categorizations, Jung further divided personality typing into functional divisions with four subsets. These additional four categorizations are as follows: sensing (S), in which an individual employs the five senses to learn, versus

intuition (N), in which a person learns through observation; and thinking (T), in which a person makes decisions using logic and adjusted values, versus feeling (F), in which emotionally driven spontaneity is an individuals decision-making tendency. Although Jung's work was considered controversial by many in the psychological community, it was the complicated nature of the assessment that many found difficult to duplicate in regular psychological practice (Briggs & Meyers, 1998). Katherine Briggs studied Carl Jung's initial theory and later introduced it to her daughter, Isabel Myers. Together the women developed what is known as the MBTI (Briggs & Meyers, 1998).

The system uses a four-letter code to label the functions most dominant in an individual. As with Jung's original classifications, the MBTI's primary division was whether an individual's dominant orientation was introverted or extraverted. Accordingly, the MBTI contains 16 personality combinations of classification in all (Briggs & Meyers, 1998). This theory, as well as the rationale for said hypotheses, which I explore in further detail in Chapter 2 of this dissertation.

The second prominent theory used as background for this study was Hans Eysenck's theory of arousal. Eysenck's (1990) theory is an explanation of personality preference based on biological foundations. According to Eysenck, extraverts (E) experience lower levels of arousal through the ascending reticular activating system (ARAS) than do introverts. It is this activity in the ARAS that results in higher levels of cortical arousal in the cerebral cortex for introverts (I). The PEN model is a personality theory containing three personality dimensions-based personality temperaments and emotion: psychoticism, extraversion, and neuroticism (Eysenck & Eysenck, 2013). The

Yerkes-Dodson law, which is defined as the concept in the PEN model, states that "some intermediate level of arousal is optimal for performance" (Eysenck & Eysenck, 1985, p. 199). This cortical arousal increases some learning styles; for instance, introverts should learn elementary tasks with less difficulty than extraverts (E) (Rosander,2013). Many theorists have argued that academic task difficulty can be correlated to increased academic study level (Grimes, 1997). Hence, I concluded that it is reasonable to assume that extraverts (E) would be less likely to experience high levels of cortical arousal when engaged in the tasks necessary to complete an advanced degree, and thus may experience higher levels of boredom. As this type of disinterest or lack of stimulation has been correlated to greater rates of college attrition, I hypothesized that extraverts (E) may have a greater propensity to leave college before earning a degree or to fail to achieve a professional degree than introverts (I) (Tinto, 1993).

Nature of the Study

This quantitative study was completed using the MBTI and a supplementary socioeconomic background survey to explore the hypothesized correlation of personality type with the highest degree an individual achieves. In addition, in order to measure any hypothesized correlations between personality types and the highest degree achieved by individuals who have been raised in an impoverished environment, separate analysis for these participants was conducted. Participants were recruited via post announcement from three groups featured on the LinkedIn business networking service website. Kaplan University (student body) members at the time of posting, the Walden University Job Seekers group with 1,073 members at the time of posting, and the Psychology Student

network Group with 72,152 members at the time of posting. The author is a member of said groups as well as LinkedIn ®. As this organization allows for post and requests from group members if said requests are in accordance with the "group rules". Researching the group rules for the aforementioned groups I found her requests were in accordance with each set of group rules. Further I have also participated in similar requests for research participations from other group members. As you must be a member of LinkedIn to access said groups, copies of these recruitment announcements have been included at the end of Chapter 3 in the Appendix.

Analyses were conducted using SPSS software. A two-tailed Mann-Whitney U test, was used to address the hypotheses. Finally, the same analysis listed above was conducted using only the results from those participants from impoverished backgrounds.

Definition of Terms

The following definitions of terms provide a context for this study:

Associate degree: A degree bestowed upon completion of a prebaccalaureate educational program, normally requiring full-time study for a period of two years.

Bachelor's degree: A degree bestowed upon an individual after successfully satisfying the requirements of a baccalaureate program, typically calling for full-time study for a period of four years*.*

Consumer Price Index for All Urban Consumers (CPI-U): A gauge that attempts to measure fluctuations in the cost of merchandise and services bought by *consumers* residing in an *urban* environment.

Doctoral degree: A degree carrying the title of Doctor awarded for successful completion within a field of knowledge; this is the highest academic degree granted in any field of study.

Food stamp: A voucher issued by the government to those with low income, exchangeable in stores for food via the SNAP (Supplemental Nutritional Aid Program).

Master's degree: A degree bestowed to an individual upon completion of an educational sequence in most instances requiring one to two years of full-time higher education beyond a bachelor's degree.

Meyer Briggs Type Indicator: A reflective self-report questionnaire aimed at identifying psychological inclinations in how an individual perceives the world and makes judgments.

Postsecondary education: Formal education beyond the level of high school.

Poverty thresholds: The dollar amounts used to determine poverty status, based on both family size and combined incomes of all members living in the same household, and adjusted annually using the *Consumer Price Index for All Urban Consumers (CPI-U).*

Socioeconomic status (SES): A compound monetary and sociological gauge of an individual's employment experience as well as individual or family's economic and social position relative to the income, employment, and educational background of others.

Undergraduate certificate: A formal award that requires completion of an organized program of study. Coursework typically addresses new knowledge or practice within a particular skilled area of occupation.

Assumptions

Creswell (2003) stated that researchers may report information obtained from participants that want their information to be shared. In this study I assumed that the participants completed with integrity both the MBTI and the supplementary questions regarding their childhood household socioeconomic status and highest level of education. Respondents' claims regarding the level of educational attainment were not confirmed with any institution of higher education.

Scope and Delimitations

As with any research, there were limitations when interpreting the study results. The following is a discussion of some of these issues. The findings of this study were limited to a specific population. As the population of this research was limited to participants recruited from three groups within the LinkedIn network though these groups have significant populations broad-scope generalizations may not be valid concerning other populations. In addition, multiple aspects of the demographics of the specific population examined within this study that may have exhibited a statistical bearing on the findings of this research. The number of participants in this study was a subgroup of larger groups consisting of individuals who are members of a professional network who voluntarily completed the MBTI. It is not clear whether members who chose not to complete the instrument are of a particular personality type, nor can any assumptions be made about those who chose not to complete the MBTI. The measurement of persistence was limited to degree level an individual may have completed. There are many legitimate reasons why a student might not complete a degree program, however, this study did not

address any of these possible additional factors. It is also not possible to decipher all variables that may have influenced student behavior related to attending college; this study did not attempt to identify them. Most significant when discussing the limitations and scope of this study is the fact that results from this study were limited in the generality of their findings.

Other Limitations

Participants were asked to recall if their childhood household was a recipient of the Food Stamps or SNAP program. The accuracy of this recollection was assumed to be correct. The participant's household SNAP participation was used as the sole indicator identifying those individuals who were raised in an impoverished household. Though this program is by no means the sole determinant of household income, it was necessary to select one definitive and easily recognizable measurement for the purposes of this study. Further, limitations were noted after the survey was completed, including participation volumes and other issues encountered after the data analysis. In addition, the correlations may be explained by other possible influences, and therefore causal conclusions were not be drawn from the results.

Finally, it is generally acknowledged that no personality remains fixed within a lifespan (VanRegenmorter,2004). Therefore, this study offers a limited view of personality and its ability to determine the highest degree an individual may have received.

Significance

There is an extensive body of research on personality and its correlation to college completion. This research has been used to develop programs, change college recruiting strategies, and develop new curricular approaches at some institutions of higher learning. However, a thorough examination of this current body of knowledge failed to reveal any existing studies that examine personality classifications as measured by the MBTI in relation the highest degree an individual achieves. Hence, I have attempted to help eliminate the gap in said research with this study.

It was the potential of this endeavor to help build on the existing knowledge base addressing educational attainment and may offer new insight into the personality type(s) of individuals who seem to achieve a degree level that inspired me to conduct this study. I further proposed that these results might offer information that may be useful in developing college recruiting and retention programs for institutions of higher learning. Moreover, researchers have identified correlations between major selection, learning style, personality, and college success. If this knowledge base is expanded and enriched, institutions of higher learning may be able to use the more complete information to design recruiting and academic degree programs that align with specific personality types.

For example, suppose the finding of the author's study and/or additional research in this area indicated that those with ISTJ classifications[1] are most likely to persevere until earning a bachelor's degree. In that case, colleges or universities wishing to attract

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[1] This classification and the other MBTI classifications are explained in Chapter 2.

students who will successfully complete their Bachelor's degree programs might develop

a marketing campaign that would appeal to this population in hopes they would be more

likely to attend their institution, as ISTJ individuals are described as thriving in

environments that are highly structured, organized, and academically challenging

(Briggs, & Myers, 1998) These institutions could employ a catchphrase such as " Smith

University, helping turn your commitment into achievement."

Summary

As discussed earlier in this chapter, there has been extensive research centering on

the correlation of personality types as defined by the MBTI and college completion.

However, the scope of this previous research does not include information about

personality preferences and the highest-level college degree an individual earns. In

addition, a considerable amount of this research does not include information on the

socioeconomic background of the study participants. Therefore, I undertook this study

that sought to discover if there is a correlation between personality type as measured by

the MBTI and the highest degree level an individual achieves.

In the spirit of academic research that contributes to positive social change, by

conducting this study it was my hope to examine the hypothesized notion that MBTI

personality type can be correlated to academic success and that the results of the study

can contribute to the current gap in this field of study. Further, by conducting a separate

analysis of the trends within the sample population that has been raised in poverty

attempted to illuminate the hypothesized correlation between MBTI personality type and

the highest degree an individual from an impoverished background achieves, as this

group has been found to have lower graduation rates as compared to their peers not from such a background. In next chapter, I will explore the current body of research in the area of college completion and the highest degree level an individual achieves.

Chapter 2: Literature Review

Introduction

Researchers have studied the prediction of college retention and the rate of degree completion within institutions of higher learning in the United States. This research spans over seventy years and contains several different models to explain why some students earn a college degree while others do not persist to graduation. Much of the research results were that college attrition has increased. Yet there seems to be no single socioeconomic factor or set of factors that could exclusively explain this phenomenon (Ishitani, 2003).

Habley and Clanahan (2004); Horn and Berger (2004) reported an increase in college enrollment; however, about a half a million of these students left college before earning a degree. An estimated two- thirds of these dropouts were enrolled in baccalaureate degree programs (Horn & Berger, 2004). Despite these figures, the number of first-generation students attempting to earn four-year degrees is likely to increase in the future (Soria & Stebleton, 2012). A mere 55.5% of college students entering in bachelor's programs in 2003 in United States graduated within six years (The National Center for Higher Education Management, 2004). Notably, some states within the United States reported graduation rates as low as 26.9% (see Figure 1., 2009 State ranking of graduation rates for the United States NCHEMS Information Center).

Many researchers have surmised that socioeconomic and cognitive factors are not the primary influence on college attrition. Rather, noncognitive and social factors such as personality type (as measured by the MBTI and other psychological tools) seem to be the

greatest predictor of college degree completion (Horn & Berger, 2004). Regrettably, most of the scholars in this area do not follow graduates to record the highest level each one achieves. Instead, most researchers focus on understanding only students enrolled in bachelor's degree programs.

Search Strategies

The research topic centered on the use of MBTI personality classifications to explore whether there was a correlation between an individual's MBTI classification and the highest degree level they achieve. Accordingly, multiple search phrases and individual words as well as several academic research databases were employed to find research from peer-reviewed scholarly articles. Through the Walden University library, the following databases were searched: Academic Search Complete, EBSCO, ERIC, Education Resource Complete, PsycINFO, PsycARTICLES, Sage journals, ProQuest Central, and Education Resource Complete 1973–present. The NCHEMS Information Center website was additionally very beneficial.

A full search using the following keywords and phrases and Boolean identifiers was performed in the above-mentioned databases: *College degree completion*, *Myers-Briggs Type Indicator and college degree*, *Myers-Briggs Type Indicator and college attrition*, *Myers-Briggs Type Indicator and college degree achieved*, *college completion*, *college attrition*, *college attrition and the MBTI*, *poverty and college degree*, *generational poverty and college*, *income and college degree earned*, *MBTI and highest degree achieved*, *personality and college degree*, *personality type and development of the MBTI*, *implications for MBTI and reliability* and *validity of the MBTI*.

Overview of the Chapter

As mentioned above, a thorough search of the literature regarding the role of personality (specifically as measured by the MBTI) failed to disclose the existence any research that concentrated on personality and its correlation with the highest-level degree an individual achieves. Hence this chapter will discuss the literature most relevant to foundation of the study: that is, personality as it relates to academic achievement, college attrition, and college persistence.

In the first section of this chapter I will discuss the theoretical foundations of this study. In the subsequent section I will summarize literature on the development, use, and validity of the MBTI. In the third section I will explore previous studies that center on the role of the MBTI classifications and their correlations with college attrition or with persevering to earn a college degree. The final section will contain a summary of these findings as well as the conclusions drawn from this information.

Theoretical Foundations

For almost a century, researchers have looked to personality variables in an effort to calculate academic achievement (O'Connor & Paunonen, 2007). Carl G. Jung's theory of personality typology has been one of the tools frequently employed in pursuit of understanding personality and motivation (Myer, 1985). Jung's major contribution to the study of psychology was in the area of adult development (Colarusso & Nemiroff, 2013). His principles emphasized that full personality development is completed in adulthood. Jung supported the idea that everyone has the capacity to make use of their entire personality.

It was this foundation created by Jung that was later expounded by Katharine Cook Briggs and her daughter Isabel Briggs Myers. The core of their theory is two types of mental functions, perception and judgment, the premise being that the perception and judgment functions signify an individual's mental preoccupations and consequently direct their behavior (Myers, 1980). These functions are also significant in understanding a persons preferred learning style and in turn level of academic achievement. Notably, Jung's theory correlates closely with studies that examine the characteristics of motivation and preferences in adult learning environments (Myers, 1980). As noted by Myers (1980) each combination creates a diverse type of personality, illustrated by the ethics, desires and external qualities that organically stem from the grouping.

As with Myers' as well as Jung's psychological types, Bargar and Hoover (2012) developed multiple associations between teaching and learning. They argued that type preference predicted students' partiality to instructional alternatives. For example, their findings indicated sensing types (S) prefer learning activities that include hands-on experience, defined goals, and practical implications. By contrast, they found that intuitive types (N) prefer an open instructional environment and loose abstract concepts. These scientists have concluded that there is a connection between type and academic interest. For example, thinking types (T) were found to have concentrated on science and technical areas; feeling types (F) are more likely to participate in the arts and humanities.

Jensen and DiTiberio (1984) proposed that Jung's work in *Psychological Types* (1923), in combination with Myers' *Gifts Differing* (1980), provided a theoretical framework that can be associated with learning styles. Their interpretations of college

students in learning situations using composition showed that sensing (S) types enjoy detailed and factual assignments that can be proven. Sensing types (S) frequently recheck figures and their work. They have a strong desire to comprehend.

The MBTI classifications has also proven to be associated with gender type and age (Cummings, 1995). For example, women were found to have greater numbers of extravert-classified types as they grow older. However, men and women alike were classified in greater numbers as sensing types when they were younger and also greater in age. This same phenomenon occurred for both men and women with thinking type classifications in middle age. Notably, men have a higher rate of being classified as thinking at any age as compared to women.

Kahn, Nauta, Gailbreath, Tipps, and Chartrand (2002) conducted a study utilizing the MBTI to examine the ability of personality inventories to forecast academic performance and retention among college freshman. The study contained three tools: the Strong Interest Inventory (SII), the Social Skills Inventory (SSI), and the Career Factors Inventory (CFI). The study population consisted of 677 freshmen. After adjusting for SAT and ACT scores, the SII, MBTI, and SSI were each found to autonomously predict the freshman year university GPA. Notable as well was the fact that the CFI and related scales of the three measurements were able to individually predict freshman–to–sophomore retention (Kahn et al., 2002). As a result, Kahn et al. recommended that institutions of higher learning use these instruments to reach at-risk students in order to improve retention levels.

McKenzie, Gow, and Schweitzer (2004) researched freshman academic success using structural equation modeling. Although they did not study retention, the researchers reported that those classified as Introverts outperformed extravert types scholastically. These findings are consistent with the theory that Introvert types are less distracted by external occurrences and have a tendency to be goal-oriented. However, Lidy and Kahn (2006) reported that new students who were more emotionally secure and outgoing assimilated better to the college environment.

When addressing the numbers of Introvert types in some professions in addition to the relationship between introversion and intelligence, Furnham et al. (2005) found that the correlation of the introvert/extravert relationship on retention varied between program types and institutions. Researchers also examined additional contrasts in regards to student retention. A preference for thinking over feeling was associated with higher levels of academic success, and individuals with a preference for thinking had a higher level of academic performance in a traditional first-year college curriculum (Kahn et al., 2002). Those with a preference for sensing (S) were also more likely to persist to graduation.

Extensive higher education research has focused on the administration of the MBTI to students with STEM (science, technology, engineering, and mathematics) majors that prepare them for future employment (Chang & Chang, 2000; Karn, Syed-Abdullah, Cowling, & Holcombe, 2007). MBTI applications have been useful particularly in the field of medicine, in that they may help students identify the personality traits they have that would be most beneficial in selecting medical specialty

or program (Clack et al., 2004; Thompson & Bing-You, 1998). More generally, employing personality typing has grown in popularity among healthcare workers. For example, the Maine Medical Center held a workshop for physicians and physician educators wherein attendees were asked to complete the MBTI, the Kolb Learning Style Inventory (LSI), and the Hemispheric Mode Indicator (HMI)[2] . The attendees reported enjoying the workshop and stated that it helped them in 36 individual areas of their medical practice and education (Thompson & Bing-You, 1998).

Clack et al. (2004) used the MBTI with five groups of graduates at a London medical school. The researchers reported findings of differences in the MBTI categorizations between the general (UK) population and the student participants. Specifically, they found that the physicians had a propensity towards the personality trait of INTJ. Notably, judging types predominated among the physicians, comprising 68% of the participants.

Introversion-Extraversion

Hans Eysenck (1990), considered by many to be one of the foremost authorities on personality and motivation, developed what he termed the *arousal theory*. This empirically based theory provides a possible an organic foundation for understanding academic performance according to behaviors most closely associated with certain personality types. According to the arousal theory, there is an organic justification of extraversion that is directly related to cortical arousal concentrated within the ascending

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[2] This test measures preferences for left-brain, right-brain, or whole-brain data processing.

reticular activating system or ARAS (Eysenck & Eysenck, 2013). Similarly, the researchers found that introverts (I) experience higher levels of activity in this system than do extraverts (E) and as a result have chronically higher levels of cortical arousal as compared to extraverts (E) (Eysenck & Eysenck, 2013).

Further, the Yerkes-Dodson law, which is the arousal theory within the PEN model, assumes that "some intermediate level of arousal is optimal for performance" (Eysenck & Eysenck, 2013). Consequently, researchers have argued that because arousal increases some forms of comprehension, introverts should master elementary tasks without difficulty as compared to extraverts (E) (Rosander, 2013). Therefore some scholars have indicated that academic task difficulty can be correlated to increased academic study level (Leppink, Paas, Van Gog, van Der Vleuten, & Van Merrienboer, 2014). Therefore, it would be reasonable to surmise that extraverts (E) would be less likely to experience high levels of cortical arousal when engaged in the tasks necessary to complete an advanced degree, and thus might experience higher levels of boredom. Since boredom and disengagement have been correlated to greater rates of college attrition (Leppink, et al., 2014), I hypothesized that extraverts (E) may be more likely to leave college before earning a degree or to fail to achieve a professional degree than introverts are (I) (Tinto, 2013).

The MBTI's functions of introversion–extraversion, thinking–feeling, and intuition–sensation have been included in the results of studies correlating personality and academic success. As stated earlier, academic success has been found to be a

quintessential element of academic achievement; including earning a college degree (Leppink, et al., 2014).

For example, researchers have reported that extraverts (E) tend to concentrate on their environment and to be most stimulated during social interactions. In contrast, researchers have also hypothesized that individuals classified as having an extraverted (E) orientation thrive on action in the social world and therefore have been seen as becoming bored with slow or tedious and complicated individual tasks (DeYoung, 2010). For example, De Fruyt, and Van Leeuwen, (2014) hypothesized that extraverts may find college tasks such as reading, research, and writing challenging as they are often solitary undertakings.

Conversely, the same researchers reported those with an introvert (I) orientation thrive on inner reflection, thought, and contemplation (De Fruyt, & Van Leeuwen, 2014). Surmising they are most energized by personal thoughts and feelings, De Fruyt, and Van Leeuwen, (2014), maintained that introverted types (I) are associated with a learning style that most enjoys reading, attending lectures, and completing written work, further indicating this trait is also closely correlated to the enjoyment of engaging in more complicated and intricate work that requires independent completion. Finally, said researchers purported introverts (I) enjoy and tend to engage in those tasks that have a higher level of difficulty and require independent motivation (De Fruyt, & Van Leeuwen, 2014).

Notably, research results were as such that these same types of tasks are often most closely associated with academic achievement and college success. Consequently,

as high academic achievement is associated with continuing education and degree achievement, it is reasonable to assume that said traits would be correlated to the highest degree level a student achieves (De Fruyt & Van Leeuwen, 2014).

Earlier scholars have recognized the contrast of extraversion (E) and associated lower educational performance with introverts' (I) greater ability to consolidate learning, greater concentration, and better maintenance of enhanced study behaviors (Entwistle & Entwistle, 1970). Current research, including that of Rosander and Bäckström (2014) have also surmised that extraverts (E) underperform in academic settings because of their lack of concentration, their charisma, and their impetuosity. Entwistle and Entwistle (2015) cited a negative correlation between academic achievement and extraversion (E), specifically due to a need for external stimulation and difficulty engaging in the solitary tasks required for academic success, which include reading, research, and writing. Conversely, introverts have been identified as being able to pursue long-term goals, an ability very strongly linked to academic achievement (John et al., 2008).

By contrast, extraversion (E) is associated with immediate reward and positive affect and therefore has been negatively correlated to academic achievement. (DeYoung, 2010; Rosander, 2013). Hence, I proposed that those classified as extraverted (E) would be likely to achieve lower-level college degrees than those who are classified as introverts (I).

Sensing and Intuition

Individuals with a preference for sensing (S) have been defined as those who gain knowledge through their five senses. (Capraro & Capraro, 2002). These are defined as

seeing, hearing, tasting, smelling, and touching. Some researchers have also concluded that sensing (S) types are detail-oriented, fastidious, and practical, tending to be most comfortable in situations where they are confident of what will happen. (Capraro and Capraro 2002).

Conversely, said researchers also concluded those with a preference for intuition (I) utilize their personal discernment and unconscious or instinctual resources to make decisions, often relying on their judgment, intuition, and imagination (Capraro and Capraro 2002). Intuitive (N) types are energized by learning about the abstract and intangible. Creative and future-oriented, they are surmised to be most engaged in activities that require new ideas and unique solutions, are often dreamers, and believe in wider possibilities. This research information further indicated that intuitive (N) types tend to experience boredom when engaged in finite or concrete tasks that require little creativity or do not allow for deviation (Capraro and Capraro 2000).

Notably, Powers and Kaufman (2004) reported that Graduate Record Examination (GRE) test scores, commonly employed for post-graduate selection and a strong predictor of future academic performance, were substantially correlated with creativity. Based on the above listed research, I proposed that it may be reasonable to assume that those classified as intuitive (N) possess the creativity necessary to produce unique solutions to problems commonly encountered in graduate and professional-level study. Hence, I hypothesized that those classified as being intuitive (N) will be more likely to earn graduate and professional degrees than those having been classified as sensing (S).

The MBTI has been employed in studies regarding variables associated with successful educational participation and learning. For example, Johnson, Sample, and Jones (1988) used the MBTI and the Self-Directed Learning Readiness Scale (SDLRS) with 76 adult college students. The researchers reported results indicating a significant correlation between intuition (N) and self-directed learning. Holland (2013), employed the MBTI and the Strong Interest Inventory, which correlates interests and Holland personality types with optimum career choice and work environment. The researchers examined the relationship of academic comfort and participation to personality preference. They reported a positive correlation between academic comfort and the intuitive (N) type.

Thinking and Feeling

The two orientations of thinking (T) and feeling (F) make up the MBTI sub-classification of an individuals judgment. Individuals classified as having a preference for thinking (T) are purported to be logical and use analysis and reason to make decisions. They are most reportedly energized when searching for a custom or approach that will apply in similar circumstances (Brown, Bull, and Pendlebury, (2013). Purported by some researchers to value logic rather than intuition when making decisions and attempting to understand principles, and reportedly focusing on tasks and accomplishments, they prefer in-depth study to make sense out of confusion and gain understanding in a particular subject (Brown et al., 2013)

For example, Eysenck and Eysenck (2013) maintained that students who value learning tasks tend to have high learning performance. These types are purported to value

accuracy and are action-oriented and precise (Eysenck & Eysenck, 2013). Notably,

research in this area has provided correlations between the above-listed traits and

academic success, including degree completion (Eysenck & Eysenck, 2013). Hence, it

may be reasonable to assume that individuals with a preference for thinking (T) have the

drive necessary to successfully complete the numerous complicated tasks associated with

achieving a college degree. I therefore further hypothesized that individuals who are

classified as having a preference for thinking (T) would be more likely to achieve higher-

level college degrees than individuals with a preference for feeling (F).

Researchers in this area have also argued that individuals with a preference for

feeling (F) like to contemplate what is imperative to them and to others who show

interest when making decisions (Munro, Chilimanzi, and O'Neill, 2012). They are

thought to enjoy finding the good in others and are energized by encouraging them.

Feeling (F) types may be considered easily manipulated, as it has been reported by

researchers that they seek approval and may have difficulty saying no (Rosander, 2013).

Feeling (F) individuals are supposed by some scholars to make decisions based on

subjective emotions as well as according to what others they value prefer (Brown et al.,

2013). These individuals are reported by some scientists to normally avoid controversy

and thrive in harmony and comfort (Rosander, 2013). Feeling (F) types have been

reported as having a learning style that seeks a personal connection to classroom

material; they wish to relate ideas and concepts to personal experiences (Rosander, 2013).

They may be energized while learning and completing tasks in a group but often

experience difficulty with learning material that does not provide a personal connection to the subject (Rosander, 2013).

For instance, Ng et al. (2012) reported that those participating in educational pursuits they view as pleasurable, stimulating, or pertinent to meeting their essential psychological requirements (Tinto, 2013) are the individuals who most often pursue college degrees in subjects in which they are most interested (Tinto, 2013). Notably, logical thinking has been identified as an essential requirement to complete the often-complicated tasks associated with higher learning such as those seen in graduate and professional college study (Rosander, 2013). I therefore found it reasonable to hypothesize that individuals with a thinking (T) preference would have higher rates of college degree completion and be more likely to earn higher-level degrees than individuals with a preference for feeling (F).

Judging and Perceiving

Researchers have found that individuals with a preference for judging (J) prefer planned, orderly activities and prefer regulation and scheduled activities. Judging (J) types have also been reported to enjoy planning, orderly ways, and seeking to regulate and manage their lives. Accomplishing tasks energizes them. In the academic environment they are task-oriented and want to complete work quickly (Rosander, 2013). This preference has been described by some scholars as efficient in deadline-based environments and keeps them serious about their workload (Powers & Kaufman, 2004). Researchers have claimed that many of these skills are correlated to academic success (Naumann &Soto, 2008; Rosander, 2013). As individuals with a preference for judging

(J) were found by researchers to often display these traits, it is reasonable to hypothesize that there is a correlation of this personality type to a high level of degree achievement and academic success. I therefore proposed that those who have been categorized as judging (J) are more apt to earn higher-level college degrees than those with a preference for perceiving (P).

Some researchers have surmised that individuals identified as perceiving (P) avoid being pressured by deadlines and prefer a loose, less structured environment (Rosander, 2013). Also, they reportedly delay decision-making and prefer to obtain all information before making a decision (Chamorro-Premuzic & Furnham, 2003). Some scholars in this research area have concluded it is this need to understand every aspect of a task often makes it impossible for them to complete work on time: they prefer spontaneity to predictability and are closely associated with procrastination (Rosander, 2013).

College Retention Research

It was the intention of this study to explore previous research regarding successful college retention programs and to ascertain how the examination of personality types (as measured by the MBTI) may add to this current base of information. A search of the literature showed that the study of college attrition has spanned more than 70 years (Rubin & Wright, 2015). The largest body of research seems to have occurred prior to 1970 (Slanger, Berg, Fisk & Hanson, 2015).

Primary Retention Models

Several models of student attrition have been created through years of research. Descriptive models are those that are founded in observation and generalize from observed facts to convey information. Bean and Metzner (1985), for example, have been credited with the most prominent descriptive models that attempted to expand the scope of prior research by examining traditional and nontraditional students. Their findings highlighted that nontraditional student's assimilation was correlated by the external (off-campus) environment rather than by social assimilation.

Rootman (1972) has been recognized for the person-role fit model, which argues that college completion or attrition depends on the individual student's ability to manage their personalities in accordance with the expectations of the institution. Notably, Pascarella's (1980) model of student-faculty interaction examines how a student's personality, assimilation, and contacts are associated with persistence. In this model, these characteristics are said to help predict the amount of casual interaction students have with faculty. In researching the various models and philosophies used to increase college persistence, Tinto's integration model (1975) and Bean's (1985) attrition model appear to be the most inclusive framework on attrition.

The academic and social assimilation model created by Vincent Tinto (1970) appears to be the foundation for the majority of the current research in this area. This model was in turn based on the earlier work of Spady (1970), who was a pioneer in researching the reasons behind students dropping out of college. Tinto (1975) revised this model, adding two additional variables: structural relations and friendship support. Prior

to Spady, however, Durkheim (1961) had theorized that creating a supportive social network could decrease student suicides. Durkheim's efforts were considered revolutionary and in turn helped create applications that inspired the attrition research of Spady (1970), Tinto (1975), and Pascarella (1980).

Tinto's (1970) model was founded on four predictor variables. The first variable, "intellectual development," refers to the level of academic development of an individual at the time they enter college. The second variable, "grade performance," is the GPA or separate grades the individual received during their college career. Next, "normative congruence" refers to the individual's ability to both feel and respond to accepted social norms in the college environment. Lastly "friendship and support" refers to a supportive personal network on which a student can rely. (Tinto, 1975).

A fifth dependent variable, "social integration," also emerged based on the above-listed predictor variables. This variable describes the level at which the individual adjusts to the social environment and forms relationships therein. Tinto (1993) further revised his model as he came to believe that the extent to which a student is integrated is related to the likelihood that this individual will persist to degree completion: that is, as an individual's assimilation into the culture increases so does the likelihood that they will stay in school. Later, Tinto's new (1993) model added factors such as a person's level of loneliness, environmental assimilation, economic status, effort, knowledge, adjustment, and inclusion as well as external obligations are associated with a student's commitment to completing a degree program. Underlying these additions to the model is the assumption that each student starts a college or educational journey with a mind-set of

commitment to the task at hand. However, any or all of these factors have been associated with success or attrition in higher education (Tinto, 1975). For example, lack of financial means and social isolation, which lead to adjustment difficulties, are among the variables most closely negatively correlated to a person's likelihood of earning a degree (Stuart, Rios-Aguilar & Deil-Amen, 2014; Ou & Reynolds, 2016).

Bean (1985) also developed a popular model of understanding student attrition. Bean believed that individual personality characteristics rather than cognitive factors play the greatest role in determining an individual's likelihood to persist to graduation. These characteristics included the ability to socialize and individual commitment to completing a degree. Specifically, Bean (1987) studied nontraditional-student attrition and found that those who were content with their experience as students were less likely to leave the university. Variables that had positive correlations with satisfaction were age, educational goals, course availability, outside encouragement, study skills, and advising. The variable of stress was not correlated with dropping out in this study, but Bean found that students who had jobs had higher levels of stress when compared to unemployed students.

Wladis, Conway, and Hachey, (2015) argued that many of the existing attrition models lack accuracy because they are based on what is considered the "traditional" student, noting that no specific attention is given to selecting first-generation, non-English speaking, or commuter learners. A significant amount of said retention research has been examined from the angle of the traditional student. This may explain "the ineffective methodologies and particularly questionable applications for predicting the

performance of African American students" (Sherman, Giles, and Williams-Green 1994, 164).

Carr (1992) conducted a study of San Jose City Community College students that reviewed the persistence rates among African American men in order to understand the impact of athletic programs support on student persistence. Among the 1,053 African-American student participants, the researchers identified several causes on attrition. These included low levels of educational attainment among family members, low levels of student participation in an effort to improve poor grades, low admission test scores, the large percentage of part-time students, higher dropout rates among African American males, and single students.

Coll and Von Seggern (1991) surmised that when students are organized according to their most significant motivation for attending college, significant follow-up and evaluation of students' goal attainment is more likely to occur. Additionally, program evaluation studies conducted by Coll and Von Seggern (1991) have confirmed that college orientation prior to attendance also positively correlated goal attainment. The researchers attributed this success to greater socialization and familiarity prior to beginning a program.

Beatty (1992) also created a typology of retention approaches as a foundation from which additional research can begin. This typology organizes retention approaches as follows: placing students into college programs which are best suited for their goals, attributes and needs; helping to minimize financial stressors and providing financial

assistance when needed; providing students with programs to increase social integration; providing remedial instruction in areas of deficient academic ability.

The Research Department of the Minnesota House of Representatives conducted a 1988 study that evaluated student retention and enrollment in Minnesota. Those conducting the study examined the advancement of freshmen entering school in the fall of 1998 through 1990. The study included student goals, background, college preparedness, and freshman-year experiences with a sample of persisters and dropouts of all entering students. The researchers highlighted several important findings: 55 % of all participants had dropped out in their freshman year; 16 % of participants transferred to other institutions prior to their fourth year of attendance; 35 % of participants had not selected a degree program; by spring 1991, 30 % of participants were still enrolled however only 13 % had graduated.

Terrell (2007) defined student retention as an individual's completion of a degree program. Tinto's (1998) definition differed from Terrell's theory in that it also included the accomplishment of educational goals such as course completion or GPA marks. Sutton and Sankar (2011) claimed that academic success encompasses social affinity and "fit" with the college community. Similarly, Wilson et al. (2011) described individual positive academic retention as occurring when an individual's motivation matches their academic aptitude and ability to socialize. The model of institutional exodus is reinforced by additional studies reviewed in this chapter, which contain discoveries pertaining to institutional practices and existing methods of retaining students. Tinto's (2007) theory argued that institutional recruitment practices need to ensure diversity in their student

body and inspire positive learning experience, academic success and career planning (Tinto, 2007).

Ohland, Brawner, Camacho, Layton, Long, Lord, and Washburn, (2011) explored four past phases of retention research. First, they noted that researchers have concentrated on retention as a component of matriculation management that allowed researchers to develop forecast models for attrition. Second, they found that researchers changed their area of concentration to approaches that decreased student attrition, particularly students with an increased dropout risk, and searched for novel strategies to achieve predictable outcomes. Third, academic research was extended to comprise institutional contributions for success and centered on bettering student retention by generating successful tactics that include a campus-wide effort. The fourth stage signified an institutional method that measured faculty and staff aptitudes and its association with kindness and their role in student retention.

Min, Zhang, Long, Anderson, and Ohland (2011) argued that there are models of student retention that mix background variables and distinct characteristics. Said variables include high-school involvement, educational aspirations, and family support and are gauges of students' academic condition, their social comfort level in a college atmosphere, and the degree to which they can navigate and interrelate within organizational structures. Astin and Sax (1997) suggested that student retention efforts should concentrate on student engagement and create opportunities for student participation. They argued that student involvement in academic and social activities is crucial to retaining them. This type of participation is commonly calculated as the

quantity of time used for academic tasks. Improvement of higher cognitive abilities such as conception, examination, application, function, and assessment may regulate student achievement. Also, participation in extracurricular activities involves students in academic or precareer memberships and campus organizations that align with organizational educational aspirations. Similarly, Kuh (2007) suggested that scholar interaction has a notable impact on student success by producing events that trigger knowledge while upholding scholarly attentiveness and inspiration. Kuh also claimed when scholars are continually involved in events, they utilize school resources and are determined to do well; however, this participation in events may differ due to institutional availability.

For some time, teachers and scholars have recognized a relationship among pupil academic advancement and retaining enrollment in institutions of higher learning (Amelink & Creamer, 2010). As student bodies become more varied, there is also increased concern about the decreased retention levels among marginal and financially underprivileged students.

Tseng, Chen, and Sheppard (2011) reported that the intricacies of student continuation have caused several institutions to concentrate greater effort on students categorized as being at greater risk of dropping out. A program review, ACT (2014), contained suggestions based upon long term data on student retention efforts and counseling in institutions of higher learning, mentioning that a multi-dimensional method is critical to improving student persistence until they earn a degree. The report content stated that secondary educational institutions should discover student aptitudes and

requirements and prioritize these as a method to measure the importance of various efforts used to improve enrollment. The report authors argued that academic support encounters must be all encompassing. Lastly, the report confirmed a need for institutional systems that identify, measure, continually observe, and react to the requirements of students identified as high risk.

Marshall and Berland (2012) in their review of retention literature recognized reasons for student departure that could be identified with systems that could identify factors such as educational stagnation and indecision, adjustment problems, and impractical college expectations caused by inadequate secondary schooling.

Gershenfeld, Hood, and Zhan (2014) studied the significance of individuals grade point average during their first semester of attendance as a way to predict underrepresented student degree attainment. Degree attainment levels and the grade point averages of over 1,900 undergraduate students enrolled in college or universities during 2005 and 2006 were examined; utilizing a logistic regression model to interpret the data. The researchers reported that participants with a GPA below 2.0 on a 4.0 scale and their graduation rates correlated to one another.

Singer and Smith (2013) reported that an individual's involvement in their attending institution before entering college, along with their experiences of college life, had a significant impact on academic accomplishment and educational management skills. Said study researchers "quality of effort" as a predictor of student participation and success, in situations in which the interaction between the student's engagement and their educational involvement results in retention. The survey instrument was a questionnaire

asking students about their personal experiences. The results were used to measure the amount of a student put forth towards their academic pursuits, as well as how the institution used policies and financial resources to get students to participate in the college experience. Several students cited the desire for academic accomplishment as their reason to finish their degree program.

Previous research efforts have indicated that judgment of an individual's scholastic product is a strong predictor of overall gratification during a degree program and motivation to complete it (Sampson, Leonard, Ballenger, & Coleman, 2010). Bean and Eaton (2008) suggested that student advisement can be a successful way to create academically beneficial student and faculty interactions. In this same vein, Billups (2008) stressed the crucial role of instructors as social ambassadors for assisting pupils in adapting to the institutional setting. Scholars view of the ranking systems in all courses help to define student educational fulfillment and advancement (Parayitam, Desai, & Phelps, 2007). When individuals view the academic scoring system as just, they gain a sense of fulfillment in their educational.

Additionally, scholars have utilized attrition models in an attempt to discover the reason why students leave undergraduate academic programs. These examples are also related to social-cognitive professional model through self-efficacy, which illuminates a relationship between an individual and an institution in an individual's career planning journey (Schmidt, Hardinge, & Rokutani, 2012). Self-efficacy characteristics are essential to improving an individual's understanding of the consequence of completing school (Friedlander, Reid, Shupak, & Cribbie, 2007; Raelin, Bailey, Hamann, Pendleton,

Reisberg, & Whitman, 2014). Koenig, Schen, Edwards, and Bao (2012), conducted a quantitative analysis of undergraduate students during their first year. The researchers found that nonacademic as well as academic factors were strong indicator of a student's decision to drop out or persist until degree completion. They surmised that gathering information about a student's background, academic needs, and personal requirements can be significant in increasing the odds of their achievement in college.

Jamelske (2009) noted that institutions of higher learning attempt to employ comprehensive retention programs but argued that they also struggle to understand the intricate and powerful interactions amongst nonacademic and academic factors. As a result, some colleges and universities have developed retention programs that combine these elements. Jamelske showed that the socioeconomic status of a student's parents is a strong nonacademic power in determining student retention and/or successful degree completion. The researchers confirmed that the financial status of a student is important for financial and personal support; individuals with low financial support have an increased likelihood of leaving college before earning a degree. Many administrators from institutions of higher learning assert the significance of financial aid in allowing students to maintain enrollment in their academic programs. These individuals also attest to the notion that a student with financial challenges is more likely to look for additional funds, typically by getting a job. In turn this type of student is at a higher risk of leaving their institution as compared to students who are identified as financially stable (Ishitani & DesJardins, 2002). Previous conventional research on student retention and persistence has centered on full-time students who attend four-year colleges. However, researchers

have begun to focus on nontraditional students. Nora (1987) claimed that retention rates are not significantly correlated to academic or social integration; among underprivileged students. Indirect and direct factors have been noted for academic success, conversely not for social assimilation, with two-year college students (Mulligan & Hennessy, 1990). Nora, Attinasi, and Matonak (1990), examined retention, they found that academic assimilation had a substantial direct correlation on retention, but no such correlation was found for social assimilation for academic assimilation, but nothing was discovered for social assimilation. Kubala (2000) reported no connection between academic and social assimilation and drop-out levels in community college students. Nora and Cabrera (1993) have reported the significance of institutional commitment on the resolve and persistence of commuter college students. Kubala surmised that weak College Placement Test (CPT) scores were prognostic in determining student withdrawal from courses. Taylor and Whetstone (1983) reported that if a student's goals, attitude and values mirrored those of the institution he or she was attending, the individual was more apt to persist at that institution.

Lewis, Leach, and Lutz (1983) created a marketing plan centered on the match between student and educational institution. The authors argued that colleges and universities have a duty to provide programs and services based on the needs of their students. Demitroff (1974) made a comparable inference: specifically, attrition rates grow when students are dissatisfied with either their major field of study or the institution as an organization. However, for a student to switch majors or even change institutions is not universally indicative of educational uncertainty or predictive of attrition. A study

conducted by Fullmer (1956) reported that students who change majors are essentially less apt drop out as compared to those who do not. A good majority of retention researchers point to a positive correlation between increased vocational goals and increased retention rates (Astin, 1972; Hanson & Taylor, 1970; Naylor & Sanford, 1982). Previous attrition research has been directed at an individual's gender as a predictor of attrition or retention. Avakian, MacKinney, and Allen (1982) concluded that among transfer and full-time freshman, women had lower rates of attrition; they dropped out at lower, but consistently steadier rate than did males. In addition, when their gender was correlated with high-school GPA, women appeared to have greater attrition rates than did men (Pascarella, 1983; Trent & Ruyle, 1965).

Stoner and DeRidder (1982) conducted a research study examining 7,653 female college students and 9,652 male college students at the University of Tennessee, Knoxville across five years. The researchers found that a greater number of males enrolled in and graduated from five-year programs as compared to females. However, a greater number of females enrolled in and graduated from four-year programs.

Conflicting results have been reported in attrition research in regard to student age and attrition rates. In early research some scientists had concluded that older students attending college as freshmen had lower graduation rates (Smith & Sugarman, 1984; Tambe, 1984). Newer research in this area has changed to a multivariable design with respect to the nontraditional and traditional student. Smith and Sugarman (1984) found that the majority of nontraditional students were more content with their educational experience. Hook (1981) and Tambe (1984) reported similar results based on their

research, particularly when they included age with other factors such as race, peer interactions, and social characteristics.

The measure of academic ability has been defined as the combined results of the student grade point average (GPA), the Scholastic Aptitude Test (SAT), the American College Testing (ACT) program, and the American Council on Education Exam (ACE) (Hook, 1981). Carney and Geis (1981) conducted a study which consisted of 490 first-semester freshmen at the University of Oklahoma. This study used participants' ACT scores and found them to be the greatest correlation with attrition rates among all of the variables in the study. Bell (1984) found that among four variables that separated persisters from dropouts, the participants' high-school class standing, their SAT scores, and their higher education GPAs were most important. Similarly, Dallam and Dawes (1981), Whittmeyer, and Camiscioni, and Purdy (1971), and Miller and Eddy (1983) all found that those attending college or university with higher GPAs and higher ACT and SAT scores were significantly more likely to persevere in their course of study. Conversely, a study conducted at the University of Arkansas by Rownd, Boulton, and Marr (1982) examined variables associated the probability of a student withdrawing from a course but remaining in school; the researchers reported that the results showed no clear pattern, offering little credence to the hypothesis that individuals with higher GPAs are less likely to drop classes than are students with lower GPAs. Additional studies have also reported similar results: that is, an individual's GPA alone cannot accurately predict student attrition at institutions of higher learning (Blanchfield, 1971; Huch, Cormier & Bonds, 1974; Johanson & Rossmann, 1970; Rownd, Bolton & Marr, 1981).

Notwithstanding the varied results of the aforementioned studies, an individual's academic propensity, in addition to other characteristics, continues to be one of the more reliable forecasters of attrition (Maudal, Butcher & Mauger, 1974).

Pascarella (1982) reported some personality characteristics he saw as related to attrition and retention. Assertiveness, moderate autonomy, self-confidence, a positive self-concept, maturity, and a definitive awareness of responsibility are advantageous to college persistence. An individual's personal value system and intellectual propensity are important only to persistence to the degree that they correspond with the values and intellectual propensity of the institution (Pascarella, 1982). By the same token, a number of negative personality traits have been found among students who drop out before achieving a degree. Many researchers characterized individuals who drop out as having personality characteristics such as aloofness, disagreeableness, hypercriticality, immaturity, impulsivity, rebelliousness, self-centeredness, inability to assimilate, and uncooperativeness (Blanchfield, 1971; Kamens, 1971; Miller & Eddy, 1983). Opposition towards their institution and elevated levels of anxiety increase the likelihood that a student will drop out before earning a degree (Perrine, 1998).

Race and ethnicity have also been researched in regard to their possible association to student attrition or retention. This has become particularly relevant after the significant increases in minority enrollments during the 1960s and 1970s, especially African-Americans (Astin, 1973). Prior to the mid-1970s, there were narrow efforts to examine ethnicity and race, more frequently than not producing ambiguous results. Astin (1973) researched students from a wide range of ethnic backgrounds, including American

Indian, African-American, Asian, and Jewish. His work seems to show that in absence of

other variables, specifically those associated with academic ability, the racial factors were

not exceptionally valuable in forecasting whether a student would persist to graduation

(Astin, 1973). Avakian, MacKinney, and Allen (1982), however, reported somewhat

different results: individuals most apt to drop out were predominantly black men, then

black women, followed by white men and lastly white women. Bynum and Thompson

(1983) too concluded from their results that minority students of any race (white, black,

Hispanic, and American Indian) were more apt to drop out than members of the racial

majority of the institution in which they are enrolled. Notably, the authors also reported

their findings showed that students of the majority sex (male or female) were more likely

to drop out (Bynum & Thompson, 1983). Faulk and Aitken, (1984) reported that

American Indian college students had significantly high rates of attrition, with rates from

75-93%. However, they also showed that American Indian ethnicity alone might not have

a correlation to attrition rates. That is because American Indians who received quality

school preparation, sufficient financial support, and high personal incentive showed

persistence rates that mirrored those of white students (Faulk & Aitken, 1984). McCool

(1984) examined the factors which would be apt to improve Hispanic student retention.

Notwithstanding the considerably greater rates of attrition among Hispanic students in

community colleges, this research indicated that the attrition rate can be lowered if

colleges and universities could develop combined approaches that connect several aspects

of student experience (McCool, 1984).

For various reasons, institutions of higher learning in the United States have attempted to increase minority enrollment. Attrition rates are higher in professional degree programs across all ethnicities, but minority students appear to have an even greater propensity to leave these programs (Pascarella, 1979). Brown (1979) reported that the growing attrition rates among minority nursing students were associated with inadequate academic training, emotions such as loneliness and isolation, frustration, and disenchantment. Also implicated were at-risk students being unaware of their need for assistance and available support systems, and a poorly prepared faculty who could not properly navigate minority student problems.

Rugg's (1982) study of some 3,000 college students at the University of Mississippi over a four-year period produced results that directly contradicted the results of some research on minority students. Using a longitudinal tracking method, Rugg found that minority students actually had a higher voluntary retention rate than non-minority (Caucasian) students (Rugg, 1982). Similarly, Gates and Creamer (1984) found that the minority status of students (race and socioeconomic class) was at the bottom of a nine-factor ranking of causes for student attrition.

In contrast, Cochran, Campbell, Baker and Leeds, (2014) noted that gender, race and ethnicity, socioeconomic status, high-school GPA, and overall college GPA must be considered when examining variables that may be associated college persistence. They note that nontraditional students (commuters, older adults, and returning students) face greater obstacles, such as having to worry about their ability to pay for college and often needing to have a job while enrolled.

Chamorro-Premuzic, and Furnham, (2003) also noted that gender, GPA, and persistence in the first two years are essential in helping determine the likelihood of attrition or achievement of a degree. Some researchers surmise that student attrition in higher education is more apt to occur during the first two years of attendance (Davidson & Muse, 1994; Murtaugh et al., 1999). For example, the American College Testing Program (ACT) also reported that the national average of freshmen returning to the same institution for the sophomore year in 2007-2008 was 66%. Tinto (1996) estimated that 57% of college students who leave before earning a degree do so before the end of their freshman year.

Tross, Harper, Osher, and Kneidinger, (2000) conducted a study of 844 freshmen at a university in the southeastern US. The researchers examined the rates of student retention using participants' self-reported GPA and SAT/ACT scores as well as non-cognitive achievement, resiliency, and conscientiousness. Notably, conscientiousness, GPA and SAT/ACT were found to be important in predicting a student's ability to persist to sophomore year. The results were reported as GPA 25% of variance, SAT/ACT 4%, and conscientiousness 7%.

Some of the most notable recent work in college retention research has come from Monaco and Martin (2007). They contended that the newest generation entering higher education, whom they dub "millennial college students," tend to possess personality characteristics, learning styles, and socialization attributes unknown in the generations that preceded them (Monaco & Martin, 2007). The characteristics most associated with the millennial student are as follows: *sheltered*, *team player*, *conventional behavior*,

confident attitude, *achiever*, *special*, and *pressured* (Monaco & Marti, 2007; Rickes, 2009). The result of these characteristics combined may be a lack of critical reasoning skills essential for college success. This generation has been described as lacking independent skills because of parents who have tended to become overly involved in their children's lives and have thereby impeded their ability to perform successfully on their own (Elam, Stratton, & Gibson, 2007).

Ou, and Reynolds, (2016) also discussed what he observed as being noncognitive correlations to college attrition or persistence, citing three differing types of involvement: with institutions, with instructors, and with fellow students, arguing that the latter is the most influential on student attrition.

In contrast, Chen, (2012) proposed models of college attrition in which social integration was not a strong indicator and did not have a significant correlation to attrition. Instead, Chen argued that factors such as background, intent to leave, GPA, and environment are associated with a student's choice to leave college prior to earning a degree (Rubin, & Wright, 2015).

Like the current study, many of these research projects have employed a Mann-U test to analyze their findings, which has further inspired the writer to employ said methodology, As cited above, the existing data and proposed models of attrition explored many non-academic correlations with whether an individual leaves college before earning a degree or persists to degree completion. The most significant factor uncovered in my search proved to be the student's sense of belonging. Specifically, many of the attrition models summarized above emphasize a sense of social integration and personal

satisfaction through personal relationships as a correlate of academic achievement. This further underlines the need to understand the set of characteristics or "personality" most seen in those who leave college before earning a degree.

Personality Testing and the Origins of the MBTI

This study attempts to discover whether there is any link between personality types as defined by the MBTI and the highest degree an individual achieves. As this psychological test is the primary tool used to identify personality type for the study, the following is an extensive overview of the MBTI.

As noted in Chapter 1, Carl Jung developed the foundation of the personality classification that eventually became the Meyers-Briggs Type Indicator. Jung's theory was based on the idea of psychic energy or libido. His early work was highly focused on introversion and extraversion (Myers, McCaulley, Quenk, & Hammer, 1998). If an individual's libido is oriented toward the social and material world, Jung labels this individual extraverted (E). By contrast, introversion is caused by an inward turning of the libido, causing the individual to be motivated by the inner world of thoughts and feelings (Jung, 1974). Jung argued that variations in the conduct of individuals are not random but are in actuality significantly determined by these factors.

The next stage of Jung's personality classifications added distinct cognitive orientations that he referred to as the rational functions: thinking (T) versus feeling (F). These summarize the role of cognitive processes in our decision making. Researchers in this area describe those with a preference for thinking (T) as likely to employ logic, order, and their knowledge of best practices in their decision making. Conversely, those

with a feeling (F) preference are inclined to use emotions rather than logic and may consider others' well-being as well as their own so as to maintain harmony (Gehring, 2007).

The final two dimensions Jung proposed were what he referred to as the irrational functions: sensation (S) versus intuition (N). Those with a sensing partiality favor the specifics of their current reality as perceived by their senses rather than patterns that connect the present to the past and future. Those who prefer intuition have a preference for patterns and impressions, while enjoying thinking about possibilities and abstract theories (Jung, 1971).

Jung (1974) believed that these classification functions were intermingled and differed in their psychic origin: conscious or unconscious. He also argued that one of the six functions would dominate the other five.

Jung then combined the attitudes of introversion and extraversion with the above-listed four functions. In this way eight dominant personality types were established: extraverts with thinking dominance; extraverts with feeling dominance; extraverts with sensing dominance; extraverts with intuition dominance; introverts with thinking dominance; introverts with feeling dominance; introverts with sensing dominance; and introverts with intuition dominance (Jung,1971).

Later, these eight personality types served as the basis for the Myers-Briggs Type Indicator, which was developed by Isabel Myers and Katharine Briggs. The Myers-Briggs Type Indicator will be the psychological test used to define personality profiles in this study, so the tool will be examined in greater detail.

The Myers-Briggs Type Indicator

Isabel Myers and her mother Katherine Briggs built on the basis of the personality classifications Jung had first identified, adding a third dimension to his scales (Myers & McCauley, 1985). This was the judging (J)–perceiving (P) dichotomy, which aids in the identification of dominant and auxiliary functions among Jung's eight personality types (Myers, McCaulley, Quenk, & Hammer, 1998). The additional dimension assists in determining whether rational or irrational judgments prevail in an individual's interaction with society (Myers & McCauley, 1985).

Isabel Myers and her mother Katherine Briggs eventually refined their system further, developing the self-assessment tool known as the Myers-Briggs Type Instrument or MBTI. This tool consists of questions that require an individual to make a selection in a series of psychologically opposite choices. It is these choices that determine the individual's preferences among the four functions. The first version of the test was published in 1962 by the Educational Testing Service. However, when it was subsequently published by Consulting Psychologists Press in 1975, the instrument's use increased dramatically (Denham, 2002).

Overview of the Myers-Briggs Type Indicator

The MBTI consists of 16 distinct personality types. Each of these types is represented by a four-character sequence of letters. Each is a combination of the MBTI personality dichotomies: introvert (I) vs. extravert (E), sensing (S) vs. intuitive (N), thinking (T) vs. feeling (F), and judging (J) vs. perceiving (P). Each type represents an

individual's personality classification or preference amongst the four dichotomies (Myers et. al, 1998).

The first letter of each code of classification signifies an individual's preference for extraversion (E) or introversion (I), (Myers, 1995). For example, those with an extraverted (E) preference are normally sociable and outgoing. In contrast, introverts (I) are normally quiet and less likely to engage with others in social situations.

The second letter denotes an individual's preference for either sensation (S) or intuition (N). (McCaulley, 1990). Individuals with a sensing (S) preference process information through their five senses, experience the world in detail, and are less rigid in their approach to life (Myers, 1995, p.2). Intuitive (N) individuals search for meaningful patterns when processing information and tend to prefer order and stability in their lives (Roberts, Kuncel, Shiner, Caspi, & Goldberg, 2007). The way an individual makes decisions is referred to as the *rational dichotomy* (Raju, & Venugopal, 2014).). This dichotomy is represented in the typology acronym of the MBTI as (T) and feeling (F) (Myers, 1995). Meyers (1995), proposed that those with a preference for thinking (T) seek to make sense of information presented before reaching a conclusion: they carefully examine all of the information and prefer order in making choices. They use logic rather than emotion in their decision making and behaviors (Myers, 1995). Feeling (F) individuals use emotions in decision-making and are less likely to enjoy structure (Brownfield, 1993; McCaulley, 1990). Finally, the fourth letter of the MBTI classification acronym represents a preference for judging (J) or perceiving (P) respectively. Those with a judging preference (J) are logical, prefer structure, and are not

likely to engage in spontaneity. In contrast, those with a dominant perceiving (P) function tend to be less structured and more spontaneous. (Myers et al., 1998). However, the degree to which an individual of a given type manifests any one preference in their personality can vary greatly (Myers & McCaulley, 1985).

MBTI applications

The MBTI has since its inception been used in a variety of settings, including but not limited to education, counseling, arts, health, science, technology, government, public safety, religion, and student populations (McCaulley, 1990). The results from tests administered using a licensed MBTI test are stored and analyzed to track changes and trends within the results (Stilwell, Wallick, Thai, & Burleson, 2000).The 1960s and 1970s were a period of great popularity for the MBTI, which was approved as appropriate for applied counseling and psychology (Myers, & McCaulley, 1985).

MBTI Reliability and Validity

Like any psychological tool, the MBTI has been much scrutinized and both criticized and credited as an effective means of understanding and classifying individual personalities. The MBTI has been a focus of numerous debates; however, studies indicate that this instrument is not only widely administered but also has high levels of internal consistency as well as test–re-test reliability.

The Myers and Briggs Institute (1998) described the overall findings for their research as moderately improved when referring to the PCIs from their original fi-om analysis of the categorical scores. Of note are their test-re-test results, in which

participants came out with three to four type preferences the same for 75% to 90% of the time.

Myers and McCaulley (1995) discussed the scope of existing data regarding the validity of the MBTI, noting that much of it focused on the instrument's construct validity. In particular, they examined the correlations between the MBTI and other personality instruments specifically related to construct validity. For example, when comparing the MBTI with the Jungian Type Survey (JTS), the correlations between the MBTI and JTS were: E: 0.68 (p < 0.01), I: 0.66 (p < 0.01) S: 0.54 (p < 0.01), N: 0.47 (p < 0.01), and F: 0.23 (p < 0.05). (The findings for the thinking variable in the results of this study have been omitted, as the authors have not clearly defined whether the value listed refers to a P value or a correlation coefficient.) It would appear, therefore, that the MBTI and JTS are drawing from like constructs. Although there are many perspectives regarding the validity of the MBTI, it is considered by many in the psychological research community to have high levels of "face validity" (McCrae and Costa, 1988; Higgs, 2001).

Edwards, Lanning, and Hooker (2002) examined correlations between the scales of the MBTI and NEO–PI–R. Some notable results of these correlations included JP displaying high correlations with Conscientiousness at -.59. As well as openness to experience at .33, SN associated with openness at 0.60, EI with extraversion at -0.64, and TF with agreeableness at 0.47. The MBTI and NEO indexes presented similar correlations in their domains, as also reported by McCrae and Costa (1989).

Further research also saw similar results in specific index categories when examining scores of the MBTI and other measurements. For example, Bradway (1964) found similar personality traits when examining the scores from individuals who were given both the MBTI and the Gray-Wheelwright Questionnaire (1946), an instrument that employs continuous scores to measure Jungian personality types. The study was conducted using 28 Jungian analysts, who administered both tests. The test results revealed that 96 % of the study participants scored the same on the E-I classifications for both tools, and 75 % had the same S-N classification. In addition, the results showed that 72% of the study participants had the same T-F classification. Finally, the results indicated that 54 % of the participants scored identically on all three of the above listed categories.

Additional research conducted by Strickter and Ross (1964) also examined the scores of the MBTI and the Gray-Wheelwright Questionnaire (1946) using a sample consisting of 47 male college students. The researchers reported the scores of the participants as a .79 correlation in the S-N categories, a .60 correlation in the T-F category, and a .58 for the S-N scale. All three of these correlations were considerable at the .01 level of significance.

College Student Attrition, Academic Performance, and the MBTI

This section will explore the literature regarding MBTI and those who leave college versus those who persist to earn a degree, as this is related to the subject at hand. Several studies have focused exclusively on attrition based on the type of institution. Provost (1982) conducted a study at a private four-year liberal arts college, examining an

individual's personality type as measured by the MBTI, their leisure satisfaction, their grade point average, and any correlation these three variables might have to college attrition. Using a stepwise regression analysis to examine trends in the MBTI survey results, Provost (1982) found that students who withdrew from college before earning a degree had dominant introversion (I) and perception (P) preferences. In contrast, those who completed their degree had dominant judging (J) preferences. This may be because those with a preference for judging (J) tend to use logic and prefer order. This tendency may contribute to better study and organizational habits, resulting in a better academic performance, making these students less likely to drop out (Provost, 1991).

Additional studies conducted by Provost (1991) examined freshmen at a small liberal arts college in the southeast United States. The author concluded that among the 245 freshmen participants, those with preferences for extraversion (E) and perceiving (P) were more likely to withdraw from the institution than those who showed a preference for introversion (I) and judging (J).

A doctoral research study conducted by T.J. Cody (1995) used the MTBI traits together with ACT scores in an effort to predict persisters and dropouts at Southern Illinois University at Carbondale. The results of the study found that students with S (sensing) personality types were more likely to persist until graduation than those with a dominant N (intuitive) preference. Of the 437 students surveyed as incoming freshman, 188 dropped out before earning a degree. It was within this dropout population that the greatest concentration of students with ENFP and INTP personality traits was seen: 48

ENFP-classified students made up 12.4 % of the total sample, and 27 INTP students represented 7 % (Cody, 1995).

Kalsbeek (1987) examined the results of data extracted from MBTI assessments completed by incoming freshmen as part of housing applications or during the freshmen orientation process at St. Louis University. The goal of the study, entitled "Tracking Retention and Academic Integration by Learning Style" or TRAILS, was to understand the correlation of learning styles and student retention rates. Kalsbeek (1987) found significant trends in the IN (introversion-intuition) learners who also performed better academically and had higher rates of college retention when compared with the overall sample population. Kalsbeek (1987) hypothesized that this might be due to the fact that individuals with this personality classification (as defined by the MBTI) tend to be conscientious; this contributes to higher academic performance, which in turn has also been correlated to lower rates of student attrition (Tinto, 1975). Using a stepwise regression analysis, the author also found that participants who displayed preferences for introversion and intuition (IN) had higher GPAs than the rest of the sample population (Kalsbeek, 1987). Subsequent research on Tinto's model of student retention was used to compare the results of the survey to the theory that a student's GPA are correlated with overall persistence and therefore directly contributes to graduation rates (Kalsbeek, 1987). (As mentioned earlier, Tinto's model of attrition examines factors related to student attrition such as GPA.)

Schurr, Ruble, Palomba, Pickerill, and Moore (1997) also utilized Tinto's model (1975) in their research. As stated above, this model includes a student's academic

difficulties, their failure to undertake their academic and professional goals, and their inability to become or remain incorporated in the intellectual and social life of the institution. Tinto's "Model of Institutional Departure" argues that to be successful, an individual needs to assimilate into academic and social academic interactions in addition to community environments. The authors carried out a study of freshmen at a Midwestern university. They studied possible correlations of personality (as measured by the MBTI) to various academic variables, campus activities, attitudes, and degree completion. As with Tinto's (1975) research, Schurr et al. (1997), found higher graduation rates among participants with preferences for sensing (S) over intuition (N). O'Connell (1991), Jones (1991), Nash (1999), Stauning-Santiago (2003), Gomez (2005), and Sheaffer (2005) found differing dominant personality types in studies examining both those who drop out of college and those who persist to earning a degree; however, the profiles for each type were not consistent between the studies.

In this regard, the review of literature examining the link between of the Myers-Briggs and college student attrition literature has proven challenging, in that although much of the information indicates there is evidence to suggest some MBTI personality classification types are more likely to complete or drop out of college, the classification itself has varied across students. There have been several college retention initiatives to help both understand the students who earn college degrees and increase their number. Among these, two programs stand out: the Tracking Retention and Academic Integration by Learning Styles (TRAILS) developed by Saint Louis University (Kalsbeek, 1986) and a for-credit course developed by Ball State University (Morrison & Brown, 2006).

The Ball State program used Tinto's theory as a foundation. This theory states that educational problems, the failure of individuals to clearly determine their educational and professional objectives, and their lack of success in remaining assimilated in the academic and community life of the organization are the primary causes of an individual deciding to leave before program completion. As summarized above, Tinto's "Model of Institutional Departure" states that, in order to be successful and persist to graduation, students need to be integrated into official academic systems and social systems.

The three-credit course at Ball State University focused on a population of criminal justice sophomores who suffered from low GPAs and were at high risk for attrition (Morrison & Brown, 2006). Both programs utilized individual and group remedial classes and tutoring to improve overall grade point averages and students' confidence levels about their ability to complete coursework. Participants were paired with other students who had higher levels of integration and were further along in degree completion. In addition, support groups and campus activities were used to create a greater sense of belonging in the participants. Although a correlation between these programs and increased retention cannot be definitively made, retention rates during the years that the programs have been in effect have been higher than during the years before the programs existed (Morrison & Brown, 2006).

The TRAILS program spawned other retention programs, including one that utilizes MBTI assessment (Bushnell, 1990). The administrators of this project viewed the MBTI classification of students as a means to understand their preferences and thus develop program models that most suited their comfort levels (Morrison & Brown, 2006).

Tinto (1997) had already encouraged institutions to integrate social support and

belonging as well as tools for academic success into their retention programs (Engstrom

& Tinto, 2008; Tinto, 1997, 2000; Tinto & Russo, 1994). Daytona Beach Community

College, Florida, attempted to emulate the factors selected by Tinto into their retention

program, which was named "Quanta." (The name was derived from Niels Bohr's notion

of the "quantum jump," whereby an electron (negatively charged) that gains energy from

a photon that strikes it "jumps" to an orbit or shell closer to the positively charged

nucleus.

Evergreen State University in Olympia, Washington utilized MBTI scores for

both students and faculty as a way to understand the needs (both academic and social) of

their students as well as to assist the faculty in adjusting their teaching styles to best

accommodate their students' individual preferences (Engstrom & Tinto, 2008; Tinto,

1997, 2000; Tinto & Russo, 1994). Evergreen then developed a Quanta program utilizing

the MBTI (Bushnell,1990). The Quanta program is a team-taught, two-semester

coordinated studies program. It encourages individual social integration though active,

collective peer-team learning. Bushnell (1990) then studied the results from the first six

years of the Quanta program. Bushnell found that sensing (S) types fared better than

intuitive types in every year except for 1990. Further, the study results saw an average

62% retention rate, up from 42 % in the year before the beginning of the program

(Bushnell, 1990).

Varvel, Adams, Pridle, and Ulloa, (2004); Shi et al. (200) surmised that there is a

strong relationship between an individual's learning preference as defined by the MBTI

and academic success. Specifically, those classified as introvert/judging had significantly higher GPA scores than students classified as Extravert/Perceiving and were much more likely to persist in course completion.

Shi, Shan, and Tian (2007) and Chang and Chang (2000) noted that based on previous research results, the MBTI may be useful in selecting those most suited for science education. Riley (1999) examined the link between personality classifications and academic performance among students in a physical science class and two chemistry classes. Riley found that students classified as INTJ outperformed all other types by an average of 5.6 to 12.6 points.

Varvel et al. (2004) studied senior engineering students and found that the majority had high academic achievement as compared to the general student population, with 40% having a GPA that hovered between 3.0 and 3.5, and 35% having a GPA higher than 3.5. The great majority of the participants were also classified as having an ISTJ preference.

Barrineau (2005) conducted a study employing the MBTI of freshman students at a liberal arts college for a period of ten years. Based on the results of this study, Barrineau (2005) concluded that participants who were classified as having a preference for extraverted, intuitive, feeling, and perceiving (ENFP) were more apt to leave an institution prior to earning a degree; 69% of participants failing to graduate were classified as having a perceiving preference.

Roush (1993) conducted a study of students at the United States Naval Academy. The participant sample consisted of 105 male and female freshmen in the class of 1991.

In addition, he included 134 individuals who were previously enrolled but withdrew from the class of 1992. Using a SRTT analysis, Roush (1993) reported that students with feeling preferences were nearly twice as likely to withdraw from the program in the 1991 class and still significantly but not as strongly likely to withdraw from the class of 1993.

Summary

A search of related literature found significant theories and research on personality and its correlation to motivation, neurobiology, academic performance, college attrition, and finally persistence. This research was conducted using a variety of techniques to both gather and analyze the data. As with this study many also employed a Mann-U test to analyze their results. In exploring the research, I also discovered a number of correlational studies involving the use of the MBTI. Notably, however, this search failed to locate any research that focused on personality type (as defined by the MBTI) as correlated to the highest degree level achieved. I therefore explored the knowledge base concerning how personality typing has been correlated to those factors found to have the most significant contribution to earning a college degree. As noted by McCollum and Kajs (2007), this lack of information concerning the MTBI and highest-level degree earned underlines the point that research still has much to explore.

Chapter 3: Research Method

Introduction

This correlational quantitative study attempted to identify whether certain

personality types are correlated with the highest education level an individual achieves,

utilizing the MBTI (MBTI, 1998). This chapter will include the research methods that

were employed in this study: specifically, the overall research design and the rational for

its use, the sample population used, recruitment procedures, participation requirements,

instrumentation, data analysis, possible threats to validity, and the ethical procedures

followed. Finally, the last section of this chapter summarizes the above listed components

in their entirety.

As discussed in the previous chapter, the Myers-Briggs Type Indicator (MBTI)

has four dimensions: extraversion (E) or introversion (I), sensing (S) or intuition (N),

thinking (T) or feeling (F), judging (J) or perceiving (P), which were the independent

variables of this study. The degree level each participant achieved served as the

dependent variable: (no college degree, certification, associate degree, bachelor's degree,

master's degree, or doctoral or professional degree).

Research Design and Rationale

As stated in Chapter 1, the goal of this study was to gather data to help determine

whether a correlation exists between the MBTI and the highest degree level an individual

attains. Also, in the study I investigated whether there are correlations between these

variables among individuals raised in an impoverished environment. Like the present

study, many of these research projects have employed a Mann-U test to analyze their results and thus confirmed the writer's decision to also employ said methodology.

Participants in the study took the MBTI Test. This instrument was chosen primarily for its reliability and validity established in previous research studies as reported in the *MBTI Manual* (The Myers-Briggs Foundation, 1998) The Myers-Briggs Foundation (1998) showed that individuals who were administered the test at varying intervals had the same preferences 75% to 90% of the time, reflecting a high level of reliability. According to Drummond (1992) the MBTI is one of the top 10 personality classification tools. Notably, Cronbach's coefficient alpha reliabilities for the MBTI were also in the span of 80– 90% in their internal consistency.

Based on the scope of the study, therefore, the Myers-Briggs Type Instrument was selected because of its empirically supported reliability as well as ease of administration and scoring. Previous research in this area has examined several correlational relationships between personality classifications as measured by the MBTI and college success in various areas including degree completion, GPA, and major selection. However, a search of the existing literature has not produced any studies that specifically focus on the MBTI classification and its possible correlational relationship to the degree level an individual achieves.

A quantitative approach was selected for this study, as a qualitative study might provide a vast array of notable findings; however, these would only provide a glimpse of the study's desired information as they would not include the additional socioeconomic data the writer also wished to incorporate. This quantitative study was completed using

the Meyer Briggs Type Indicator and supplementary socioeconomic background question to explore the hypothesized correlation between personality type and the highest degree an individual achieves. In addition, in order to address correlations between personality types and the highest degree an individual achieves amongst participants who have been raised in an impoverished environment, a separate analysis for these participants was conducted.

Population and Sampling

Convenience sampling, which is one of several non-probability sampling techniques, was implemented for this study. This technique was selected for its ease of use and lower cost as it was not felt that a probability sampling method would be feasible in the context of the study. With respect to the sampling frame, a number of potential types and sources of data were used by the researcher. First, I am a member of several LinkedIn® business network groups. These groups have a combined membership of over 80,000. Outside of membership in one of these groups, no additional exclusion or inclusion criteria was used other than requiring participants to be 18 years of age or older.

An analysis was conducted in order to determine the minimum sample size required in order to achieve a statistical power of .80 using an alpha of .05. An alpha of .05 as the standard indicating statistical significance and a statistical power of .80 as a minimum acceptable level of statistical power are considered standard within the field of statistics. A priori power analysis was conducted using G*Power 3.1.9.2 (Faul, Erdfelder, Lang & Buchner, 2007), with a moderate-effect size being a statistical minimum based on previous research conducted in this area. This test, which specified a two-tailed Mann-

Whitney U test, a moderate effect size of $d = 0.5$ (derived from previous literature conduced in this area), an alpha of .05, and a minimum statistical power level of .80, found a minimum total sample size of 134 for participants from an impoverished environment (Faul, Erdfelder, Lang, & Buchner, 2007). The full sample size of 843 was estimated by dividing the subsample size by .159, which this assumed that about 15.9% of the participants will answer yes to question about poverty.

Procedures

The study participants were recruited from three groups featured on the LinkedIn® website. I am a member of said groups as well as the LinkedIn® service. The groups included the Kaplan University (Student Body) group with 2,974 members at the time of posting, the Walden University Job Seekers Group with 1,035 members at the time of posting, and the Psychology Student Network Group with 72,152 members at the time of posting.

Data collection began immediately following approval from Walden University's Institutional Review Board under approval study # 10-19-17-0049801. It was estimated that about one week would be required for initial preparation after the approval of said review. I included surveys completed within a period of three weeks after all announcements had been listed in the three sources.

The study recruitment announcements (contained in Appendix A, Appendix B, and Appendix C) specified that participation required completion of three tasks. First, the participant had to read the Informed Consent, which could be accessed by clicking on the link provided in the recruitment posts. Second, if the participant was in agreement with

the details outlined via the Informed Consent, they were asked to continue by clicking the "Continue" button directly below the Informed Consent.

The Informed Consent and Supplementary Demographic Information link were hosted by the web service Survey Monkey. The first step to completing the survey was to select a five-digit PIN on the same page as the five survey questions and to save this number, since the participants were asked to provide it again when completing the last step of study participation. The demographic survey questions are below. For all questions, respondents were asked to check the box that corresponded to their answer:

1. What is the highest degree you have earned: no college degree, certification, Associate's degree, Bachelor's degree, Master's degree, or doctoral or professional degree?

2. To the best of your knowledge, did your childhood household participate or receive benefits for a year or more from the SNAP program formerly known as Food Stamps? (Yes, no or not sure)

3. What is your gender? (male, female, transgender).

4. Please check your ethnicity (American Indian or Alaskan Native, Black or African American, Hispanic or Latino, White/ Caucasian, prefer to not answer, Other).

5. Age: What is your age?
   a. 18-24 years old

   b. 25-34 years old

   c. 35-44 years old

      d. 45-54 years old

      e. 55-64 years old

      f. 65-74 years old

      g. 75 years or older

A hyperlink to the third step in study participation was also included on the Survey Monkey web page. Once participants completed both the Personal Information Survey and the Informed Consent, they were directed to click on the hyperlink, which brought them to the Elevate web site®, hosted by CPP Publishing the only licensed distributor of the MBTI. The survey participants were asked to provide their name and email address on the landing page to the MBTI, however they were instructed in the informed consent to enter their five-digit ID number in the first and last name space in place of this. In order to ensure they remained anonymous but allowing for their response's to be linked with the demographic survey. Their email address was used in the event that they need to log in more than once to complete the study, however the author of the study did not have access to this information and it was not used by the survey site for solicitations.

I chose the website provided by SkillsOne (an approved administer of CPP publishing) site for administration, scoring, and report generation for the MBTI. There was no debriefing required by the test administrator. However, for those who wished to learn more about the study, a hyperlink to a separate Survey Monkey page was provided at the end of the MBTI test (see appendix D).

The participants' five-digit PIN numbers were used to match the results of each individual's demographic survey with their MBTI results.

Instrumentation

Isabel Myers and her mother Katharine Cook Briggs developed the Myers-Briggs Type Indicator® instrument based on the foundation built by psychologist Carl G. Jung in his book *Psychological Types* first published in 1921. The MBTI questionnaire was initially published by the Educational Testing Service in 1943 and later republished by the current publisher Consulting Psychologists Press (CPP).

The MBTI® Step II™ (Form Q) contains 144 items, all of which use the item response theory (IRT) to assure the most accurate prediction of the personality-type categories. The form can be used by individuals age 14 or over and takes approximately fifteen to twenty minutes to complete. The test is also designed to be at a seventh-grade reading level (Myers, McCaulley, et al., 2003). The online version of MBTI Form M was used in this study. Zeisset (2000) states that a good psychological test is reliable, valid, and has appropriate norms. In considering the most appropriate tool to implement in this study, the writer considered two of what may arguably be considered most frequently employed psychological personality measurement tools; the MBTI and the Five-Factor Model (FFM), known as the Big Five. The FFM uses five categories of measurement of personality extraversion, neuroticism, conscientiousness, agreeableness and openness. The focus of said traits are their correlation to behavior. In determining the most effective tool to use in this study, I considered several aspects of the MBTI versus the FFM. The MBTI's implementation of a cognition-based theory that examines how individuals

intake and process information and experiences, proved a better fit than the FFM Lexical Hypothesis approach, as this hypothesis is loosely defined as the individual differences that are most notable when examining an individual's encoded information present in language. Given that both approaches have been widely acclaimed, implemented, and also criticized, I selected the MBTI for its length of use and further cited reliability.

Test-retest reliability estimates are often used to measure stability or replication over time. The MBTI manual published by the Myers Briggs Foundation (1998) consolidates test-retest reliability with figures that span various time periods, with the longest interval being over fifty years between administrations for the same participant. The results indicated that even with changing social circumstances and life-altering events, 54% of the classifications or scores had not changed at all or had changed on just one scale. In tests conducted during shorter time periods, 75% did not change on individual scales, and about 90% stability was found in some samples that used the newer Form M version of the indicator (Zeisset, 2000). The test-retest reliability approach also shows consistency over time, with agreement levels that are significant beyond coincidence. Notably, Cronbach's coefficient alpha reliabilities for the MBTI were in the span of 80-90% in their internal consistency.

Myers and McCaulley (1995) discussed the scope of existing data regarding the validity of the MBTI, noting that much of it focused on the instrument's construct validity. In particular, they examined the correlations between other personality instruments specifically related to construct validity. For example, when comparing the MBTI with the Jungian Type Survey (JTS), the correlations between the MBTI and the

JTS were: E: 0.68 ($p < 0.01$), I: 0.66 ($p < 0.01$) S: 0.54($p < 0.01$), N: 0.47 ($p < 0.01$), and

F: 0.23 ($p < 0.05$). (The findings for the Thinking variable for the results of this study

have been omitted, as the authors have not clearly defined whether the value listed refers

to a P value or a correlation coefficient.) It would appear, therefore, that the MBTI and

the JTS are drawing from like constructs. Although there are a variety of perspectives

regarding the validity of the MBTI, it is considered by many in the psychological

research community to have high levels of "face validity" (McCrae and Costa, 1988;

Higgs, 2001).

Edwards, Lanning, and Hooker (2002) examined correlations between the scales

of the MBTI and the NEO–PI–R. Some notable results of these correlations included JP

displaying high correlations with conscientiousness at -.59, as well as openness to

experience at .33, SN associated with openness at 0.60, EI with extraversion at -0.64, and

TF with agreeableness at 0.47. The MBTI and the NEO indexes presented similar

correlations in their domains, as also reported by McCrae and Costa (1989).

As earlier noted, the four-letter MBTI type serves as a formula to identify an

individual's preferred mental functions of personality. These have also been labeled "type

dynamics" and are defined as follows: The *dominant function* is the function that has the

most influence on an individual's personality. The *auxiliary function* is the function that

often helps balance the dominant function. The third function, the *tertiary function*, is less

dominant and stands in contrast to the auxiliary function. The fourth and least strong

preference is referred to as the *inferior function*.

The MBTI employs a self-reporting system to determine an individual's dominant preference in each of its four dimensions: extraversion–introversion (E-I), sensation–intuition (S-N), thinking–feeling (T-F), and judgment–perception (J-P). The connections between these preferences create 16 distinctive personality types that are identified by the tool. The overall MBTI score also designates the strength of the preference in each dimension. Higher scores in any given preference identify a strong likelihood that the individual possesses the characteristics associated with those preferences (Varvel, Adams, Pridie, & Ruiz Ulloa, 2004). Using items with high midpoint discrimination exclusively permits the MBTI to have fewer items while still providing comparable statistical information to that provided by other instruments with many more items and inferior midpoint discernment.

The combination of the answers from all of the ninety- three forced-choice questions determines an individual's score in each preference category (Myers, 1998): that is, each question response is given a value within a preference type. The total scores are then combined and the preference that contains the highest numerical score is selected as the participant's personality preference. For example, question # 51 on form Q of the MBTI® Step II™ : "Are you more likely to trust your: a. experience b. hunch?" This response is then recorded as a point on the axis to identify the individual's preference for introversion (I) or extraversion (E). The significance of the placement of this response along with all the others determines one's *dominant*, *auxiliary*, *tertiary* and *inferior* traits among the 16 possible MBTI personality classifications.

In 1975, Consulting Psychologists Press, Inc. (CPP Inc.) began publishing the MBTI as a tool for additional purposes other than research. Also in 1975, the Center for Applications of Psychological Type (CAPT®) was co-founded by Isabel Myers and Mary McCaulley, Ph.D. This organization's mission is to offer assistance to individuals who want to use the MBTI in research. The MBTI instrument can only be obtained through CPP and their approved distributors. I selected the website provided by SkillsOne (an approved administrator of CPP Publishing) because I was accepted by SkillsOne as a student researcher for site administration, scoring, and report generation.

The overall cost for using the MBTI is significant; I chose the online administration option offered to research students by SkillsOne. This included scoring at $13.50 each for counts of 100-499 instruments, with a onetime set-up fee of $190. The supplementary survey contains one question about the participant's knowledge of their family's receipt of Food Stamps or the SNAP program during their upbringing. The participants were asked to check Yes or No to knowledge of said participation; this was used to determine whether their household income levels were likely to be classified as low, which the researcher used as an indicator of an impoverished background. (This determination is discussed in more detail in previous chapters.) Three other questions regarding the participant's highest degree level achieved as well as their gender, ethnicity, and age were also be included.

According to the United States Census Bureau (2014), an estimated 15.9 % of Americans live in poverty. The income guidelines are based on poverty thresholds set by the United States Census Bureau and the United States Department of Health and Human

Services (HHS). Poverty thresholds are the dollar amounts used to determine poverty status and are based on both family size and income of all members living in the same household and adjusted annually using the Consumer Price Index for All Urban Consumers (CPI-U).

Consequently, the qualifying incomes for the SNAP program (Food Stamps), as outlined by the HHS (2014), require the combined income of any qualifying household to be equal or lower to that of the poverty income thresholds set forth by the HHS and the United States Census Bureau (U.S. Census Bureau, 2014). Therefore, this study used participants whose childhood home qualified for this program for a year or more, as a means of measuring their upbringing in a multigenerational impoverished environment.

Data Analysis Plan

This correlational quantitative study sought to identify whether certain personality types are associated with the highest education level an individual achieves, utilizing the Myers-Briggs Type Indicator (MBTI). Specifically, in the study participation process, participants were asked to specify the highest degree level they have achieved (no college degree, certification, Associate's degree, Bachelor's degree, Master's degree, or doctoral or professional degree).

The research questions research hypotheses and null hypothesis for this study were as follows:

Research question #1) Do people classified as extraverts (E) have higher or lower educational levels than people who are classified as introverts (I)?

Research hypothesis #1) Individuals classified as introverts (I) will have higher levels of degree attainment than those classified as extraverts (E).

Null hypothesis #1) There is no difference between degree levels attained by participants classified as introverts (I) and by those participants classified as extraverts (E).

Research question #2) Do people from impoverished backgrounds classified as extraverts (E) have higher or lower educational levels than people who are classified as introverts (I)?

Research hypothesis #2) Individuals from impoverished backgrounds classified as introverts (I) will have higher levels of degree attainment than those classified as extraverts (E).

Null hypothesis #2) There is no difference between degree levels attained by participants from impoverished backgrounds classified as extraverts (E) and by those classified as introverts (I).

Research question #3) Do people who are classified as sensing (S) have higher or lower educational levels than people who are classified as intuitive (N)?

Research hypothesis #3) Individuals classified as intuitive (N) will have higher levels of degree attainment than those classified as sensing (S).

Null hypothesis # 3) There is no difference between degree levels attained by participants classified as intuitive (N) and by those classified as sensing (S).

Research question #4) Do people from impoverished backgrounds who are classified as sensing (S) have higher or lower educational levels than people who are classified as intuitive (N)?

Research hypothesis # 4) Individuals from impoverished backgrounds classified as intuitive (N) will have higher levels of degree attainment than those classified as sensing (S).

Null hypothesis # 4) There is no difference between degree levels attained by participants from impoverished backgrounds classified as intuitive (N) and by those classified as sensing (S).

Research question #5) Do people who are classified as judging (J) have higher or lower educational levels than people who are classified as perceiving (P)?

Research hypothesis # 5) Individuals classified as judging (J) will have higher levels of degree attainment than those classified as perceiving (P).

Null hypothesis # 5) There is no difference between degree levels attained by participants classified as judging (J) as compared to those attained by those classified as perceiving (P).

Research question #6) Do people from impoverished backgrounds who are classified as judging (J) have higher or lower educational levels than people who are classified as perceiving (P)?

Research hypothesis #6) Individuals from impoverished backgrounds classified as judging (J) will have higher levels of degree attainment than those classified as perceiving (P).

Null Hypothesis # 6) There is no difference between degree levels attained by participants from impoverished backgrounds classified as judging (J) and by those classified as perceiving (P).

Research question #7) Do people who are classified as feeling (F) have higher or lower educational levels than people who are classified as thinking (T)?

Research hypothesis # 7) Individuals classified as thinking (T) will have higher levels of degree attainment than those classified as feeling (F).

Null hypothesis # 7) There is no difference between degree levels attained by participants classified a thinking (T) and those classified as feeling (F).

Research question #8) Do people from impoverished backgrounds who are classified as feeling (F) have higher or lower educational levels than people who are classified as thinking (T)?

Research Hypothesis #8) Individuals from impoverished backgrounds classified as thinking (T) will have higher levels of degree attainment levels than those classified as feeling (F).

Null hypothesis # 8) There is no difference between degree levels attained by participants from impoverished backgrounds classified as thinking (T) and those classified as feeling (F).

A series of descriptive as well as inferential statistical tests were conducted for the study. First, a series of descriptive statistics were generated in order to present an initial illustration of the data collected and the participants included in this study. This consisted

of tables reporting the sample sizes and percentages of response for all categorical variables included in the study. Next, a series of further descriptive as well as inferential statistical tests were conducted in order to answer the research questions included in this study. First, the practical question included in this study asked about the most frequently seen personality types at each educational level, which was categorized by highest degree completed.

This question was answered through the use of descriptive statistics, in which the sample sizes and percentages of all personality types were reported separately on the basis of highest degree Following this, the four theoretical questions posed were answered by using the entire sample to determine whether there is a relationship between educational level and the following personality preferences used in the MBTI: extravert (E) versus introvert (I), sensing (S) versus intuition (N), judging (J) versus perceiving (P), and feeling (F) versus thinking (T). These same four theoretical questions were also be explored specifically with respect to participants from an impoverished background. These questions asked whether one personality preference has a higher or lower educational level than respondents classified as having the opposing personality preference. Within these data, educational level was measured on the ordinal level as this is a rank-ordered, categorical measure. For this reason, the independent samples *t*-test is inappropriate because it is a parametric test and assumes normality of the outcome, while the non-parametric alternative, the Mann-Whitney *U* test, was an appropriate choice in this case. The Mann-Whitney *U* test is a nonparametric test of the null hypothesis that it is similarly likely that a arbitrarily chosen value from one example was less than or

greater than a arbitrarily designated value from a second sample (Willson, 1976). Unlike *t*-test it did not involve the theory of normal distribution. It is almost as nominal as the *t*-test on normal distributions.

These tests were run using IBM Corporation's trademarked SPSS data analysis software. Therefore, in order to answer all eight theoretical questions, a series of eight Mann-Whitney *U* tests were used to analyze the data collected. These tests determined whether one personality type has a significantly higher or lower educational level than the opposing personality type with respect to the entire sample as well as with respect to participants from an impoverished background.

Threats to Validity

Numerous considerations contribute to the validity of research, including the accuracy of the data, the candor of the people involved in providing and securing the data, and the suitability or social situation in which the information is obtained (Fairclough, Jessop, & Sayer, 2010). In addition, the standard qualifiers of validity and reliability must be observed through the entirety of the data (Wodak & Meyer, 2012).

The nature of the study, which combined an established psychological measurement tool with a selected means to identify an additional population within the overall participation sample, created a threat to the study validity, since the construct of the MBTI has been questioned by some in the scientific community. I have addressed this threat in previous chapters, citing data from previous research studies that show notable levels of validity and reliability.

Criterion validity is the type of validity that examines the correlation between the survey and a criterion variable. *Statistical conclusion validity* is the level to which conclusions about the relationship among variables based on the data are quantitative, statistical, and qualitative data. In order to ensure that these criteria were adequately met, I employed the most current version of the MBTI Form M under the licensed permission of the current publisher, CPP, as well as of its certified distributor. A copy of said permissions is included in the Appendix of this chapter.

With respect to external validity specifically, threats are defined as conditions that may limit my ability to generalize the results of the research study (Wodak & Meyer, 2012). One of the main limitations and threats to external validity is localization of the dataset: that is, the entire participant sample in this study belongs to the same geographical location (the United States) and also is comprised of alumni participants from only three institutions of higher learning. Another limitation of this study was the small sample size. Although the experiment covered a dataset of 226 students, which is arguably sufficient, a larger sample size would have increase external validity. That said, because the selected approach had some other potential aspects that posed a threat to the study's external validity, additional measures were taken. These included obtaining the security and privacy policies of both sites used to conduct the research as well as presenting all findings in anonymous result format.

Ethical Procedures

The survey participants were informed about the scope of the research, and the detailed expectations for participants were listed in the study participation in recruitment

posts, together with an Informed Consent that detailed the nature of the study. This included the information that study results which were used in this doctoral dissertation and are subject to academic review and possible publishing. The researcher has also included copies of each recruitment announcement in Appendix A, Appendix B, and Appendix C. The recruitment of participants was done through established institutions of higher learning. All electronic resources used for gathering study data were done so through secured services, each of which had reported a security system within their technical infrastructure.

All collected data is stored in my personal computer, which is password-protected, used only on a certified secured network, and stored in a locked office for which only the writer has a key or access to said key. Additionally, all participants provided their responses anonymously, and the original source data was destroyed according to university guidelines. The IRB approval for this research will be valid through October 2019.

Summary

This chapter provided an in-depth overview of MBTI and rationale for using this psychological tool to address the research problem explained in this study A supplemental question was added to the required participant information to determine whether or not a participant had or had not been raised in an impoverished environment. The data analysis was discussed as it relates to gathering information, the desired number

of required participants, and the three methods that were employed in extracting the

results data. In Chapter 4, I will present the findings from the survey data.

Chapter 4: Results

Introduction

In this chapter I will discuss the descriptive statistics as well as collection

methods and data analyses or the report. This correlational quantitative study attempted

to identify whether certain personality types are correlated with the highest education

level an individual achieves, utilizing the MBTI (1998). An additional analysis was also

conducted of the subset of participants from a generational poverty background. The

design of the study involved one nominal-level variable with two groups and an ordinal-

level variable. The research questions, hypotheses, and analysis were all consistent with

the scale of measurement.

Additionally, I attempted to address the prevalence of personality types at each

educational level. The MBTI as well as the degree level a participant achieves (no degree,

certification, associate's degree, bachelor's degree, master's degree, or doctoral or

professional degree) served as the variables.

The research questions in this study consisted of a single practical question with a

series of theoretical questions; these theoretical questions focused on the entire sample as

well as specifically on participants from an impoverished background. The questions and

the hypothesis used for the study are presented below:

Practical Question: What are the most frequently seen personality types at each

educational level (no college degree, certification, Associate's degree, Bachelor's degree,

Master's degree, or doctoral or professional degree)?

Research question #1) Do people classified as extraverts (E) have higher or lower educational levels than people who are classified as introverts (I)?

Research hypothesis #1) Individuals classified as introverts (I) will have higher levels of degree attainment than those classified as extraverts (E).

Null hypothesis #1) There is no difference between degree levels attained by participants classified as introverts (I) and by those participants classified as extraverts (E).

Research question #2) Do people from impoverished backgrounds classified as extraverts (E) have higher or lower educational levels than people who are classified as introverts (I)?

Research hypothesis #2) Individuals from impoverished backgrounds classified as introverts (I) will have higher levels of degree attainment than those classified as extraverts (E).

Null hypothesis #2) There is no difference between degree levels attained by participants from impoverished backgrounds classified as extraverts (E) and by those classified as introverts (I).

Research question #3) Do people who are classified as sensing (S) have higher or lower educational levels than people who are classified as intuitive (N)?

Research hypothesis #3) Individuals classified as intuitive (N) will have higher levels of degree attainment than those classified as sensing (S).

Null hypothesis # 3) There is no difference between degree levels attained by participants classified as intuitive (N) and by those classified as sensing (S).

Research question #4) Do people from impoverished backgrounds who are classified as sensing (S) have higher or lower educational levels than people who are classified as intuitive (N)?

Research hypothesis # 4) Individuals from impoverished backgrounds classified as intuitive (N) will have higher levels of degree attainment than those classified as sensing (S).

Null hypothesis # 4) There is no difference between degree levels attained by participants from impoverished backgrounds classified as intuitive (N) and by those classified as sensing (S).

Research question #5) Do people who are classified as judging (J) have higher or lower educational levels than people who are classified as perceiving (P)?

Research hypothesis # 5) Individuals classified as judging (J) will have higher levels of degree attainment than those classified as perceiving (P).

Null hypothesis # 5) There is no difference between degree levels attained by participants classified as judging (J) as compared to those attained by those classified as perceiving (P).

Research question #6) Do people from impoverished backgrounds who are classified as judging (J) have higher or lower educational levels than people who are classified as perceiving (P)?

Research hypothesis #6) Individuals from impoverished backgrounds classified as judging (J) will have higher levels of degree attainment than those classified as perceiving (P).

Null Hypothesis # 6) There is no difference between degree levels attained by participants from impoverished backgrounds classified as judging (J) and by those classified as perceiving (P).

Research question #7) Do people who are classified as feeling (F) have higher or lower educational levels than people who are classified as thinking (T)?

Research hypothesis # 7) Individuals classified as thinking (T) will have higher levels of degree attainment than those classified as feeling (F).

Null hypothesis # 7) There is no difference between degree levels attained by participants classified a thinking (T) and those classified as feeling (F).

Research question #8) Do people from impoverished backgrounds who are classified as feeling (F) have higher or lower educational levels than people who are classified as thinking (T)?

Research Hypothesis #8) Individuals from impoverished backgrounds classified as thinking (T) will have higher levels of degree attainment levels than those classified as feeling (F).

Null hypothesis # 8) There is no difference between degree levels attained by participants from impoverished backgrounds classified as thinking (T) and those classified as feeling (F).

Data Collection

The study surveys were completed by 225 participants. Three participants did not complete both parts of the study. Two participants completed the demographic study hosted on the Survey Monkey website but did not complete the MBTI hosted on the

SkillsOne website. One participant completed the MBTI portion of the study but did not complete a corresponding demographic study. These three partial surveys were not included in the overall study results presented herein.

The survey participation announcement was posted in three groups on the LinkedIn website and was opened for participation for a period of three weeks. There were 112 participants the first week, three of whom were disqualified for incomplete survey participation. There were 89 participants during the second week and 24 during the third week of the study.

Demographic Representation and Descriptive Statistics

The survey results were that 11.71 % or 26 individuals had no college degree. Ten participants or 4.5 % have earned a Certification, while 19 people or 8.56 % listed an Associate's degree as the highest educational level they have achieved. The highest percentage among the entire population of participants with degrees were those with Bachelor's degrees, amounting to 75 individuals or 33.78 % of the total sample population. 73 participants, amounting to 32.88 %, have earned a Master's degree. Nineteen participants or 8.96 % of the sample had earned a Doctorate or professional degree. In the group of participants who were categorized as not having been raised in an impoverished environment, 6.3 % or 7 people did not have a college degree; .9 % or 1 participant had a certification; 6 people or 5.4 % had an Associate's degree; 38.7 % or 43 individuals had a Bachelor's degree; and 45 or 40.5 % have earned Master's degrees. Finally, 9 people or 8.1 % of this group of survey participants have earned a Doctoral or professional degree.

These results vary slightly from those of the *United States Census Bureau, Current Population Survey (2017) Annual Social and Economic Supplement*. The Census Bureau (2017) reported that 33.4 % of American adults have attained a Bachelor's degree and 26 % have earned a high school diploma, whereas 9.3 % of adults have earned a Master's degree. Nearly 2% of Americans have a doctoral degree, and 1.5 % have earned a professional degree.

Within the impoverished group, 11.2 % or 25 people had no college degree; 9 individuals or 7.1 % have a certification; 14 participants or 12.5 % have earned an Associate's degree; 31 individuals or 27.7 % of the participants in this classification have earned a Bachelor's degree. 31 people or 27.7 % from the impoverished group have earned a Master's degree and 10 or 8.9% have a professional or Doctoral degree.

The following table represents the percentage and frequency of the highest degree level earned by the entire sample.

Table 1:
Q2: What is the highest degree you have earned? Results for Total Survey Sample

Highest Degree Level Earned	Number of Respondents	Percentage of Sample
No college degree	26	11.71 %
Certificate	10	4.50 %
Associate degree	19	8.56 %
Bachelor's degree	75	33.78%
Master's degree	73	32.88 %
Doctoral or Professional degree	19	8.56 %
Total	222	100 %

The following table represents the percentage and frequency of the highest degree level earned by the sub-sample.

Table 2
Q2: What is the highest degree you have earned? Results for Subsample:

Highest Degree Earned (Sub-Sample)	Number of Respondents	Percentage of Survey Sample
No college degree	16	16.84 %
Certificate	8	8.42 %
Associates degree	13	13.68 %
Bachelor's degree	24	25.26 %
Master's degree	27	28.42 %
Doctoral or professional degree	7	7.37 %
Total	95	100%

The following table represents the number and percentage of participants'

responses from the total sample regarding their childhood household participation in the

SNAP also known as food stamps program.

Table 3
Q3: To the best of your knowledge did your childhood household participate or receive benefits from the SNAP program, formerly known as Food Stamps?

Answer Choice	Number of Respondents	Percentage of Survey Sample
Yes	127	57.21 %
No	95	42.79 %
Not Sure	0	0 %
Total	222	100 %

The following table represents the frequency and percentage of participants for

each category selection of the gender identification question in the survey.

Table 4
Q4: What is your gender?

Answer Choice	Number of Respondents	Percentage of Survey Sample
Female	125	57.60%
Male	90	41.47 %
Transgender	2	0.92 %
Total	222	100 %

The fourth question in the demographic survey asked participants to select their ethnicity from a list of choices. These choices were as follows: American Indian or Alaskan Native, Black or African American, Hispanic or Latino, White/ Caucasian, prefer to not answer, Other (as an ethnicity that was not listed). The following table represents the frequency and percentage of identifications chosen for the survey question asking the participants to define their ethnicity.

Table 5

Q5: What is your ethnicity? (Please select all that apply)

Declared Ethnicity	Number of Respondents	Percentage of Survey Sample
American Indian or Alaskan Native	6	2.70 %
Asian or Pacific Islander	14	6.31 %
Black or African American	65	29.28 %
Hispanic or Latino	40	18.02 %
White/Caucasian	97	43.69 %
Prefer not to answer	0	0.00%
Other	4	1.80 %
Total	222	100 %

The sixth and last question participants were asked to answer was their age from within a range provided. The ranges were as follows: 18-24 years old, 25-34 years old, 35-44 years old, 45-54 years old, 55-64 years old and 65-74 years old and 75 years or older. The following table represents the frequency and percentage of participants answers regarding the age category of which they were a member.

Table 6

Sample Ages by Group

Q# 6: Age: What is your age?

Answer Choice	Number of Respondent	Percentage of Survey Sample
18-24 years	51	22.97 %
25-34 years	65	29.26 %
35-44 years	66	29.73 %
45-54 years	26	11.71 %
55-64 years	13	5.86 %
65-74 years	1	0.45%
75 years or older	0	0.00 %
Total	222	100.00 %

Table 7

MBTI Types for Full Survey Sample

	Frequency	Percent	Valid Percent	Cumulative Percent
ENFJ	2	.9	.9	.9
ENFP	37	16.7	16.7	17.6
ENTJ	1	.5	.5	18.0
ENTP	1	.5	.5	18.5
ESFJ	10	4.5	4.5	23.0
ESFP	19	8.6	8.6	31.5
ESTJ	21	9.5	9.5	41.0
ESTP	6	2.7	2.7	43.7
INFJ	3	1.4	1.4	45.0
INFP	12	5.4	5.4	50.5
INTJ	3	1.4	1.4	51.8
INTP	3	1.4	1.4	53.2
ISFJ	18	8.1	8.1	61.3
ISFP	26	11.7	11.7	73.0
ISTJ	48	21.6	21.6	94.6
ISTP	12	5.4	5.4	100.0
Total	222	100.0	100.0	

Table 8

MBTI Types for the Sub- Sample

	Frequency	*Percent*	*Valid Percent*	*Cumulative Percent*
ENFJ	2	2.1	2.1	2.1
ENFP	17	17.9	17.9	20.0
ENTJ	0	0	0	0
ENTP	0	0	0	0
ESFJ	6	6.3	6.3	26.3
ESFP	8	8.4	8.4	34.7
ESTJ	12	12.6	12.6	47.4
ESTP	0	0	0	0
INFJ	1	1.1	1.1	48.4
INFP	6	6.3	6.3	54.7
INTJ	1	1.1	1.1	55.8
INTP	1	1.1	1.1	56.8
ISFJ	8	8.4	8.4	65.3
ISFP	9	9.5	9.5	74.7
ISTJ	19	20.0	20.0	94.7
ISTP	5	5.3	5.3	100.0
Total	95	100.0	100.0	

The following table represents the personality classification type and the

frequency of each degree level obtained for the entire survey sample:

Table 9
MBTI Type and Highest Degree Earned: Entire Sample

	Type	No Degree	Certificate	Associate Degree	Bachelor's Degree	Master's Degree	Doctoral/ Professional
Valid	ENFJ	0	0	0	1	1	0
	ENFP	3	2	3	14	10	5
	ENTJ	0	0	0	1	0	0
	ENTP	0	0	0	0	1	0
	ESFJ	3	0	0	4	2	1
	ESFP	0	0	2	8	7	2
	ESTJ	1	0	1	9	8	2
	ESTP	0	0	1	2	3	0
	INFP	3	2	0	2	4	1
	INFJ	0	0	0	1	2	0
	INTJ	0	0	0	2	1	0
	INTP	0	0	0	2	1	0
	ISFJ	3	0	3	5	5	2
	ISFP	3	2	1	11	8	1
	ISTJ	7	3	5	12	17	4
	ISTP	4	0	2	2	3	1
	Total	27	9	18	76	73	19

The following table represents the personality classification type and the
frequency of each degree level obtained for those survey participants who self-identified
as having been raised in an impoverished environment:

Table 10

MBTI Type and Highest Degree Earned: Subsample

Type		No Degree	Certificate	Associate Degree	Bachelor's Degree	Master's Degree	Doctoral/ Professional
Valid	ENFJ	0	0	1	1	0	0
	ENFP	2	2	3	3	5	2
	ENTJ	0	0	0	0	0	0
	ENTP	0	0	0	0	0	0
	ESFJ	2	0	0	1	2	1
	ESFP	0	0	1	1	4	2
	ESTJ	0	0	1	3	1	0
	ESTP	0	0	0	0	0	0
	INFP	3	2	0	1	0	0
	INFJ	0	0	0	0	1	0
	INTJ	0	0	0	1	0	0
	INTP	0	0	0	1	0	0
	ISFJ	2	0	2	1	2	1
	ISFP	1	1	1	4	2	0
	ISTJ	3	2	4	3	6	1
	ISTP	3	0	0	1	1	0
Total		16	8	13	24	27	7

The following table represents the percentage of each educational level and
personality dimension classifications of the total survey sample.

Table 11
MBTI Personality Dimensions and Highest Degree Level Achieved, by Percentage

Dimension	No Degree	Certificate	Associate Degree	Bachelor's Degree	Master's Degree	Doctoral/ Professional
Extraversion	26 %	22 %	39 %	51 %	44 %	53 %
Introversion	74 %	78 %	61 %	49 %	56 %	47 %
Sensing	78 %	56 %	83 %	70 %	73 %	68 %
Intuition	22 %	44 %	17 %	30 %	27 %	32 %
Thinking	44 %	33 %	50 %	39 %	47 %	37 %
Feeling	56 %	67%	50 %	61 %	53 %	63 %
Judging	52 %	33 %	50 %	46 %	49 %	47 %
Perceiving	48 %	67 %	50 %	54 %	51 %	53 %

The following table represents the frequency of each educational level and
personality dimension classifications of the total survey sample.

Table 12
Frequency of Highest Degree Earned: Sample

	Dimension	No Degree	Certificate	Associate	Bachelor's	Master's	Doctoral/ Professional
Valid	Extraversion	7	2	7	39	32	10
	Introversion	17	7	11	37	41	9
	Sensing	20	5	15	53	53	13
	Intuition	6	4	4	23	20	6
	Thinking	12	3	5	30	34	7
	Feeling	15	6	9	46	39	12
	Judging	14	3	9	35	36	9
	Perceiving	13	6	9	41	37	10

The following table represents the personality dimensions and the percentage of each
degree level obtained for the survey subsample.

Table 13

MBTI Personality Dimensions and Highest Degree Achieved, by Percentage: Subsample

Dimensions	No Degree	Certificate	Associate	Bachelor's	Master's	Doctoral/ Professional
Extraversion	25 %	38 %	46 %	50 %	56 %	71 %
Introversion	75 %	63 %	54%	50 %	44 %	29 %
Sensing	69 %	50 %	69 %	71 %	78 %	71 %
Intuition	31 %	50%	31 %	29 %	22 %	29 %
Thinking	37 %	38 %	38 %	50 %	41 %	14 %
Feeling	63 %	63%	62 %	50 %	59 %	86 %
Judging	44 %	37.5 %	62 %	54 %	56 %	43 %
Perceiving	56 %	62.5 %	38 %	46 %	44 %	57 %

The following table represents the personality dimension and the frequency of

each degree level obtained for the survey subsample.

Table 14

MBTI Personality Dimensions and Highest Degree Level Achieved, by Frequency (Subsample)

	Dimension	No Degree	Certificate	Associate	Bachelor's	Master's	Doctoral/ Professional
Valid	Extraversion	4	3	6	12	15	5
	Introversion	12	5	7	12	12	2
	Sensing	11	4	9	17	21	5
	Intuition	5	4	4	7	6	2
	Thinking	6	5	5	12	11	1
	Feeling	10	3	8	12	16	6
	Judging	7	3	8	13	15	3
	Perceiving	9	6	5	11	12	4

The practical question that was the basis for this study was the following: What

are the most frequently seen MBTI personality types at each educational level (no college

degree, certification, Associate degree, Bachelor's degree, Master's degree, or Doctoral

or professional degree)? The survey gave results for these percentages (see table's 11 & 13).

Mann-Whitney U Tests

Eight Mann-Whitney U tests were conducted to address each of the null hypotheses for each question. The results indicated that seven of the eight null hypotheses were not rejected, as the p's ranged from .147 to .942. The single null hypothesis that was rejected was as follows:

There is no correlation between degree levels attained by participants from impoverished backgrounds classified as extraverts (E) and by those classified as introverts (I), the Mann-Whitney U test result yielded a significance test level of p= .022. This research question was stated as: Do people from impoverished backgrounds classified as extraverts (E) have higher or lower educational levels than people who are classified as introverts (I)? The corresponding research hypothesis for this question was as follows: Individuals from impoverished backgrounds classified as introverts (I) will have higher levels of degree attainment than those classified as extraverts (E). This research hypothesis was not supported because the results were opposite of the predicted direction (see Table 13).

Summary

Analysis of the results of this study showed no evidence for any correlation for any of the research questions except for one. There was an association between degree levels attained by participants from impoverished backgrounds classified as extraverts (E)

and by those classified as introverts (I). This research hypothesis for this relationship was not supported because the results were opposite of the predicted direction.

In Chapter 5 I will also present a more detailed interpretation of findings, the limitations of the study, possible implications for social change, recommendations for further study, and offer a conclusion.

Chapter 5: Limitations, Recommendations and Implications

Introduction

In this Chapter I will present and interpret the findings of this study as well as discuss its limitations. Next, I will provide some of my recommendations for future research and its implications. In this study, I attempted to identify whether certain personality types (utilizing the MBTI (1998) personality classifications) were correlated with the highest education level an individual achieves. This study also contained a supplementary socioeconomic background survey to explore the hypothesized correlation of personality type with the highest degree an individual achieves among those having been raised in an impoverished environment.

After analyzing the results of this study, there was no evidence for any correlation for all research questions, except for one. There was an association between degree levels attained by participants from impoverished backgrounds and being classified as extraverted or introverted. This research hypothesis for this relationship was not supported because the results were opposite of the predicted direction.

Interpretation of the Findings

The study findings contrasted with hypotheses one and two of the study which surmised that individual's from both the complete sample and subsample classified as introverts(I) would have higher levels of degree attainment than those classified as extravert's (E).

One reason for the study results might be that students who are introverted (I), and also suffer from learning difficulties, are less likely to reach out to those who might

provide assistance in overcoming academic issues. For example, it is probable that an introverted student might be less likely that an extroverted individual to reach out to other students to form a study group, engage in tutoring or take advantage of mentoring programs, that might lead to improving academic achievement. As academic success has been linked to higher graduation rates (Spengler, Lüdtke, Martin, & Brunner, 2013) this may negatively impact individual's level of degree attainment.

I would suggest there may be some additional possible explanations for these findings. Tito (1989) proposed that an individual who feel safe and comfortable in their academic environment are more likely to persevere to graduation. I would also suggest that individuals from impoverished backgrounds in particular, who are introverted (I) are less likely to interact with other students and faculty, leading to greater uneasiness in a higher education environment and therefore are more likely to not enjoy college attendance, and to discontinue it.

However, these theories conflict with some research explored in second chapter. For example, Eysenck and Eysenck, (2013) concluded from their study that introverts (I) experience higher levels of cortical arousal, a process normally associated with the ability to perform specific and difficult task such as those associated with academic achievement. Additionally, Rosander, (2013) likewise discussed in Chapter 2 of this study where cortical arousal was found to increase some forms of comprehension and the mastery of elementary tasks without difficulty for introverts (I). This mastery is thought to contribute to academic success which has been linked to higher degree attainment rates (Leppink, Paas, Van Gog, van Der Vleuten, & Van Merrienboer, 2014).

It was the aforementioned research data which led me to surmise for the purpose of developing some of the study hypothesis, that introverts (I) should have higher rates of degree attainment as opposed to extroverts (E). I would propose that it is the combination of these ideas that may explain why there was a nonsignificant finding in the full sample.

The study results also showed no correlation for the third and fourth hypotheses which were stated as : #3) Individuals classified as intuitive (N) will have higher levels of degree attainment than those classified as sensing (S) and # 4) Individuals from impoverished backgrounds classified as intuitive (N) will have higher levels of degree attainment than those classified as sensing (S). The results were that those with a preference for intuitiveness (N) had lowered levels of degree attainment across all degree levels. This finding was also true of the sub-sample.

I would suggest that there may be some possible explanations for why the results differed from much of the existing research explored in the second chapter. For example, Bargar and Hoover (2012) found that intuitive (N) types prefer learning activities that center around hands-on experience, defined goals, and practical implications. Further, the researchers surmised that intuitive (N) types prefer an open instructional environment and loose abstract concepts. I would propose that perhaps there was no association for intuitive (N) types and degree attainment level because they are not comfortable in and often regimented and strictly academic teaching models. Conceivably this lack of comfort level leads them to discontinue attendance.

Jensen and DiTiberio (1984) research showed that sensing (S) types preferred complex and factual assignments that can be proven. In addition, those classified as

sensing (S) often questioned and reexamined their work. I would propose that it is possible no lack of association was found because sensing(S) types may find it difficult to persevere in degree programs which require abstract conceptual learning.

I would offer that it is the possibility of both the explanation outlined above or the conclusions drawn for existing research occurring, which could account for the reason why there was no significant correlation found between educational level and being sensing (S) versus intuitive (I).

Hypotheses number seven and eight of the study, were based upon the concept that Individuals classified as thinking (T) will have higher levels of degree attainment than those classified as feeling (F), both within the sub-sample as well as the full sample. The results indicated there was no association between degree attainment and being classified as thinking (T) versus feeling (F).

I therefore surmised that those classified as thinking (T) would have higher levels of degree attainment as compared to those with a preference for feeling (F) based on conclusions drawn by reviewing the literature discussed in the second chapter of this paper. For example, Brown, Bull, and Pendlebury, (2013) reported that individuals classified as having a preference for thinking (T) are logical and use analysis and reason to make decisions. They further asserted that these people value logic rather than intuition when making decisions and attempting to understand principles, as well as concentrate on tasks to achieve understanding on a particular subject (Brown et al., 2013).

Munro, Chilimanzi and O'Neill, (2012) contended that individuals with a preference for feeling (F) like to consider what is valuable to them and to others who

show attentiveness when making decisions (Munro, Chilimanzi, & O'Neill, 2012).

Brown, Bull and Pendlebury, (2013) conveyed that these individuals also tend to make

decisions according to what others they value prefer (Brown et al., 2013).

I would propose that conceivably individuals with a preference for feeling (F)

assimilate better into a college environment because of what appears to be considerable

regard for others. Whereas the rigidity and need for logic as opposed to feeling displayed

by those classified as thinking (T) might limit these individual's ability to socialize.

Leading to feeling uncomfortable in the college environment, and the discontinuation of

attendance.

Conversely however, it might also be plausible that the opposite is possible. That

is those classified as thinking (T) might perform better in a structured college classroom

environment. While those classified as feeling (F) need to be accepted by others may lead

to excessive socialization distracting from academic pursuits. I would offer that it is the

possibility of both of these scenarios occurring that would explain why there is no

association.

Some of the other survey outcomes were also important in that they seem to differ

from the results indicated in other research in this area. For example, within the entire

sample the most dominant preference for the receipt of a Doctoral or Professional degree

was ENFP with 5 or 29 %, of the 19 who earned a degree at this level. Within the sub-

sample, the same disparity also existed as the highest level of doctoral or professional

degree attainment was also within the ENFP dimension and shared by the same number

of individuals classified as ESFP with 2 or 11.76 % respectively within this degree achievement range.

These findings are important because those categorized as ENFP have been described by some researchers as someone who is invigorated by spending time with other people who concentrates on concepts as opposed to facts and specifics (Bean & Eaton, 2008). In addition, individuals with this preference often make decisions based on viewpoints or emotions and who are spontaneous rather than regimented. They also often act as champions or cheerleaders and take delight in also helping others to achieve their dreams (Bean & Eaton, 2008).

In contrast those with ESFP classification have been described as are intensely emotional, feel offense to criticism, they often tend to avoid conflict and require constant stimulating in order to avoid boredom. Those with this tendency are also often poor at planning for future events and can be extremely unfocused when dealing with subjects that do not interest them. However, they are also outwardly motivated and often lack fear of the unknown and enjoy new experiences. They are often described as having originality and excel at interacting with others (Schurr, Ruble, Palomba, & Moore, 1997).

Last, I would suggest that another possibility may be that the MBTI may not be a valid tool for use in the prediction of achievement in higher education. Specifically, to determine the highest degree level an individual achieves.

Limitations

My study had several limitations. First the study was correlational, therefore no causal conclusions can be made, and there may be a number of explanations consistent

with the findings. Another was the sources from which I recruited study participants. The study participants were enlisted by posts featured on three groups on the LinkedIn® website who are associated with professional and academic networking. This may have limited access to the type of survey population who participated. If the survey population included those whose personal circumstances do not include activities such as professional networking, the results may have differed. For example, additional participants whose professions do not require or for which professional networking is not a regular activity, may have provided results starkly different from those of the study.

 Next, there was only one question used to determine an individual's childhood economic background. I believe that participant's answers may have varied due to not remembering or incorrectly recalling their childhood household's participation in the SNAP program. Finally, the limited time period (three weeks) of open participation may have disqualified potential participants who visit the web sites less frequently or lack spare time to complete the survey within that period.

Recommendations

This study may aid in determining the direction of further research regarding degree attainment. More specifically, based upon this study's results future researchers may be encouraged to not use the MBTI as an exclusive tool in degree level attainment research. I would suggest that although the MBTI was not a strong indicator of an individual's level of degree attainment in this study, the assessment itself as explored earlier in this text proves to be a valuable tool in psychological studies. Therefore, I propose that the MBTI be utilized with other measures for research in this area, such as

more detailed background information that may also influence an individual's ability to complete a college degree or certificate. This background information would include relevant influences such as a participant's age, race, sex, ethnicity, health issues, family compilation, personal obligations, employment status, and financial need. For example, although a student may have a personality preference that in some research has been correlated to academic achievement, they may also have personal circumstances that could negatively affect their ability to earn a degree. Student who must balance, children, parents and work obligations may qualify for people within this group.

In addition, I believe that the discovery of any trends such as a disproportionate amount of classification types within a survey population could create an opportunity to examine these individuals in further detail, to help understand if there are also any corresponding personal experiences or current circumstances that these individual share or do not share. Some of the advantages of this might be to isolate other factors that can positively or negatively affect degree attainment as well as allow for future research efforts to build upon the results. This case study approach implementing personal supplementary interviews in conjunction with MBTI assessments may also allow for the development of new questions for future research.

Implications

The scrutinization of institutions of higher learning has progressively increased in recent years, particularly as it relates to the areas of student retention and graduation rates. As a result, many administrators continually seek to measure and understand the

predictors, and influences that effect these areas. Adding to this challenging task is an ever-changing student population and societal expectations.

I would suggest that the significance of the findings of the study are that they contradict much of the existing research and subsequent theories in this area and explored in second chapter of this study. These contradictions may serve as an incentive to both further test and challenge said existing information.

I propose that the opportunity for this study to contribute to positive social change lies in the possibility of   improving recruitment marketing and retention programs for institutions of higher learning. For example, it could encourage college administrators and marketing departments to alter current recruitment programs that utilize the MBTI as an exclusive tool. Meaning that any marketing programs that use only information from MBTI research regarding the preferences of some MBTI types should also take into consideration a potential students' personal circumstances that may also affect their desire or ability to attend an institution. These factors might include financial constraints, the necessity to work during attendance, childcare obligations, family composition and background.

Additionally, future marketing recruitment and college retention programs could be designed to reflect some of the findings of the study. For example, the results indicated that those identified as extraverts (E) had greater degree attainment levels than introvert (I) within the subsample. As discussed in the review of related literature, those who feel comfortable in their environment are more likely to pursue and persevere in degree attainment (Tinto, 1990). I propose that recruitment and retention programs could

entice individuals into being more socially active by appealing to their fields of interest while adding elements of socialization. For example, recruitment tours that group potential students by areas of interest and include non -academic mixers in their experience.

Finally, the consideration of personal information obtained from questionnaires for potential or incoming students could also aid administers in designing marketing recruitment programs that would successfully address any personal hurtles (such as family, heath or financial obligations) that the potential student may see as a barrier to entry into their institutions.

Conclusion

Degree attainment has been and continues to be a challenging subject. I would suggest that one of the most noteworthy findings of this study was there appeared to be a significant relationship between being extraverted (E) versus introverted (I) and the highest educational level achieved in the sub-sample. I suggest that it is the aforementioned results that hold the greatest potential for further research that may contribute to positive social change. Specifically, to determine or identify if the attributes most commonly displayed by those classified as extroverts (E) contribute to higher level of degree attainment among those raised in impoverished environments, as well as to utilize these identified attributes to design recruiting and retention programs that appeal to those who possess them.

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Appendix A: Participation Invitation to The Walden University Job Seekers Group

Dear Walden University Job Seekers Group Members,

My name is Nicole Orcutt. I am a student finishing my PhD. in Clinical Psychology at Walden University. As part of my degree requirements I am conducting a doctoral study. I am looking for volunteer participants for this study. The process will take about 30 minutes and involves three tasks. First, to read and agree to an informed consent regarding the nature of the study. Second, to complete a brief demographic survey, and last to take a personality test. You must be at least 18 years old to participate. Participation will be anonymous and you will not be asked for any personal information.

The study participation site can be accessed via :

https://www.surveymonkey.com/r/RJX62XB

Appendix B: Participation Invitation to Psychology Student Network Group

Dear Psychology Student Network Group Members,

My name is Nicole Orcutt. I am a student finishing my PhD. in Clinical Psychology at Walden University. As part of my degree requirements I am conducting which involves taking a personality test. I am looking for volunteer participants for this study. The process will take about 30 minutes and involves three tasks. First, to read and agree to an informed consent regarding the nature of the study. Second, to complete a brief demographic survey and last, to take a personality test. You must be at least 18 years old to participate. Participation will be anonymous, and you will not be asked for any personal information.

The study participation site can be accessed via:

https://www.surveymonkey.com/r/RJX62XB

Appendix C: Participation Invitation to Kaplan University (Student) Group

Dear Kaplan University Student Group Members,

My name is Nicole Orcutt. I am a student finishing my PhD. in Clinical Psychology at Walden University. As part of my degree requirements I am conducting a study I am conducting which involves taking a personality test. I am looking for volunteer participants for this study. The process will take about 30 minutes and involves three tasks. First, to read and agree to an informed consent regarding the nature of the study. Second, to complete a brief demographic survey and last, to take a personality test. You must be at least 18 years old to participate. Participation will be anonymous and you will not be asked for any personal information.

The study participation site can be accessed via:

https://www.surveymonkey.com/r/RJX62XB

Appendix D: Study Debriefing Statement

This quantitative study was completed using the Meyers-Briggs Type Indicator and a supplementary socioeconomic background survey to explore the hypothesized correlation between personality type and the highest degree an individual achieves. In addition, in order to measure any hypothesized correlations between personality type and the highest degree achieved by individuals who have been raised in an impoverished environment, separate analysis for these participants was conducted.

Participants were recruited from announcements featured on the pages of three groups featured on the LinkedIn® business networking service website. The groups include Kaplan University, the Walden University Job Seekers group and the Psychology Student network Group. Participants were asked to select a five-digit pin number of their own choosing in order to link responses from both steps of the survey while assuring their anonymity. The results of the survey will be provided in the form of a completed dissertation for the purpose of completing the requirements for a Doctorate degree in Clinical Psychology from Walden University.