

CORRELATING MASLOVIAN NEED SATISFACTION TO EDUCATIONAL ATTAINMENT  
AND TIME SINCE COMPLETION

by

Anthony Brandt Babbitt

Liberty University

A Dissertation Presented in Partial Fulfillment

Of the Requirements for the Degree

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## ABSTRACT

The purpose of this quantitative, correlational research study was to investigate how accurately an individual's needs satisfaction (i.e., the criterion variables) may be predicted from the combination of educational attainment and time since completion (i.e., the predictor variables). The present study addresses a gap in the literature regarding whether secondary education, post-secondary education, or both, correlate to the satisfaction of Maslow's hierarchical needs across a broad spectrum sample of the United States population. A US-based quota sample of 245 paid adult participants operating on Prolific Academic's online research platform provided the data within a Qualtrics-hosted version of the Five Need Satisfaction Measure (FNSM). Sample participants were screened and assigned to quota-limited groups based on educational attainment. The data for this correlational study was analyzed with multiple linear regression testing to determine whether a relationship exists between the predictor and criterion variables. The present study demonstrates that post-secondary education combined with time since completion positively correlates to the satisfaction of all five levels of Maslovian needs. This relationship reveals the previously unrecognized connection between educational attainment and individual need satisfaction, meaning that individuals able to further their education will more readily satisfy needs from the most elementary to the most idyllic. Generalizable to a larger US population, the present study's findings may have importance in facilitating higher academic achievement rates amongst future generations. Future research should include a larger sample population focusing on the inclusion of older participants across all ranges of educational attainment.

*Keywords:* Maslow, hierarchy of needs, educational attainment, time since completion, physiological, belonging, safety-security, belonging, esteem, self-actualization.

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### **Dedication**

I dedicate this work to my wife, Amanda Babbitt, for her love, patience, and devotion. You are my best friend and my person for all time and eternity.

## **Acknowledgments**

I thank God, without whose support, guidance, and protection, I would never have survived to this point in my life. Having never left my side, even through the darkest of nights, He continues as my constant companion, always sheltering me from my mistakes, reminding me of my potential, and faithfully encouraging me. Like the prodigal son, I hope one day to return to His embrace.

I thank my wife for recognizing the person I am and reminding me of who I hope to become. Our deep, abiding, and imperfect love for one another has helped me better understand God's love for us all.

I thank my mother, recipient of two doctorates, for motivating me with her words and example. Her most important lesson has been to forgive myself.

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### **List of Abbreviations**

Five Need Satisfaction Measure (FNSM)

General Equivalency Diploma (GED)

Institutional Review Board (IRB)

Statistical Package for Social Sciences (SPSS)

Universal Serial Bus (USB)

Variance Inflation Factor (VIF)

## **CHAPTER ONE: INTRODUCTION**

### **Overview**

The purpose of this quantitative, correlational research study was to investigate how accurately an individual's needs satisfaction (i.e., the criterion variables) may be predicted from the combination of educational attainment and time since completion (i.e., the predictor variables) amongst a quota sample of 245 adult participants within the United States. No research exists correlating the lifelong process of need satisfaction to secondary education, post-secondary education, or both. Chapter One outlines the background, the problem statement, the purpose statement, the study's significance, the research questions, and the definitions.

### **Background**

The present study investigated the non-market benefits of educational attainment, specifically whether educational attainment may improve quality of life. Past research has suggested multiple non-market benefits from educational attainment. For instance, Heckman et al. (2018a) summarized the increased market returns from post-secondary education amongst high socio-emotional and cognitive ability individuals. Heckman et al. (2018b) later quantified significant reductions in the areas of incarceration, welfare use, and depression amongst lower socio-emotional and cognitive ability individuals upon graduating college. Griffin (2016) detailed numerous benefits of graduate education in the categories of physical health, self-esteem, and well-being. Sirgy (2020) positively correlated improved mental health to Maslovian need satisfaction. The present study attempted to bridge and unite these studies by identifying a correlation between educational attainment and time since completion with one's ability to satisfy needs defined within Maslow's (1943, 1954, 1968) hierarchy.

The majority of research into educational attainment focuses on the market (i.e., financial) benefits of education by comparing completion costs to subsequent potential or actual earnings. The European Centre for the Development of Vocational Training (2013) contended that understanding both the market and non-market benefits of education is essential to properly assess the total return on investment from vocational and educational training. Oreopoulos and Salvanes (2011) reported an individual's non-market benefits from education include improved happiness, greater job satisfaction, enhanced occupational prestige, lower rates of disability, better physical health, fewer instances of smoking, reduced likelihood of incarceration, lower probabilities of divorce, and improved trust. Whether educational attainment impacts one's ability to fulfill the quality of life needs within Maslow's hierarchy is worth exploring.

Explaining the historical, social, and theoretical contexts is necessary to understand the problem's background entirely. Maslow (1943, 1954, 1968) believed that mental health during a person's lifetime required achieving need satisfaction throughout subsequent life stages. Maslow asserted that mental health improved correspondingly as an individual consistently satisfied each subsequently higher level of needs. Maslow contended that individual advancement was informally achieved both through trial and error (e.g., an infant learning to walk and talk) and formally (e.g., attending school or structured training). However, the overlooked piece is to what extent post-secondary education assists in lifelong development and need satisfaction.

### **Historical Context**

Maslow (1943, 1954, 1968) first proposed a hierarchical order to needs, which he defined as physiological, safety-security, belonging, esteem, and self-actualization. Though he never envisioned a pyramid structure, Maslow described a hierarchical relationship of prepotent lower-level needs deemed more urgent than subsequent higher-level needs. Suppose that a person

focusing on higher-level needs has subsequently ceased to adequately satisfy their lower-level needs. In that case, the individual will abandon their efforts towards higher-level needs to re-engage in lower-level need satisfaction. Maslow asserted that the entirety of one's needs continually monopolizes the consciousness, with the lower-level needs repeatedly returning to the foreground once they cease to be sufficiently satisfied. For instance, the physiological need of hunger will drive a person to abandon safety needs during the search for food, even at the risk of life and limb. Maslow stated that as a result, all people exist in a perpetual state of fractional needs satisfaction, with some needs fully or partially satisfied while others remain unsatisfied. According to Maslow, this perpetually-wanting nature of humanity clarifies the motivations behind the whole of human behavior.

Maslow (1943, 1954, 1968) continually refined his hierarchy, later revising the third-level descriptor from *love* needs to *belonging* needs, and the second-level descriptor from *safety* needs to *safety-security* needs. Despite the significant impact Maslow's theories have had on the field of psychology, research has been limited by the absence of valid and reliable scales intended to measure Maslow's hierarchical construct (Lester et al., 1983; Strong & Fiebert, 1987; Taormina & Gao, 2013). Nonetheless, several attempts have been made. Lester et al. (1983) attempted to create a 50-item scale utilizing six-point Likert-type questions to measure all five levels of needs simultaneously. Testing the Lester et al. (1983) instrument supported Maslow's assertions that the more needs were satisfied, the better an individual's mental health (Sirgy, 2020). Among participants in the Lester et al. (1983) study, a strong negative correlation was identified between participants' need satisfaction and their neuroticism and beliefs in an external locus of control (Lester et al., 1983; Lester, 2013). Strong and Fiebert (1987) attempted to create a universal instrument measuring the intensity of Maslovian needs within the general public. The



resulting 20-question, paired-statement survey was deemed a valid measure of each level's significance within the hierarchy (Lester, 1990). Where Lester et al.'s (1983) instrument measured the extent to which participants reported their need satisfaction, the Strong and Fiebert (1987) instrument instead measured the importance participants place on each level of need (Lester, 2013). In short, the two instruments measured different constructs (Lester, 2013). Unfortunately, the Lester et al. (1983) instrument was not fully published and available for public use until almost two decades after its creation (Lester, 1990; Lester, 2013).

The fact that no generalizable instrument had been developed or published before 2013 has resulted in numerous imperfect instruments suitable only for their intended application and, therefore, not universally relevant (Taormina & Gao, 2013). For instance, Porter's (1962) instrument assessed Maslow's theories as they applied to the study of lower and middle management jobs. Goodman's (1968) instrument attempted to create a method for participant ranking and ordering of needs. Lollar's (1974) instrument endeavored to utilize participants' oral interviews to assess need satisfaction. Barling's (1981) instrument contained a method for applying Maslow's theories to industrial settings. Haymes and Green (1982) attempted to devise an instrument that incorporated an approach wherein participants rated the importance of Maslovian needs. Zalenski and Raspa (2006) utilized Maslow's theory in developing an instrument designed to evaluate the efficacy of hospice care. Scheller's instrument (2016) applied Maslow's hierarchy within the context of urban planning, management, and development. De Guzman and Kim's (2017) instrument incorporated Maslow's theories to research community policing. Most of the measures devised to assess Maslow's needs' satisfaction have suffered from measurement problems (Taormina & Gao, 2013).

Taormina and Gao (2013) finally solved the simultaneous measurement of all five levels

of needs satisfaction by creating the Five Need Satisfaction Measure (FNSM; see Appendix F). The resulting 72-item survey consists of five separate sections, one for each level of need. The initial four sections contain 15 Likert-type questions with only 12 items in the final self-actualization section. Taormina and Gao extensively tested this instrument and found support for Maslow's theory of the prepotency of lower-level needs before attention turned to higher-level needs. Since its creation, the FNSM has been employed within several studies (King, 2018; Taormina & Shamionov, 2016; Winston et al., 2017) and referenced in numerous research papers (Arnett et al., 2014; Autin et al., 2019; Liu et al., 2016). The FNSM is the preferred instrument implemented by researchers to measure the satisfaction of Maslovian needs and has been cited positively in international books and journals more than 375 times.

### **Social Context**

The need for higher education has expanded as developed economies transform from industrial-era manufacturing toward technology-era computerization. Frey and Osborne (2017) stated that computerization within modern economies requires an average worker to have a much deeper and broader education than was needed one hundred years ago. Bastedo et al. (2016) described the changing educational landscape within the U.S. as making post-secondary education more available to the average citizen, even as increasing costs outpace inflation. Valletta (2016) asserted that as early as the 1980s, the college degree had replaced the high school diploma as the minimum educational requirement necessary to obtain fruitful labor within the modern U.S. economy.

Government-sponsored student-loan programs have expanded every decade since the Montgomery G.I. Bill was first made available to returning veterans of World War II (Looney & Yannelis, 2019). These loan programs have made more money available to higher education

institutions than at any time in U.S. history. As a growing number of Americans took advantage of these new loans to finance their educations, total student loan debts also grew and now exceed \$1.5 trillion (Friedman, 2018). This influx of loans and other funding sources has occasioned greater competition amongst schools to attract an ever-increasing number of students and the tuition dollars they bring. Schools seek to entice prospective enrollees with various combinations of ideal living conditions, athletic team glory, academic achievements, and prestigious reputations. Since the invention of the world wide web in 1989 (Berners-Lee, 1989), schools have expanded beyond their geographically constrained markets by creating online classrooms. These classrooms make students' physical distances from the schools irrelevant. Unfortunately, such costly competitive efforts to attract and retain tuition-paying students have strained schools' finances and endowments. Christensen and Horn (2013) portended that half of U.S. higher education institutions will be bankrupt by 2030.

The value of post-secondary education is often studied with a focus on the economic impact, student loan debt, and the future earning potential of the various post-secondary degree majors (Andrews et al., 2016; Autor, 2014; Berger, 1988; Carnevale et al., 2015; Finnie & Frenette, 2003; Ford & Choi, 2018; Hecker, 1996; Heckman & Polocheck, 1974; Korn, 2015; Manzoni & Streib, 2019; Rumberger & Thomas, 1993; Thomas & Zhang, 2005; Wolniak et al. 2008). From a Maslovian perspective, students may be enticed to attend specific schools due to alluring living conditions (i.e., physiological needs), perceived campus safety (i.e., safety-security needs), or community programs, athletic teams, and clubs (i.e., belonging needs). Faculty are similarly recruited based on compensation, tenure, and benefits packages (i.e., safety-security needs), school culture (i.e., belonging needs), and the prestige of affiliation with a world-renowned university (i.e., esteem needs). Individual needs influence the choice of school

for both students and faculty. Unfortunately, schools have historically overlooked education's potential importance to an individual's post-graduation quality of life or ability to satisfy higher-level needs. Discussions of post-secondary education have been caught up in the excessiveness of student-loan debts compared with future earnings or the high costs of professor tenure programs. Notwithstanding, money has never been a goal of the human-animal, but merely a means to achieve other goals. Discussions into the value of post-secondary education should focus on the satisfaction of needs and the resultant improvements to mental health outcomes for both the faculty and the students pursuing higher education.

### **Theoretical Context**

Skinner's (1938) behaviorism theory asserts that all animal behavior, including humans, results from learning to satisfy extrinsic needs through trial and error, mimicry, or positive and negative reinforcement. Skinner felt humanity was no different than other animals, little more than intelligent apes. Skinner attributed animal learning to repetitive attempts towards a goal. Skinner's theory seeks to explain animal behaviors as learned responses to environmental stimuli.

Unfortunately, Skinner's (1938) theory informs most of the widely employed approaches governing the management of people within the commercial, government, and educational sectors. The following are examples of negative reinforcement intended to eliminate unwanted behaviors. Municipalities hire additional police, build larger detention centers, and lengthen jail sentences, hoping that adverse consequences will reduce instances of maladaptive behaviors (Mauer, 2019). Similarly, educational institutions implement increasingly severe punishments in response to rule-breaking. Taylor (2018) pointed out that schools often install metal detectors and window bars to ensure physical safety, even though these devices heighten perceptions of

danger amongst students. Any advantages these obstacles achieve in deterring ne'er-do-wells are offset by students' increased sense of peril (Taylor, 2018).

Conversely, positive reinforcement techniques attempt to increase desirable behaviors by offering rewards for desirable behavior (Skinner, 1938). Teacher retention is addressed by increasing salaries and other benefits, suggesting that teachers remain within the profession primarily for financial incentives. Student achievement is thought to stem from recognition and academic honors rather than the joy of learning. Grading systems are employed to construct student performance hierarchies, glorifying top students while simultaneously casting slow or unmotivated learners into a negative light. Skinner's theories explain the animal world well but have little merit when explaining humanity's higher cognitive motivations.

Maslow (1943, 1954, 1968) sought to address Skinner's (1938) theoretical weaknesses by explaining human behavior as motivated by both extrinsic and intrinsic need satisfaction. Maslow theorized that motivation for the human-animal also stemmed from inherent desires. Maslow felt humanity exhibits higher-order thinking and higher consciousness than the rest of the animal kingdom. Maslow observed humanity creating knowledge and sharing new ideas through language, writing, and experimentative thinking.

Maslow's (1943, 1954, 1968) theories paved the way for explaining human motivations beyond Skinner's (1938) operant conditioning and learned behavior theories. Maslow sought to explain human motivation within a practical framework combining the physical necessities of life and man's inherent mental intricacies. This framework was based on the construct that individuals possess a graduating hierarchy of needs each person will continually attempt to satisfy. Maslow theorized human needs manifest and are fulfilled as one matures physically and psychologically from birth through adulthood.

Maslow (1943) defined his first hierarchical level as *physiological* needs, representing the fundamental needs of food, clothing, and shelter that an individual strives to meet beginning in childhood. These are the most elementary needs, all of which are tangible and concrete. They include nutritious sustenance and protection from the elements in the forms of clothing and shelter. Maslow (1943, 1954) defined the second hierarchical level as *safety-security* needs, consisting of concrete requirements relating to physical health and environmental safety free of crime and natural disasters. Additionally, abstract modern-world pressures first appear at this level in the forms of financial security, job security, and health care coverage. Satisfying these needs becomes more pressing during adolescence when individual mobility increases and one begins interacting with a larger world. Maslow felt that mastering safety-security need satisfaction may extend well into adulthood.

Maslow (1943) defined the third hierarchical level as *loving* needs. Maslow (1954) subsequently renamed this level to *belonging* needs. Belongingness is the first level at which needs consist entirely of abstract factors correlated to interactions between individuals and groups. Maslow argued that satisfying belonging needs would result in intimate, enduring, and emotionally rewarding relationships. Maslow stated that these needs are often met by establishing familial bonds with life partners, progeny, or both, in addition to professional and community connections.

Maslow (1943) defined the fourth hierarchical level as *esteem* needs involving self-respect and the respect earned within relationships formed at the belonging level. Esteem needs are most often fulfilled in later adulthood when individuals have mastered a skill, become proficient within their trade, or become a respected elder within their community. The fifth and final level, Maslow specified as *self-actualization* needs. Maslow initially defined these needs in

an idealized manner, mostly describing the admirable qualities of close friends and mentors. Maslow (1968) later adjusted his definition to incorporate societal contributions and acts promoting the overall well-being of humanity. Maslow believed it unusual for most people to achieve need satisfaction at this level during a lifetime. Thus, only senior citizens were likely candidates for models of individuals having satisfied needs at the self-actualization level. Satisfaction at this level occurs when contributions to one's esteem-level community receive broader usefulness amongst the larger communities of a region, a country, or the whole of humanity. Maslow believed self-actualized individuals include Eleanor Roosevelt, Martin Luther King, Jr., and Mahatma Gandhi, whose contributions to society bettered the lives of millions and whose names still evoke respect decades after their passing.

Maslow (1943, 1954, 1968) maintained that lower-level needs were prepotent, at all times more pressing than higher-level needs. When lower-level needs become persistently unfulfilled, as in times of war or natural disaster, Maslow believed that individuals would abandon efforts toward higher-level need satisfaction and refocus solely on satisfying lower-level needs. In other words, no one is concerned with safety, belonging, or esteem needs after not having eaten or slept for three days. Identifying the level at which an individual operates can best explain their behavior (Maslow, 1943). Ascertaining optimal motivators for a specific person may also be achieved once one's operant level of need is identified (Maslow, 1954, 1968). Maslow contended that a mentally healthy individual enjoying a full life could only be possible after continuously satisfying all five need satisfaction levels. To this day, Maslow's theories remain the foundation for research into human motivation (Taormina & Gao, 2013).

Both Skinner (1938) and Maslow (1943, 1954, 1968) felt that animals and people learned how to meet their needs and that all behavior resulted from attempts to satisfy needs. However,

only Maslow saw that humanity possessed higher-order thinking, which enabled the fulfillment of such abstract requirements like love, respect, and self-actualization. Maslow's theories explain why people assemble in groups, develop culture, and demonstrate concern for how they are remembered after death.

Unfortunately, the concept of whether educational attainment impacts the satisfaction of needs remains an open question. Maslow's (1943, 1954, 1968) hierarchy of needs requires learning to achieve satisfaction. It stands to reason that higher education could facilitate more effective and speedier need fulfillment. While Maslow felt few people could achieve self-actualization within a lifetime, it stands to reason that education attainment should lend speed to the need satisfaction learning process. When Maslow was developing his theories, the U.S. population did not enjoy widespread access to post-secondary education. The present study attempted to ascertain whether higher education achievement and the passage of time since completion translates into an improved ability to continually satisfy higher-level needs.

### **Problem Statement**

Maslow (1943, 1954, 1968) theorized that human behavior stemmed from the motivation to satisfy universal, definable needs. Maslow proposed a five-level hierarchical model. The lower-level needs were most urgent, requiring satisfaction before attention could be allocated to fulfilling higher-level needs. From lowest to highest, Maslow defined *physiological* needs, *safety-security* level needs, *belonging* level needs, *esteem* level needs, and *self-actualization* level needs. An individual's ability to satisfy each level of needs develops as one matures in body and mind from birth through adulthood. Should the lower-level needs fail to be satisfied at any time, the individual abandons attempts to fulfill higher-level needs to address the more pressing lower-level needs instead. Maslow theorized that as individuals successfully conquered



each level of needs, improved psychological health resulted. Thus Maslow tied the satisfaction of everyday physiological and psychological needs to optimal human development and mental well-being.

Despite an enormous impact on the field of psychology, research into Maslow's (1943, 1954, 1968) theories suffered from the lack of a universally applicable instrument for the simultaneous measurement of all five levels of need satisfaction. However, repeated attempts to develop instruments for specific applications have been successful (Barling, 1981; Goodman, 1968; Hall & Nougain, 1968; Haymes & Green, 1982; Lollar, 1974; Mathes, 1981; Porter, 1962). Outstanding research has correlated the relationship between student academic success and the satisfaction of Maslovian needs (Burlison & Thoron, 2014; Freitas & Leonard, 2011; Yates et al., 1980). Maslow's hierarchy has also correlated with teacher retention (Chalermnirundorn, 2018; Fisher & Royster, 2016) and teacher efficacy (Aravind & Prasad, 2016). Maslow's theories have enabled cultural change within libraries (Pateman & Pateman, 2018). Despite these specific, albeit isolated, applications of Maslow's theories, no universally applicable instrument for the simultaneous measurement of all five levels of needs existed until 2013 (Taormina & Gao, 2013).

Creating a valid and reliable universal instrument is daunting (Lester, 1990). Maslow (1987) hypothesized that most basic physiological-level needs were adequately met within modern, developed economies, barring occasions of famine, war, or natural disaster. Safety-security level satisfaction will vary widely, for instance, between individuals residing in war-torn Kabul, Afghanistan, industrialized Beijing, China, or modern San Francisco, CA. Additionally, Maslow posited that it was unlikely for an individual to achieve self-actualization in the first half of life due to the complexity of learning to satisfy lower-level needs consistently. Only two

attempts have been made to create a universally applicable measure of Maslow's (1943, 1954, 1968) hierarchy of needs (Lester et al., 1983; Taormina & Gao, 2013). The fact that Maslow's theories continue to appear frequently within scientific literature endorses further research attention.

Taormina and Gao (2013) developed the Five Need Satisfaction Measure (FNSM; see Appendix F) to simultaneously measure all five levels of need satisfaction within Maslow's (1943, 1954, 1968) hierarchical model. This instrument remains consistent with Maslow's theories that need satisfaction applies holistically instead of being specific to workplace circumstances, the home, or other isolated environments. The FNSM instrument employs a five-point Likert scale and creates a cumulative score for each of the five needs (Sullivan & Artino, Jr., 2013). During validation, Taormina and Gao found support for Maslow's conjecture that lower-level needs must be satisfied before higher-level need satisfaction could be undertaken. Scoring the FNSM allows a researcher to identify which level(s) of needs have been met, the level a participant is currently focusing on, and which level(s) remain unsatisfied. Maslow believed that man was a learning animal; given enough time and resources, man would eventually satisfy all his needs. During the last century, economic factors have rapidly expanded the need for post-secondary education (Frey & Osborne, 2017). Unfortunately, the impact of post-secondary education has never been researched with regards to Maslow's theories.

The problem is that the literature has failed to address whether secondary education, post-secondary education, or both facilitate the satisfaction of Maslow's (1943, 1954, 1968) hierarchical needs across a broad spectrum sample of the United States population.

### **Purpose Statement**

The purpose of this quantitative, correlational research study was to investigate how accurately an individual's needs satisfaction (i.e., the criterion variables) may be predicted from the combination of educational attainment and time since completion (i.e., the predictor variables) amongst a quota sample of 245 adult participants within the United States. Needs Satisfaction Levels (NSL), as defined by Maslow's (1943, 1954, 1968) hierarchy of needs, was measured by the Five Need Satisfaction Measure (FNSM; Taormina & Gao, 2013). The FNSM instrument (see Appendix F) assigns satisfaction scores for all five need levels defined by Maslow: *physiological* level needs, *safety-security* level needs, *belonging* level needs, *esteem* level needs, and *self-actualization* level needs. The resulting scores identified which level(s) of need participants satisfied and which level of needs participants were attempting to achieve. Participants self-reported their present operational level within Maslow's hierarchy. A quota sample of 245 U.S.-based adult participants gathered from Prolific Academic's online research platform consented to complete the FNSM (see Appendix F) and individual demographic survey (see Appendix D) necessary for the analysis. Multiple linear regression was employed to evaluate all five research questions and ascertain whether relationships exist between the predictor and criterion variables (Gall et al., 2006).

### **Significance of the Study**

The behaviors of people are as frequently changing as the circumstances in which people find themselves. Skinner (1938) attempted to explain human behavior as learned responses to environmental stimuli. Maslow (1943, 1954, 1968) explained behavior as motivated by attempts at hierarchical need satisfaction. The Greek philosopher Heraclitus claimed that the only thing in life that will never change is that life itself continually changes (Kirov, 2016). Deming (1993)

spent five decades honing his theory of profound knowledge, intended to optimize systems within a changing world. Shortly before his death, Deming realized the missing piece within his theoretical framework was understanding human psychology. Deming identified people as the factor causing the unanticipated changes within the business systems he sought to improve.

Modern, higher-education institutions are all businesses, regardless of whether for-profit or non-profit. As such, challenges involving people and change also exist within higher education institutions. Without sound finances, these businesses will succumb to competition and eventually cease to exist. There are only two ways to enhance business profits: increase sales or reduce costs (Rust et al., 2002). Schools must continually optimize their procedures and strategies should they hope to compete in an ever-changing world (Anderson, 2016).

From the perspective of human resources, Washington (2016) reported that American higher-education institutions are experiencing a shortage of qualified personnel, a situation expected to worsen in the coming years through attrition and retirement. Morris and Laipple (2015) asserted that many schools are unprepared to address this worsening employee acquisition and retention problem. Discussions of personnel concerns often focus on wage and salary issues, despite Maslow (1943, 1954, 1968) theorizing human motivation stemming from chiefly abstract, non-monetary demands. Karaxha (2019) asserted that the most critical factor in successful organizations was the creativity involved in a company's approach to employees. To retain qualified staff and faculty, schools must address the motivations of personnel.

Similarly, schools must address the motivations of tuition-paying students. Repeated studies have investigated students' need satisfaction within Maslow's (1943, 1954, 1968) hierarchy and how those needs impact both academic success and student retention (Burlison & Thoron, 2014; Freitas & Leonard, 2011; Yates et al., 1980). Maslow's hierarchy has been

correlated to teacher retention (Chalermnirundorn, 2018; Fisher & Royster, 2016) and teacher efficacy (Aravind & Prasad, 2016). Maslow's theories have enabled cultural change within libraries (Pateman & Pateman, 2018). Higher education institutions attempt to fulfill current student physiological needs with dorms and cafeterias, safety-security needs with campus security and emergency call boxes, and belonging needs with clubs and student societies. However, schools have failed to explain to students how higher education supports need satisfaction post-graduation and throughout one's lifetime. A gap in the literature exists on whether educational attainment and time since completion correlate with Maslovian need satisfaction.

The present study attempted to highlight the essential impact of educational attainment and time since completion on the satisfaction of people's needs and mental health. A correlation between education and a lifetime of need satisfaction would highlight a path for achieving greater need satisfaction levels at all ages. A correlation would foster recognition of education's vital role in facilitating individual and collective need satisfaction. Individuals could be empowered to further their education to satisfy the most elementary to the most idyllic needs. Schools could cite the present study as a basis for increasing student enrollment and expanding educational offerings instead of focusing primarily on the lifetime earning potential of academic majors and degrees. Need satisfaction at the root of all human motivation and behavior could be quantified as the intangible return on educational investments.

### **Research Questions**

The research questions for the present study were:

**RQ1:** How accurately can an individual's physiological needs satisfaction be predicted from a combination of *educational attainment* and *time since completion*?

**RQ2:** How accurately can an individual's safety-security needs satisfaction be predicted from a combination of *educational attainment* and *time since completion*?

**RQ3:** How accurately can an individual's belonging needs satisfaction be predicted from a combination of *educational attainment* and *time since completion*?

**RQ4:** How accurately can an individual's esteem needs satisfaction be predicted from a combination of *educational attainment* and *time since completion*?

**RQ5:** How accurately can an individual's self-actualization needs satisfaction be predicted from a combination of *educational attainment* and *time since completion*?

### Definitions

1. *Belonging Needs* – The third level of Maslow's hierarchy, consisting of abstract needs relating to interactions with individuals and groups, resulting in intimate, enduring, and emotionally rewarding relationships (Baumeister & Leary, 1995; Maslow, 1943, 1954).
2. *Esteem Needs* – The fourth level of Maslow's hierarchy, defined as self-respect and the respect received within those relationships formed at the belonging level (Maslow, 1943).
3. *Hierarchy of Needs* – A purposefully defined scale of requirements people continuously seek to satisfy, beginning with the most concrete physical needs (e.g., food, clothing, shelter) and progressing through the most abstract psychological needs (e.g., self-actualization; Maslow, 1943, 1954, 1968).
4. *Physiological Needs* – The first level of Maslow's hierarchy represents the fundamental needs that an individual strives to meet. The most basic needs are tangible and concrete, including nutritious sustenance and protection from the elements in the form of clothing and shelter (Maslow, 1943; Maslow & Lewis, 1987).
5. *Safety-Security Needs* – The second level of Maslow's hierarchy, consisting of concrete

needs such as social order, health, environmental safety free from crime or natural disaster. Additionally, abstract needs must be fulfilled, such as financial security, job security, and medical coverage (Maslow, 1943).

6. *Self-actualization Needs* – The fifth and final level of Maslow’s hierarchy is defined as those needs that drive an individual to achieve one’s ideal self and realize one’s true potential. Maslow envisioned exemplary individuals as having achieved this level, such as Mahatma Gandhi, Martin Luther King, Jr., and Albert Einstein (Maslow, 1943, 1954, 1968; Maslow & Lewis, 1987).

## **CHAPTER TWO: LITERATURE REVIEW**

### **Overview**

Maslow's (1943, 1954, 1968) hierarchy of needs is considered a foundational theory in psychology as an explanatory construct for the motivations beneath the whole of human behavior: satisfaction of universal needs. Education is critical to achieving needs satisfaction. An organism must learn how to satisfy needs through various means, including trial and error, positive and negative reinforcement, mimicry, and in the modern era, formal education. Maslow's hierarchy of needs has explained college persistence, career success, urban design, and community policing. Often misapplied, Maslow's theories have suffered from the lack of a universally applicable instrument to measure need satisfaction. Chapter Two outlines the theoretical framework, biblical perspective, related literature, the Five Need Satisfaction Measure (FNSM), the demographic survey, the relationships and inter-relationships, the literature gap, and the summary.

### **Theoretical Framework**

Hoffman (1988) documented that Abraham Maslow was an American psychologist born in Brooklyn, New York, in 1908 to first-generation Jewish immigrants from Kyiv, Ukraine. Maslow was the oldest of his parents' seven children. Though poverty-stricken, Maslow's parents emphasized the importance of education to their children. During his youth, Maslow was reared in a neighborhood where he suffered persecution stemming from his Jewish ethnic background. As a result, Maslow sought physical safety amongst the books and shelves of his local library. This sanctuary sparked his love of reading and learning. Maslow attended one of the most prominent high schools in New York before graduating from the University of Wisconsin with undergraduate, master's, and doctoral degrees in psychology.



Hoffman (1988) notes that Maslow's upbringing influenced his ideas regarding human behaviorism and psychology, especially during his time as Alfred Adler's student. Eventually, Maslow began to question the foundations upon which psychology constructed its many suppositions. Maslow's questioning led him to cultivate an entirely new branch of psychology termed "humanistic psychology." Recalling the persecutions of his youth and subsequently experiencing the Second World War, Maslow began to focus on human potential and mental health, hoping that humanity could avoid similar traumas in the future. Maslow (1965) was mentored by and greatly admired both the renowned Gestalt psychologist Max Wertheimer and the prominent anthropologist Ruth Benedict. The behaviors of these two mentors became the ideation for the self-actualized individual (Maslow, 1965). Maslow considered himself to be a philosopher and theorist, not a practitioner. Throughout his life, Maslow sought to inspire, rather than lead, by encouraging other social scientists to investigate new pathways of thought and inquiry. Ultimately, a 62-year-old Maslow suffered a severe heart attack in Menlo Park, California, which led to his death on June 8, 1970.

One of Maslow's teachers, Alfred Adler, was a student of the renowned neurologist and psychologist Sigmund Freud (Hoffman, 1988). Maslow often disagreed with Adler's Freudian philosophies, feeling that Freud's focus on mental illness caused him to neglect mental health entirely. Maslow (1968) once stated, "Freud supplied to us the sick half of psychology, and we must now fill it out with the healthy half" (p. 18). Where Freud focused primarily on the mentally ill, Maslow desired to understand mentally healthy individuals. Freud attempted to bring people into accord with normalcy, while Maslow hoped to help people achieve their optimal selves. Maslow (1971) adopted the Socratic view that most evils encountered during daily life resulted from self-ignorance and ignorance of the world around us.

Maslow's (1943, 1954, 1968) theoretical hierarchy of needs is now an established theory within the field of psychology, explaining the motivations behind the whole of human behaviors, regardless of how those behaviors may manifest in the physical world. Maslow's (1943) theory was first proposed in a paper published by the Psychological Review titled "A theory of human motivation." In later publications, Maslow (1954, 1968, 1971) expanded and refined the theory to the present version described below. Maslow aspired to explain human behaviors further than Skinner's (1938) animalistic behaviorism theory, which attributed behaviors to learned responses to environmental stimuli. Maslow asserted that humans' higher consciousness required a more sophisticated view of behavior than Skinner's operant conditioning theory.

In developing a humanistic theory of motivation, Maslow (1943) started with several generally accepted tenets. These include:

- A motivation theory must be founded on the integrated wholeness of an individual.
- Any physiological drive, such as hunger, cannot be the center of a theory on motivation.
- Any theory on motivation should center on ultimate goals rather than the intermediary steps along the path toward a final destination.
- There are many methods to achieve a goal; therefore, a motivation theory should focus on mental motivations instead of physical behaviors.
- Any behavior is both an expression of a need and an attempt to satisfy that need.
- Practically all behaviors are motivated. Motivation theory is not behavior theory.
- Human needs are prepotent, that is to say, hierarchical; subsequent needs appear only after more pressing needs have been met. Man is an eternally wanting organism.
- Lists of drives are less important than the motivations behind the drives.

- Motivation theories must be based on human rather than animal psychology (Maslow, 1943).

The precepts detailed above formed the foundation on which Maslow (1943) built his theory of human motivation. Maslow's designated need levels were not distributed according to uniform intervals. Maslow delineated needs according to urgency, sequentially categorizing the needs emerging after more immediate needs have been satisfied. Maslow's methodology is not universally appreciated. For instance, Kenrick et al. (2010) argued that the inclusion of sexual activities within the physiological level of needs contradicted their findings that physical intimacy may also satisfy safety-security, belonging, and other need levels. However, Maslow believed that any behavior could conceivably fall within any group of needs and specifically attempted to avoid assigning motivations to specific behaviors. Maslow asserted that a holistic view of a person's behaviors should indicate the individual's current operational level of need satisfaction.

Misapplication of Maslow's (1943, 1954, 1968) theories is commonplace; researchers often attribute Maslovian explanations to unconnected quarters of an individual's experience, such as focusing only on a party's limited work environment or community or home experience. However, Maslow felt the human experience could not be divided and was indistinguishable by domain. Maslow intended his theories to explain human behavior as an indivisible-whole. Maslow's characterization is essential to the present study since the satisfaction of needs at a higher level does not occur until lower-level requirements are satisfied throughout all spheres of life. For example, a child receiving a free school lunch may support somewhat higher academic success. Even so, subsequent hunger during the remainder of the day may negate any advantage from the mid-day satisfaction of the child's physiological requirements.

Despite his precept that humanity was eternally wanting, Maslow (1943, 1954, 1968) posited that as individuals consistently satisfied ever-higher levels of needs, overarching improvements to mental health were achieved, culminating in the satisfaction of self-actualization needs at the highest level. Thus, a person attempting to satisfy first-level physiological needs could be considered less psychologically healthy than someone working to continually meet third-level esteem needs. Similarly, a self-actualized person who continuously satisfies top-level needs could be regarded as more psychologically healthy than someone who remains focused on any of the lower levels. Along the same vein, Maslow believed the levels were traversed in the hierarchical order outlined. Any attempts to skip a level would ultimately fail until the omitted level's needs were satisfied.

Maslow's (1943, 1954, 1968) prepotent, hierarchical model anticipates that every time lower-level needs cease to be satisfied, individuals will abandon attempts at higher-level needs and refocus on the unmet lower-level needs. For example, a person may concentrate on higher-level safety-security or belonging needs while experiencing moderate appetite. However, once appetite grows to the hunger level, all attempts to satisfy higher-level needs will melt away as the lower-level hunger need seizes control of the consciousness. This reality means that an individual may continue working through a lunch period. Still, after a sufficiently long period without food, one abandons all other activities to search for a meal. Should a person fail to address recurrent lower-level hunger needs, they will abandon higher-level needs, thus eliminating any possibility of their satisfaction. It follows that regardless of the level a person may be focusing on, one may accurately assume the person has sufficiently satisfied all needs below the current operational level.

Within Maslow's (1943, 1954, 1968) hierarchical framework, the five sequential need levels are defined in the following manner. The primary group consists of physiological needs, historically a common launching point for theories explaining human motivations. The requirements at this level center around an organism's attempts at maintaining homeostasis of the biological processes governing bodily fluids, blood sugar, oxygen saturation, consistent body temperature, and others. Psychologists agree that these base-level needs are of primary concern to most organisms and addressed before any other. This level is generally thought to be the most studied.

Maslow (1943, 1954, 1968) differentiated appetite from hunger at the physiological need level, the former a daily urge for sustenance and the latter a prolonged denial of nourishment. Maslow's distinction becomes significant when gauging urgency since a healthy appetite does not reflect an unmet need and is unlikely to modify behavior. Hunger-related behavioral alterations indicate an unfulfilled need for nutrients. Like appetite, minor environmental temperature fluctuations may trigger no behavioral change or merely result in the addition or removal of clothing. Excessive temperature variations will engender increasingly urgent behaviors, such as building a fire or assembling shelter, to address the need to maintain thermal homeostasis regardless of environmental conditions. Given the severe nature of environments expected to produce hunger or temperature extremes, Maslow posited that within most civilized societies, a preponderance of people enjoy the satisfaction of their physiological needs, absent such extreme circumstances of war, famine, societal collapse, or natural disaster.

Maslow's (1954, 1968) second level consists of safety-security needs, which Maslow (1943) initially characterized as safety needs. In the original description, Maslow recognized that safety needs were most readily apparent amongst infants and children versus adults. Maslow

attributed this to the fact that adults possess both greater physical motor control and more experience interacting with the world. On the other hand, infants and children lacking the same degrees of physical motor control and experience tend to view the world as more dangerous to their physical safety. Children's increased awareness of danger causes the young to react more visibly to environmental threats than adults. Maslow recognized that the need to avoid risk is present in all humans, regardless of age. Safety needs cause people to develop mental constructs through which they interpret the world and their day-to-day existence. Maslow felt that a normally operating society typically permits its members to feel safe from predatory animals, criminals, and tyranny. Just as a person whose appetite has been sated will no longer feel hunger, an individual enjoying safety will no longer feel physically endangered.

Maslow (1954, 1968) intended his addition of security at the second level to acknowledge the abstract realms of emotional, psychological, spiritual, and financial needs. Three examples of such abstract security needs are access to affordable healthcare, a belief in a just god controlling humanity's fate, and retirement savings. Individual behavior will also begin to become more regulated within this level. For instance, a person quick to anger and become violent will soon learn they, directly and indirectly, jeopardize their physical safety through such behaviors. An individual risking criminal incarceration or physical health during a theft of goods intended to meet physiological needs will diminish hazardous activities in the furtherance of achieving higher-level safety-security needs. In other words, well-fed thieves tend to be less violent than starving thieves.

Maslow (1968) believed that individuals might work more purposefully or grow more responsible to meet enduring and future financial needs more capably. Maslow felt that social order was embedded at this level since social order fosters safety and security within one's

community and immediate environs. Maslow stated that when social order broke down, people tend to flee to safer areas to satisfy safety-security needs, resulting in refugee crises that often accompany those conflicts and natural disasters of a severity sufficient to engender societal collapse.

Maslow's (1943) third level consists of love needs. Maslow (1954, 1968) later re-characterized this level as belonging needs. This change was meant to broaden the definition of this level's needs to include non-familial and non-romantic relationships. After physiological and safety-security needs have been sufficiently gratified, individuals will seek to satisfy needs relating to belonging within a broader community. Needs associated with belonging may manifest in romantic relationships, amicable relationships, or both, as well as deepened familial and community relationships. Maslow alleged that the denial of belonging needs provoked a majority of the cases of psychological maladjustment. For this reason, the belonging level of Maslow's hierarchy is the second-most studied after physiological needs.

The belonging level is the first point where entirely abstract needs appear (Maslow, 1943, 1954, 1968). Belonging needs are purely psychological, relating to feelings of affection, attachment, and bonding with others, but this level may not be satisfied merely by surrounding an individual with other people. Belonging needs may manifest and be satisfied through physical acts, such as sexual relationships, spending time with friends and family, or attending events comprised of like-minded groups. The primary distinguisher of need satisfaction at this level is that an individual both supplies and receives feelings of belonging, desire, love, and affection. Maslow stated that a person might satisfy needs at this level through membership in an active political party, entering a religious community, or enjoying a hobby with others, despite having no close familial relationships or engaging in physical contact or intimacy.

The fourth level Maslow (1943, 1954, 1968) designated as esteem needs. Maslow believed that, barring a pathological condition, everyone shares a need to hold a positive self-evaluation, enjoying the respect and admiration of oneself and others. Maslow divided esteem needs into two related sub-categories. First, Maslow declared that people want to feel capable and confident within the world. Second, Maslow believed that people desire a reputation and respect from others founded on how they behave and interact with the world around them. Maslow asserted that achieving satisfaction at the esteem level should result in genuine self-confidence as opposed to false bravado. Maslow stated that a failure to satisfy needs at this level tended to lead to discouragement, depression, and neuroticism. Maslow failed to decide the question of whether self-respect is more important than respect from others. Instead, Maslow judged that either should adequately satisfy this level of need since the two are often co-occurring.

The fifth and final level Maslow (1943, 1954, 1968, 1971) declared self-actualization needs. Initially, the self-actualization level included only abstract descriptors of people Maslow held in high regard, especially his mentors Dr. Adler, Dr. Benedict, and Dr. Wertheimer. When defining this level, Maslow posited that self-actualization was realized when people fulfilled their highest purpose in life. Just as an acorn can only become an oak, Maslow asserted that a musician, businessman, poet, or dancer must also achieve the fullness of their potential to satisfy their self-actualization needs. The self-actualization level, and each preceding lower level, could only be addressed when all the lower-level needs were simultaneously and sufficiently met.

Maslow (1968, 1971) later revised his self-actualization definition as immeasurable by any other but self. Maslow asserted that self-actualized individuals enjoyed recurring “peak experiences,” which he defined as moments when an individual either feels or knows one has



elevated oneself to the utmost heights of human possibility. Peak experiences would be akin to a baseball player pitching a perfect game or a composer authoring her magnum opus. Anyone achieving pre-eminence within their field may be assumed to be satisfying self-actualization needs, although only the individual would know with certainty.

Though Maslow (1943, 1954, 1968, 1971) never envisioned a pyramid structure, the above illustrates the hierarchy of needs, including its prepotent and interdependent nature. Within this hierarchical model, Maslow believed that all human behaviors found an explanation, whether weakly or strongly motivated by the needs identified. For instance, Maslow believed that innate human curiosity, a behavior that does not directly satisfy any level of need, was weakly tied to all levels. Curiosity allows the creation or discovery of new methods to fulfill needs. Maslow concluded that humankind wonders what lies beyond the furthest hill and across the seas, purely from a desire to gratify man's ever-wanting nature.

Maslow's humanistic psychology neglects mental illness as much or more than Freud's psychoanalysis neglected the healthy-minded. Even though Maslow asserted (1943, 1954, 1968) that failing to satisfy needs resulted in certain forms of mental illness, he neglected to explain many psychopathies and extreme cases of mental illness. Due to this shortcoming, many of his theories and assertions find little practical use in developing therapeutic interventions for the severely mentally ill. Maslow (1971) acknowledged this failure and reiterated that his research and theories were meant to better understand, maintain, and achieve positive mental health.

Despite the significant impact Maslow's theories have had on the field of psychology, research has been limited by the absence of universally applicable, valid, and reliable instruments intended to measure Maslow's construct (Taormina & Gao, 2013). Lester et al. (1983) created a 50-item scale utilizing six-point Likert-type questions to measure all five levels

of needs simultaneously. Testing the Lester et al. instrument supported Maslow's (1954) assertion that the more needs were satisfied, the better an individual's mental health. Among participants, a strong negative correlation existed between the reported needs satisfaction and both the participants' neuroticism and belief in an external locus of control (Lester, 2013). Strong and Fiebert (1987) subsequently attempted to create a universally applicable instrument measuring the intensity of Maslow's needs amongst the general public. The resulting 20-question survey, applying pair-statements, was determined to be a valid measure of the importance of each need level among participants (Lester, 1990). Where Lester et al.'s (1983) scale measured the extent to which participants reported need satisfaction, the Strong and Fiebert (1987) scale measured the necessity of each need level amongst participants (Lester, 2013). In short, the two instruments measured different constructs (Lester, 2013). Unfortunately, the Lester et al. (1983) instrument was not fully published until almost two decades after its creation (Lester, 1990; Lester, 2013). The Strong and Fiebert (1987) scale suffered limited usefulness.

The fact that no universally applicable instrument had been developed or published meant that the application of Maslow's theories has relied upon creating purpose-designed scales and an array of other methods (Taormina & Gao, 2013). Since Maslow (1943) first postulated his hierarchy, and despite his subsequent efforts to hone and refine his theory (Maslow, 1954, 1968, 1971), many researchers have called his findings into question. Wahba and Bridwell (1976) failed to find support for any ranking of needs, let alone a hierarchical model, contrary to Strong and Fiebert's (1987) or Taormina and Gao's (2013) findings. Hofstede (1984) failed to find cross-cultural applicability of Maslow's hierarchy as presently structured, suggesting that non-Western cultures may require a different model. Cianci and Gambrel (2003) asserted that Maslow's hierarchy was ethnocentrically focused on individualistic societies, marginalized

collectivistic cultures, and lacked universal applicability. Both Cianci and Gambrel (2003) and Tay and Diener (2011) question Maslow's hierarchical architecture, while Tay and Diener (2011) found support for a universal hierarchy of needs.

Mittelman (1991) criticized Maslow's decision to study only the healthiest 1% of the population. Maslow (1954, 1968, 1971) asserted that his focus on the most mentally healthy people promoted a perfect understanding of psychology, while other psychologists' focus on the ill resulted in a sick and imperfect grasp of psychology (Mittelman, 1991). Maslow believed mental illness could not be cured without first understanding mental health (Maslow, 1968, 1971). Maslow queried, where better to examine mental health than in those possessing the most optimal levels?

Subsequent efforts to quantify need satisfaction have focused on creating valid measures for assessing the satisfaction of Maslow's (1943, 1954, 1968) hierarchy of needs. Many of these efforts resulted in misapplications through the creation of purpose-specific measures (Hall & Nougain, 1968; Hancock, 1993; Lee & Hanna, 2015; Liu et al., 2016; Mathes, 1981; Porter, 1962; Scheller, 2016). Most of the measures devised to assess Maslovian need satisfaction have suffered from measurement problems (Taormina & Gao, 2013). Porter (1962) misapplied Maslow's theories to the study of lower and middle management jobs yet still found an expected, positive correlation between manager efficacy and need satisfaction. Goodman (1968) unsuccessfully attempted to create a method for participants to rank and order needs; a misapplication restricted explicitly to work environments. Lollar (1974) attempted to utilize purpose-designed participant interviews to assess Maslow's need satisfaction amongst lower socioeconomic populations, finding limited success within an adolescent sample population. Barling (1981) devised a measure to apply Maslow's theory to industrial settings, another

misapplication that rendered conflicting results between various ethnicities. Haymes and Green (1982) attempted to devise a program focusing only on the first three need levels. Their method hoped to identify ways of preventing overly aggressive behavior in children by requiring child participants to rate their Maslovian need satisfaction. Zalenski and Raspa (2006) have adapted Maslow's hierarchy to the study of hospice care, another misapplication, hoping to identify a framework for the satisfaction of needs within a hospice setting. Scheller (2016) took a novel approach toward Maslow's hierarchy, seeking to create urban plans and neighborhoods conducive to achieving the satisfaction of all five levels of needs for residents. Again, Scheller misapplied Maslow's theories, ultimately suggesting that self-actualization correlated positively with property value increases.

Conversely, several studies have utilized holistic approaches to study Maslow's (1943, 1954, 1968) theories. De Guzman and Kim (2017) applied Maslow's theories to the study of community policing. They determined that communities focusing on lower-level need satisfaction required more traditional police forces, while communities reaching higher-level need satisfaction tend to self-police. Morrical, Graves, and Shelby (2018) identified a positive correlation between college students' need satisfaction and university persistence. Both Freitas and Leonard (2011) and Burleson and Thoron (2014) have examined how Maslow's need satisfaction positively impacted student learning ability and subsequent academic success. Fisher and Royster (2016) attempted to measure teachers' need satisfaction to address retention problems in the field of education.

Koltko-Rivera (2006) asserted that Maslow intended to amend his hierarchy prior to his death to include a sixth level beyond self-actualization. According to Maslow's (1969) journals, this new level was to be titled "self-transcendence." Koltko-Rivera argued that Maslow (1969,

1979, 1982) defined a self-transcendent person as one attempting to further causes beyond the self as a means of experiencing a communion surpassing the boundaries of individuality.

Maslow's journals referred to "peak experiences," a designation previously included in the self-actualization definition. Koltko-Rivera cites Maslow's private journal entries, which purportedly contain six levels of the hierarchical model, and suggests Maslow considered a division of the fifth level into two distinct categories of self-actualization and self-transcendence. Koltko-Rivera's revision to the hierarchy has never been accepted within the psychology community because the self-transcendence level remains virtually indistinguishable from Maslow's (1943, 1954, 1968, 1971) self-actualization. Furthermore, Maslow never published a revision that included a sixth level, regardless of the ideas documented within his personal journals.

Taormina and Gao (2013) eventually rectified the problem of simultaneously measuring all five levels of needs satisfaction when creating the Five Need Satisfaction Measure (FNSM; see Appendix F) instrument. This 72-item survey consists of one section for each level of need. Each section consists of 15 Likert-type questions, with only 12 questions for the final self-actualization level. Taormina and Gao extensively tested this instrument, finding support for Maslow's assertions that lower-level needs must first be met before attention shifts toward higher-level needs. Since its creation, the FNSM has been employed within several studies (King, 2018; Taormina & Shamionov, 2016; Winston et al., 2017) and referenced in numerous research papers (Arnett et al., 2014; Autin et al., 2019; Liu et al., 2016). The FNSM is the preferred instrument implemented by researchers to measure the satisfaction of Maslovian needs and has been cited positively in international books and journals more than 375 times.

Taormina and Gao (2013) designed their survey for a western audience, initially composing English questions. Subsequently, the instrument was translated into Chinese and

validated with a test group of 384 ethnically Chinese people living within the casino-resort city of Macau, China. Taormina and Gao's findings supported Maslow's ordering of needs, the prepotency of the various levels of needs, and Maslow's (1943, 1954, 1968) assertions that the requirements were universally descriptive. The Taormina and Gao findings directly contradict three prior studies. Cianci and Gambrel (2003) questioned the applicability of Maslow's hierarchy within collectivistic cultures. Tay and Diener (2011) disagreed with the hierarchical ordering Maslow hypothesized. Hofstede (1984) suggested that non-Western cultures may require a different hierarchy. All three studies failed to find support within Taormina and Gao's analysis.

The present study employed the FNSM (see Appendix F) instrument amongst a US-based quota sample of 245 participants drawn from the general public utilizing Prolific Academic's online research platform. Taormina and Gao's (2013) research supports Maslow's (1943, 1954, 1968) hierarchical, prepotent ordering, despite validation only within a sample population of Chinese individuals from a collectivistic culture. The present study represented the first administration of the FNSM instrument to a large sample ( $N = 245$ ) within the United States' individualistic culture, a purpose for which the tool was initially intended. Replicating Taormina and Gao's validity and reliability measures would confound both Hofstede's (1984) and Cianci and Gambrel's (2003) assertions that Maslow's hierarchy lacks universal cultural applicability.

### **Biblical Perspective**

Maslow's (1943) hierarchy of needs provides a sensible and orderly structure to many of the Bible's commandments and admonitions. At the physiological level, the promised land flowed with more than enough milk and honey to sustain the Israelites after their long sojourn in the desert (Deuteronomy 26:9, English Standard Version). The righteous are taught, "If you have

found honey, eat only enough for you, lest you have your fill of it and vomit it” (Proverbs 25:16). The Bible further instructs, “if your enemy is hungry, feed him; if he is thirsty, give him something to drink” (Romans 12:20). Any excess should go to others in need, whether friend or foe. There is a spiritual component of hunger since our souls also crave nourishment.

Deuteronomy 8:3 recounts how God “humbled you and let you hunger and fed you with manna ... that he might make you know that man does not live by bread alone, but man lives by every word that comes from the mouth of the Lord.” Scripture is the bread that nourishes our souls, and God commands that believers share his word to feed the souls of others as we do ourselves. Matthew 25:35-37 reads, “I was hungry and you gave me food, I was thirsty and you gave me drink, I was a stranger and you welcomed me ... as you did it to one of the least of these my brothers, you did it to me.”

Traveling on to the safety-security level, humanity is promised that righteousness was rewarded with safety. Proverbs 11:14 informs, “where there is no guidance, a people falls, but in an abundance of [righteous] counselors, there is safety.” Psalms 4:8 informs that, “in peace [we] will both lie down and sleep; for you alone, O Lord, make [us] dwell in safety.” Safety also extends beyond the physical to the spiritual. Second Timothy 4:18 says, “The Lord will rescue me from every evil deed and bring me safely into his heavenly kingdom.”

Having fed ourselves and our neighbors, next enjoying God’s safety, we subsequently reach the belonging stage where we begin to build communities of Christ. Once more, this includes strangers and enemies, the Bible instructing, “As for the one who is weak in faith, welcome him, but not to quarrel over opinions” (Romans 14:1). Healthy emotional attachments take shape as neighbors “stir up one another to love and good works, not neglecting to meet together, as is the habit of some, but encouraging one another, and all the more as you see the

day drawing near” (Hebrews 10:24-25). The bounty is not solely physical or emotional but also spiritual. Matthew 18:20 teaches, “for where two or three are gathered in my name; there am I among them.” When uniting with our communities, we join with God.

Our bellies full, our bodies safe, and our hearts filled, Christians reach the esteem level of Maslow’s (1943) hierarchy. At this level, we seek to improve ourselves and those in our communities. Proverbs 19:20 commands that we “listen to advice and accept instruction, that [we] may gain wisdom in the future.” Proverbs 18:15 similarly declares that “an intelligent heart acquires knowledge, and the ear of the wise seeks knowledge.” Wisdom serves to ensure one’s ability to satisfy lower-level needs in the future. Ecclesiastes 7:12 teaches, “the protection of wisdom is like the protection of money, and the advantage of knowledge is that wisdom preserves the life of him who has it.” Again, a spiritual component exists regarding the search for wisdom. Proverbs 10:8 informs Christians that “the wise of heart will receive commandments, but a babbling fool will come to ruin.” First, Corinthians 1:30 celebrates, “Christ Jesus, who became to us wisdom from God, righteousness and sanctification and redemption.”

Christianity’s ultimate goal mirrors the highest level of Maslow’s (1943, 1954, 1968) hierarchy: self-actualization. Matthew 16:24 illustrates Jesus telling his disciples, “If anyone would come after me, let him deny himself and take up his cross and follow me.” Jesus was the first self-actualized person in the Bible. Jesus’ humility allowed him to enter heaven before resurrecting his bodily temple three days later. Jesus provides the path for all humanity to return to God, and “whoever believes in him should not perish but have eternal life” (John 3:16). John 14:6 further recounts Jesus declaring, “I am the way, and the truth, and the life. No one comes to the Father except through me.” Self-actualization is the only level without any physical component; it is entirely spiritual. For Christians, Maslow’s hierarchy of needs and the Bible



offer similar paths to return to heaven and reunite with our creator, like the prodigal son of Luke 15:11-32.

### **Related Literature**

The present study's variables are explored below. The five criterion variables are participant's Maslovian need satisfaction, as measured by Taormina and Gao's (2013) Five Need Satisfaction Measure (FNSM; see Appendix F). The demographic survey (see Appendix D) will collect information relating to the predictor variables of educational attainment and time since completion. Clarification of the relationships between variables and a gap in the literature is discussed. Chapter Two concludes with a concise summary of the topics examined.

### **Five Need Satisfaction Measure**

Maslow never sought to be a leader within the field of psychology, hoping instead to inspire others toward deeper exploration. Despite first proposing the hierarchy of needs in 1943, Maslow continued to refine and polish the framework until his death on June 8, 1970. Lewis (Maslow & Lewis, 1987) attempted to revise the hierarchy of needs after Maslow's passing to include more modern terminology. Kiel (1999) sought to enhance Maslow's theory in the hopes that revisions would more accurately reflect the state of psychological education at the turn of the 21st century. Koltko-Rivera (2006) attempted to modify the canonical hierarchy by adding a sixth level titled "self-transcendence," claiming Maslow had considered the addendum before his death. The flexibility of Maslow's theory and the openness with which Maslow embraced new concepts and interpretations have simultaneously been the theory's most potent strength and the most significant encumbrance.

The decades following Maslow's (1943) initial publication of his hierarchy were spent rendering emendations. Maslow (1954) changed the third level of *love* needs to the more

inclusive *belonging* needs. Next, Maslow extended the second level of *safety* needs to include abstract concepts, a change reflected with a new designation of *safety-security* needs. Eventually, Maslow (1954, 1968) updated the fifth level of *self-actualization* to a generalized definition less specific to his mentors' characteristics. Kiel (1999) indicated that in 1969, Maslow was toying with the idea of adding self-transcendence as a sixth level superior to self-actualization. Despite conflicting opinions about its composition and contents, Maslow's five-level structure constitutes the generally accepted hierarchy of needs presently utilized within the field of psychology. Maslow perceived himself to be an advisor and guide, not a mental health practitioner. Therefore, despite dedicating decades to modifying his theory, Maslow never devised a universally applicable instrument intended to measure need satisfaction.

Recognizing the value of Maslow's (1943, 1954, 1968) theory, several efforts have been undertaken to create holistic and universally applicable measures. Lester et al. (1983) developed the first valid measure of Maslow's hierarchy but failed to publish the complete instrument and administration guidelines. Although sampled entirely from a college student population, Lester et al.'s instrument was judged both valid and reliable. Strong and Fiebert (1987) produced an instrument, also validated exclusively on a sample of undergraduate students. In response to Strong and Fiebert's efforts, Lester (1990) published the remaining pieces of the Lester et al. (1983) instrument. Unfortunately, neither instrument gained widespread acceptance and use. Lester (2013) later performed a comparative research study of the two instruments. He found that while the Lester et al. (1983) instrument adequately measured needs satisfaction, the Strong and Fiebert instrument measured participants' rankings of the importance of Maslow's hierarchical needs. Neither enjoyed widespread endorsement. This failing is hypothesized to result from the fact that each instrument measured different constructs, and both had only been validated on

college students (Lester, 2013). Their applicability to a generalized sample of the public remains questionable (Taormina & Gao, 2013).

Several attempts to successfully measure needs satisfaction rendered purpose-built instruments yet lacked applicability to the general public (Burlison & Thoron, 2014). Freitas and Leonard (2011) created an instrument purported to measure need satisfaction among nursing students but substituted various need levels with unrelated psychological terms. Aravind and Prasad (2016) attempted to correlate self-actualization to teacher efficacy. De Guzman and Kim (2017) sought to simultaneously measure needs satisfaction within a community to explain different community policing models.

Taormina and Gao (2013) hoped to overcome the failings of previous efforts by creating a valid and reliable instrument possessing broad applicability to the general public. Taormina and Gao eventually achieved their goal of simultaneously measuring all five levels of needs satisfaction with the Five Need Satisfaction Measure (FNSM; see Appendix F). This 72-question survey consists of five sections, one section for each need satisfaction stage within Maslow's (1943, 1954, 1968) hierarchy. Each section contains 15 Likert-type questions, except the self-actualization section with only 12 questions. Taormina and Gao extensively tested this new instrument, finding support for Maslow's (1943, 1954, 1968) assertions regarding the prepotency of needs. That is to say, lower-level needs must first be met before attention and efforts are devoted to higher-level needs.

Taormina and Gao (2013) intended their survey for a western audience, composing the original questions in English. However, the instrument was translated into Chinese for testing and administration to a sample of 384 ethnically-Chinese people residing within mainland China. Taormina and Gao's results supported Maslow's (1943, 1954, 1968) ordering of needs,

Maslow's assertions regarding the prepotency of needs, and Maslow's belief that the needs he defined were universally descriptive. Taormina and Gao's findings directly contradict both the Cianci and Gambrel (2003) study questioning the applicability of Maslow's hierarchy to collectivistic cultures and the Tay and Diener (2011) study refuting the hierarchical ordering Maslow suggested. Taormina and Gao's research also failed to support Hofstede's (1984) contention that non-Western cultures require a different hierarchy.

In the few years since its creation, the FNSM (see Appendix F) has been employed within several studies (King, 2018; Taormina & Shamionov, 2016; Winston et al., 2017) and referenced in numerous research papers (Arnett et al., 2014; Autin et al., 2019; Liu et al., 2016). The FNSM is the preferred instrument implemented by researchers to measure the satisfaction of Maslovian needs and has been cited positively in international books and journals more than 375 times. Taormina and Shamionov (2016) cannibalized sub-sections of the FNSM to create a traditional values instrument with broad cultural applicability, lending further support that the FNSM is valid and reliable irrespective of culture. James (2016) repeatedly cites Taormina and Gao's (2013) research into need satisfaction as a defining element explaining people's unwillingness to obtain mental health treatment. King (2018) deployed the FNSM when investigating correlations between an individual's needs satisfaction and religious commitment. Pan and Vinitwatanakhun (2019) implemented the FNSM to examine correlations between needs satisfaction and student perceptions of school climate. Autin et al. (2019) modified particular sub-sections of the FNSM instrument to create a new measure of needs satisfaction applicable to the "psychology of working" theory. Nagpaul and Chen (2019) extracted sections of the FNSM physiological section to create a new measure investigating whether social service programs addressed the need satisfaction of at-risk youths.

Taormina and Gao's (2013) instrument supported Maslow's (1943, 1954, 1968) hierarchical ordering and the prepotency of needs. However, their study was validated amongst a sample population drawn from a collectivistic culture. The present study employed Prolific Academic's online research platform to administer the FNSM (see Appendix F) to a quota sample of U.S.-based adults drawn from the general public. The present study was the initial administration of the FNSM instrument to participants from an individualistic culture. Replicating Taormina and Gao's validity and reliability measures would confound both Hofstede's (1984) and Cianci and Gambrel's (2003) assertions that Maslow's hierarchy lacks universal cultural applicability. Similarly, replicating Taormina and Gao's results would prove the FNSM's suitability for the western audiences for whom it was initially intended.

### **Demographic Survey**

The present study implemented a demographic survey based on Taormina and Gao's (2013) demographic survey. Taormina and Gao employed a demographic survey appropriate to the several instruments used for validation of the FNSM. Neuroticism was measured by conjoining the Costa and McCrae (1992) and the Peterson and Seligman (2004) instruments. Family emotional support was measured within Procidano and Heller's (1983) *Perceived Family Social Support* scale. Life satisfaction was measured by employing Sirgy et al.' (1998; originated by Meadow et al., 1992) *Life Satisfaction* scale. And finally, Taormina's (2009) *Traditional Chinese Values* scale measured participants' traditional values. The final Taormina and Gao (2013) demographic survey collected age, gender, education, marital status, number of siblings, number of children, employment status, monthly income (in USD), and perceived overall health.

The present study collected participants' U.S. state of residency, age, biological gender, ethnicity, marital status, employment status, household income, educational attainment,

graduation dates (to calculate the time since completion), current academic enrollment and progress (if any), and significant life events data. A final question into participants' perceived level of need satisfaction was included strictly to verify attention. Absent are Taormina and Gao's (2013) questions relating to the participants' number of children, number of siblings, and perceived overall health since these topics are irrelevant to the research questions.

Within the remaining items, several significant differences exist. The residency question was included to help ascertain the generalizability of the present study's findings and to ensure participants were qualified for sample population inclusion as U.S. residents. Ethnicity was gathered since the U.S. population varies significantly from the homogenous demographics of Taormina and Gao's (2013) Macau, China sample population. Due to differences in education between the United States and mainland China populations, educational attainment questions differ from the categories selected by Taormina and Gao. Taormina and Gao considered only five education categories: no education, primary school, secondary school, bachelor's, and masters or higher. Within the Taormina and Gao sample population, seven (7) participants reported no education, 46 reported completing primary school, 241 completed secondary school, 79 had earned a bachelor's degree, and 13 possessed a master's degree or higher. Seventy-six percent of participants (76%) held a secondary education or lower.

Secondary education is compulsory within the United States, and 90% of adults have earned a high school diploma (U.S. Census Bureau, 2017). The present study's research questions seek to correlate post-secondary education and time since completion to needs satisfaction. Educational attainment categories were selected based on the likely sample of U.S.-based participants and the research questions. The Taormina and Gao (2013) study underrepresents participants with post-secondary education. Within their less-educated sample

population, education correlated positively to safety-security (2%), belongingness (5%), and esteem (6%) needs, but negatively to physiological (-6%) and self-actualization (-7%) needs. China is developing economically, while the United States has an advanced economy (Benoit & Tu, 2020). These differences in educational attainment and economic development may directly impact need satisfaction.

Employment and marital status were retained from the Taormina and Gao (2013) demographic survey. Monthly income from the Taormina and Gao demographic survey has been adjusted to annual household income ranges. Taormina and Gao's question concerning perceived overall health was omitted since this information was gathered within the physiological needs section of the FNSM but otherwise irrelevant to the research questions.

Most importantly, the United States was experiencing one of the worst pandemics in its history. The pandemic resulted in economic slowdowns and increased death rates amongst the prospective U.S.-based sample population (Bauer et al., 2020). The situation continued during the present study's March 2021 data collection period. Extraordinary life events, such as major illness or death of a family member, may impact need satisfaction at multiple levels (Maslow, 1943, 1956, 1968). Frost (2019) directs that all possible variables must be considered for multiple linear regression analyses to function correctly. For these reasons, the demographic survey included major life event information regarding unusual but impactful occurrences relating to the pandemic, which may have skewed the present study's findings (Cohen et al., 2019).

### **Educational Attainment**

The majority of research into educational attainment focuses on the financial (market) benefits of education when comparing completion costs to subsequent earnings. The European

Centre for the Development of Vocational Training (2013) contended that understanding both the market and non-market benefits of education is essential to properly assess the total return on investment from vocational and educational training. Educational attainment has been studied repeatedly from the perspectives of degree-related earning increases, lifetime-earning increases, or both. Both Berger (1988) and Hecker (1996) identified a correlation between college majors and future earnings. Korn (2015) further illuminated Berger's and Hecker's works, revealing a perpetuation of the relationship between college majors and earning capacity after two decades. Finnie and Frenette (2003) also investigated wage differences of various college majors within a sample of Canadian students, reaching similar conclusions as Berger, Hecker, and Korn. Finnie et al. (2018) subsequently updated these studies with additional research centered on taxable income differences between various college majors. Wolniak and Engberg (2019) researched the impact of school quality and college major on the short-term wage growth during the years immediately following college graduation. Manzoni and Streib (2019) investigated the social mobility effects of college majors. Ford and Choi (2018) studied the significance of college majors and skill levels to future earnings. Carnevale et al. (2015) quantified the economic value of individual college majors, discovering the most popular college majors were also the highest-paying post-graduation. These studies all suggest that educational attainment is a decent analog for wealth and typically present together. Of course, not all college majors result in significant increases in earning capacity. Carnevale et al. also revealed that college majors with reduced future-earning capabilities were less popular than high-paying alternatives.

The adage "money cannot buy happiness" (Chung et al., 2019) refers to the fact that monetary gains should fail at the third and fourth levels of Maslow's hierarchy, amongst belonging and esteem needs. The studies cited above contradict this adage, finding that wealth, a



correlate to educational attainment, is beneficial in satisfying both belonging and esteem needs. McClure and Ryder (2018) concluded monetary spending positively affects social relationships in an academic setting. Rubin and Wright (2017) discovered the positive impacts of wealth on social status at universities. Individuals and companies also exploit financial resources when contributing to neighborhood organizations and civic causes to enhance their community assimilation and social standing. Burns and Rossi (2019) investigated the motivations behind business donations to community organizations, finding small businesses tend only to donate within their local operational markets. Bearman and Franklin (2018) studied how individuals have begun creating collective giving groups as a means to harness financial resources while building a sense of community among group members and donation recipients. Parsons (2019) studied how these small group donating activities contribute to increased giving, reciprocal activities, and the formation of larger social hierarchies within communities. These studies recognize that relationships surrounding wealth and donations ultimately focus on resource sharing. Unfortunately, the bonds created tend to last only as long as the money (McClure & Ryder, 2018; Parsons, 2019; Rubin & Wright, 2017).

Recent studies into educational attainment focus on factors inhibiting or promoting academic achievement. Dowden et al. (2018) targeted teen pregnancy's negative impact on secondary and post-secondary academic completion. Gardner (2017) researched how illness-related absenteeism negatively correlates to school performance. Kislev (2016) investigated the detrimental consequences of obstructive school policies on student achievement and persistence. Okbay et al. (2016) explored the role of various ethnicities' genetic factors in educational attainment. Hyman (2017) determined that school spending is integral to student efficacy and motivation. Goldrick-Rab et al. (2016) researched the role of income inequality and the

damaging effects on educational attainment predominantly experienced amongst lower-income individuals. Herd et al. (2019) analyzed gender inequality's role in educational outcomes. However, issues interfering with or supporting educational attainment fall outside the present study's scope. The present study sought to identify a correlation between previously attained educational attainment and needs satisfaction.

Several non-market benefits from educational attainment have also been investigated. Oreopoulos and Salvanes (2011) reported the following benefits of education: improved happiness, greater job satisfaction, enhanced occupational prestige, lower rates of disability, better physical health, fewer smoking instances, reduced likelihood of incarceration, and lower probabilities for divorce, and improved trust. Griffin (2016) discovered enhanced non-market returns from a graduate education in the areas of individual physical health, self-esteem, and reported well-being. Heckman et al. (2018a) described higher market returns from post-secondary education amongst high socio-emotional and cognitive ability individuals.

Heckman et al. (2018b) built on Becker's (1965) research into potential non-market advantages from educational attainment, finding substantial benefits across all demographics. For instance, while low-income individuals realized more significant benefits, educational attainment resulted in improved mental health, increased voter participation, reduced incarceration rates, and reduced reliance on welfare programs. Assari (2019) notes that educational attainment is typically associated with improved health and a reduction in risk-taking behaviors. Roy et al. (2020) identified a positive correlation between educational attainment and longevity, adding an average of 1.37 years to life expectancy for each higher degree level achieved. Whipps (2017) identified educational attainment as the single most significant factor contributing to the age at which women become mothers and that higher educational attainment

pushed motherhood to later in life. Whipples also detected a correlation between educational attainment and increases in the number of months offspring are breastfed. Increases in both maternity age and time spent breastfeeding are generally accepted as beneficial to mother and child.

Unfortunately, benefits from educational attainment are not universally experienced. When Assari (2018) investigated the returns on educational attainment for ethnically Black people regarding health outcomes and income, he found non-market returns were lower for ethnic Blacks than other ethnicities. Assari and Mistry (2018) found that within the United States, educational attainment did not significantly reduce smoking amongst ethnic Blacks. Assari and Bazargan (2019) observed a similar lack of smoking-related returns for American Indians and natives of Alaska. Assari et al. (2019a) identified diminished returns on parental educational attainment for minority children suffering from chronic medical conditions. Subsequently, Assari et al. (2019b) also measured diminished returns from educational attainment on the alcoholism rates of Hispanics. Assari and his various co-researchers conducted multiple studies within the United States, repeatedly identifying reduced market and non-market returns for minorities from educational attainment.

No studies exist attempting to correlate educational attainment to Maslow's (1943, 1954, 1968) hierarchy of needs. The satisfaction of needs directly relates to mental health (Sirgy, 2020), another potential non-market benefit of educational attainment. The present study highlights the essential impact of educational attainment and time since completion on Maslovian need satisfaction. Maslow believed that good mental health during a person's lifetime involved successful satisfaction of needs throughout various life stages. Maslow asserted that mental health improved consistently as an individual continually satisfied each subsequently

higher level of needs. Maslow (1954) contended that individual advancement through his hierarchical model was informally achieved both through trial and error (e.g., an infant learning to walk and talk) and formally (e.g., attending school or other structured training). However, the overlooked piece is to what extent post-secondary education assists an individual's overall development and needs satisfaction.

### **Time Since Completion**

Both Maslow (1943, 1954, 1968) and Erikson (1966) believed that human minds develop through various learning processes. Maslow believed that need satisfaction was learned through mimicry, trial and error, exploration, and invention. Similarly, Erikson asserted that people travel through developmental stages, only passing to subsequent stages after mastering the skills required to succeed within one's current stage. Ultimately, only one primary factor is necessary to satisfy all of Maslow's hierarchical needs: time. Traditionally within studies concerning educational attainment, the standard benefits are quantified in terms of subsequent lifetime earnings or a comparison of pre- and post-matriculation earning differences (Andrews et al., 2016; Autor, 2014; Berger, 1988; Carnevale et al., 2015; Finnie & Frenette, 2003; Ford & Choi, 2018; Friedman, 2018; Goldrick-Rab et al., 2016; Hecker, 1996; Korn, 2015; Manzoni & Streib, 2019; Rumberger & Thomas, 1993; Thomas & Zhang, 2005; Valletta, 2016; Wolniak et al., 2008). However, time remains a necessary factor for consideration, even when both the knowledge and the capacity to satisfy a need are present. Unfortunately, time since completion rarely appears within the literature. The periods covering individuals' time since completing secondary and post-secondary schooling are regularly ignored (Desjardins, 2003; Pamphilon, 2005; Wister et al., 2010; Yamashita & Brown, 2017). Since most adults in the United States graduate high school and attend college at similar ages (Bustamante, 2019; Dale, 2010), age is a

close corollate to time since the completion of one's education. However, the predictor variable of *time since completion* is preferable to age both for its relationship to educational attainment and to avoid multicollinearity.

Of the studies where time since completion is a factor, the subject matter varies wildly. Augustine and Negraia (2018) identified time since completing college as a significant factor deciding the extent to which a poorly educated mother's educational attainment impacts her children's skills development. Augustine and Negraia determined that children of college-educated women develop better if birthed during the post-college years versus prior to university graduation. Their study found that children blossoming in good health correlated positively with increases in the length of time between a mother's college graduation and the child's birth. Enestvedt et al. (2020) employed time since completing vocational training as a criterion for their study into gender-related leadership motivations. Enestvedt et al.'s research determined that women have obtained more leadership positions within the preceding six years than men. The authors suggested this may be due to waning sexism or improving gender equality in the workplaces studied. Ryan (2002) concluded that healthcare practitioners achieved the most optimal patient outcomes immediately after completing vocational education and training. Ryan also reported measurable outcome declines corresponding to increases between treatment and the time since practitioners completed formal training. Driscoll et al. (2018) recognized that increases in residency training program times since completion significantly lowered subsequent certification scores among healthcare professionals.

Conversely, researchers have discovered that time since completion does not affect knowledge obtained during vocational education and training. Lange and Pearce (2017) found no decrease in diabetes knowledge, regardless of the time since completing nurse training. Cook et

al. (2016) found that time since completing formal education was not a factor in determining physician attitudes toward maintaining certifications. Han et al. (2018) concluded that time since completing formal training played no role in whether practitioners obtained grant funding from the National Institutes of Health. The Han et al. finding suggests that older practitioners and recent graduates are perceived as equally knowledgeable and qualified when considering grant-making decisions.

*Time since completion* was chosen as a relevant variable, considering that the failure to account for this factor might skew the present study's findings (Chapman et al., 2008; Lee & Coelli, 2010; Leigh, 2008; Polidano & Ryan, 2016). Should a sample population be queried as to the highest educational attainment level without regard for the time since completion, the research questions might remain unanswered or increase the likelihood of a type I error. By including the time since completion as a predictor variable, the present study intended to compensate for the time necessary to satisfy needs following degree attainment (Polidano & Ryan, 2016). With this predictor variable, two differently-aged participants share equal footing if possessing similar levels of educational attainment and time since completion. A thirty-five-year-old and a fifty-five-year-old, both holding a doctoral degree for ten years, may be reasonably compared. Additionally, time since completion acts as an analog for time in general among those having only a high school diploma or GED (Polidano & Ryan, 2016). The possibility remains that older participants without post-secondary education are equals in need satisfaction to younger participants possessing advanced degrees.

### **Relationships and Inter-relationships**

A U.S.-based quota sample of 245 pre-qualified adults operating within the Prolific Academic online research platform was administered both a demographic survey (see Appendix

D) and the Five Need Satisfaction Measure (FNSM; Taormina & Gao, 2013, see Appendix F). The pre-qualification of participants was based on their U.S. residency, age 18 or older, and the highest level of educational attainment. Each participant's highest level of educational attainment fell within only one of the seven ordinal categories of no secondary education (i.e., no GED or high school diploma), a general equivalency diploma (GED), a high school diploma, an associate's degree(s), a bachelor's degree(s), a master's degree(s), or a doctoral degree(s). The demographic survey collected the participants' graduation dates for every level of educational attainment achieved. Time since completion was calculated from the time between survey administration and participants' graduation dates. The FNSM instrument rigorously appraised each participant's needs satisfaction to identify the level(s) of need sufficiently satisfied and the level at which the participants were currently operating.

Participants were grouped according to levels of educational attainment and time since completion. Time since completion data were analyzed since academic graduation rarely results in the immediate satisfaction of needs. The fact remains that time is typically required before educational attainment improves one's ability to satisfy needs. Inclusion of time since completion allowed proper participant grouping concerning this time or age factor. A participant having recently earned a master's degree may be more appropriately placed in a group of bachelor's degree participants simply because not enough time had transpired since completing the master's degree for effect on the participants' need satisfaction to be measurable. Comparing the FNSM results to the individuals' self-reports of educational attainment and time since completion allowed the analysis of whether a positive, negative, or no correlation existed. A possible finding was that higher education positively correlates with Maslovian (1943, 1954, 1968) need satisfaction. However, it remained equally plausible that educational attainment was unrelated.

Suppose a correlation exists between educational attainment and time since completion concerning the satisfaction of needs. In that case, further analysis might identify the education levels and time since completion factors with the most negligible or most significant impacts. Within each educational attainment group, a sub-group of individuals for whom that level represents the highest educational attainment was created from the larger group of all participants having achieved that level. For instance, most participants earned a high school diploma, while a smaller sub-group represented those for whom a high school diploma represented their highest level of educational attainment. Comparing these within-group differences identifies any significance of further education, time since completion, or both. A plausible finding may have been that a high school diploma and 20-30 years since completion positively correlate to a similar level of need satisfaction as a bachelor's degree and 0-10 years since completion. Within these analyses, the overall effect of each subsequent level of educational attainment and time since completion should be quantifiable.

Likewise, information from the demographic survey (see Appendix D) regarding age, U.S. region of residency, biological gender, or ethnicity may ascertain the degree to which educational attainment impacted participants from a variety of areas, ages, or ethnicities. Plausible findings might be that educational attainment more significantly impacted participants from the Southern region than the Northeastern region (U.S. Census Bureau, 2018). Alternately, participants of certain ethnic groups may benefit from educational attainment disproportionately to other ethnicities. Age groups may identify the value of educational attainment obtained within specific life stages, such as a more significant value to those who achieved higher education levels during young adulthood versus those achieving the same education levels well into maturity.



Beginning in 2020, the United States was experiencing one of the worst pandemics in its history. The pandemic resulted in economic slowdowns and increased death rates amongst the prospective U.S.-based sample population (Bauer et al., 2020). The situation continued during the present study's March 2021 data collection period. Extraordinary life events, such as major illness or death of a family member, might have impacted need satisfaction at multiple levels (Maslow, 1943, 1956, 1968). Frost (2019) directed that all possible variables must be considered for multiple linear regression analyses to function correctly. For this reason, the demographic survey included major life event information regarding unusual but impactful occurrences relating to the pandemic (Cohen et al., 2019).

Taormina and Gao (2013) previously identified a positive correlation between Maslovian (1943, 1954, 1968) need satisfaction and the variables of family support, traditional values, and life satisfaction. Maslow's (1943) assertion that man is an eternally wanting creature suggests that further study is warranted to identify other factors positively impacting needs satisfaction.

### **Gap in the Literature**

Maslow (1943, 1954, 1968) believed his hierarchy intertwined with Erikson's (1966) theory of human developmental stages. Both Maslow and Erikson asserted that individual psychological development involved learning over the entirety of an individual's life. From Maslow's perspective, learning allowed people to satisfy universal, hierarchical needs, leading to a healthier psyche as more needs were consistently satisfied. Erikson contended that a mentally healthy individual would traverse distinct progressive stages, learning new skills within each phase. Erikson asserted that successfully completing all life's stages resulted in an abundant life, similar to Maslow's self-actualization. For both Erikson and Maslow, there was a time component involved in traversing these theoretical developmental periods. Erikson divides his

levels into time segments comprising specific life events commonly occurring within distinctive age brackets (e.g., childhood, adolescence, young adulthood). Maslow did not attach time frames to his hierarchy. Maslow believed a person could conceivably spend a lifetime seeking to adequately satisfy needs at one specific level. For example, a prisoner sentenced to a life term from an early age may never fully meet safety-security level needs and remain unable to progress to higher-level needs. Such a situation would result in the prisoner's poor mental health throughout the entirety of their life. Regardless, Maslow's theory allows the possibility that any individual ought to self-actualize given sufficient time and resources.

The bulk of research regarding education and Maslow's hierarchy of needs is not as holistic as Maslow intended. The literature focuses only on school environments to help students achieve academic success or increase teacher efficacy and retention. Morrical et al. (2018) positively correlated Maslow's (1943, 1954, 1968) need satisfaction with post-secondary academic persistence. Aravind and Prasad (2016) found a relationship between teacher efficacy and the satisfaction of Maslow's needs. Chalermnirundorn (2018) identified teacher needs satisfaction as crucial to persistence within the profession. Fisher and Royster (2016) applied Maslow's hierarchy to resolving issues surrounding teacher retention. Freitas and Leonard (2011) identified a relationship between student academic success and the satisfaction of needs. Though learning has been acknowledged within both Erikson's (1966) and Maslow's theories, both were developed and proposed during a time in U.S. history when post-secondary education was neither as affordable nor readily available to the average U.S. citizen as it is today. The increased availability of advanced degrees might advance an individual's ability to satisfy universal needs. This question has never been studied.

A gap in the literature exists correlating educational attainment and time since completion to the satisfaction of Maslow's (1943, 1954, 1968) hierarchy of needs. The present study attempted to highlight the essential impact of educational attainment on need fulfillment. Ultimately, educational institutions' success or failure depends on a single factor: people's motivations. The problem is that the literature has failed to address whether secondary education, post-secondary education, or both, facilitate the satisfaction of Maslow's hierarchical needs across a broad spectrum sample of the United States population.

### **Summary**

Maslow's (1943, 1954, 1968) hierarchy of needs illuminates the motivations prompting human behaviors, outlining individual efforts to satisfy prepotent needs along a path leading to self-actualization. Self-actualization, as defined by Maslow, bears a striking resemblance to Christ's teachings concerning salvation. The Bible exhorts Christians to "increase in learning and the one who understands obtain guidance" (Proverbs 1:5). The path of righteousness involves education and time, concluding with self-actualization and returning to the Kingdom of God. Taormina and Gao's (2013) FNSM is a valid and reliable instrument for measuring needs satisfaction. Taormina and Gao also supply a relevant framework for a demographic survey. Investigating whether a correlation exists between needs satisfaction and educational attainment should reinforce biblical principles espoused by Christians worldwide. A gap in the literature exists concerning the impacts of education on individuals' mental health and development. Maslow's hierarchy expresses that only upon the satisfaction of lower-level physical needs may higher-level spiritual needs be addressed. The research discussed herein addressed this gap while offering scientific support for biblical precepts guiding the evolution of individual souls and humanity.

## **CHAPTER THREE: METHODS**

### **Overview**

The purpose of this quantitative, correlational research study was to investigate how accurately an individual's Maslovian needs satisfaction (i.e., the criterion variables) could be predicted from the combination of educational attainment and time since completion (i.e., the predictor variables) amongst a quota sample of 245 adult participants within the United States. A self-report demographic survey (see Appendix D) gathered demographic, educational attainment, and time since completion data. Maslovian need satisfaction was measured via the online administration of the Five Need Satisfaction Measure (FNSM; see Appendix F; Taormina & Gao, 2013). Chapter three details the research methodology utilized within the present study, including the design, research questions, null hypotheses, participants and setting, instrumentation, and procedures. The chapter concludes with a description of the analysis strategy utilized to address the research questions.

### **Design**

The present study utilized a quantitative, correlational research design to assess whether a relationship exists between the predictor variables of educational attainment and time since completion and the criterion variable of Maslovian need satisfaction. The predictor variables were gathered from self-reports of participants' educational attainment and time since completion for every secondary and post-secondary academic level. A quantitative, correlational research design implementing multiple linear regression was chosen for its ability to identify both linear and predictive relationships between two predictor variables and one criterion variable (Gall et al., 2006; Warner, 2012). The predictor variables were self-reports of educational attainment and time since completion gathered from a demographic survey (see Appendix D). The five criterion

variables were each of the participants' five levels of need satisfaction, as defined by Maslow's (1943, 1954, 1968) five-level hierarchy of needs and measured by the FNSM (see Appendix F; Taormina & Gao, 2013).

Multiple linear regression was employed to evaluate all five research questions. Multiple linear regression is appropriate when determining whether a statistically significant linear relationship, predictive relationship, or both, exists between one continuous criterion variable and a combination of two or more continuous or categorical predictor variables (Gall et al., 2006; Warner, 2012). In the present study, the five criterion variables were each of the participants' five-levels of need satisfaction, as defined by Maslow's (1943, 1954, 1968) hierarchy of needs and measured by the Five Need Satisfaction Measure (FNSM; see Appendix F; Taormina & Gao, 2013). The two predictor variables were participants' highest educational attainment and time since completion. When a correlation between predictor and criterion variables exists, multiple linear regression analysis is a statistical technique that produces an equation describing the predictive relationship between variables (Warner, 2012). When such a correlation exists,  $R$  demonstrates the relationship's strength and  $R^2$  identifies the effect size.

### Research Questions

The research questions for the present study were:

**RQ1:** How accurately can an individual's physiological needs satisfaction be predicted from a combination of *educational attainment* and *time since completion*?

**RQ2:** How accurately can an individual's safety-security needs satisfaction be predicted from a combination of *educational attainment* and *time since completion*?

**RQ3:** How accurately can an individual's belonging needs satisfaction be predicted from a combination of *educational attainment* and *time since completion*?

**RQ4:** How accurately can an individual's esteem needs satisfaction be predicted from a combination of *educational attainment* and *time since completion*?

**RQ5:** How accurately can an individual's self-actualization needs satisfaction be predicted from a combination of *educational attainment* and *time since completion*?

### **Null Hypotheses**

The null hypotheses for the present study were:

**H<sub>01</sub>:** There is no significant predictive relationship between an individual's *physiological needs satisfaction* score, as measured by the FNSM, and an individual's *educational attainment* and *time since completion*.

**H<sub>02</sub>:** There is no significant predictive relationship between an individual's *safety-security needs satisfaction* score, as measured by the FNSM, and an individual's *educational attainment* and *time since completion*.

**H<sub>03</sub>:** There is no significant predictive relationship between an individual's *belonging needs satisfaction* score, as measured by the FNSM, and an individual's *educational attainment* and *time since completion*.

**H<sub>04</sub>:** There is no significant predictive relationship between an individual's *esteem needs satisfaction* score, as measured by the FNSM, and an individual's *educational attainment* and *time since completion*.

**H<sub>05</sub>:** There is no significant predictive relationship between an individual's *self-actualization needs satisfaction* score, as measured by the FNSM, and an individual's *educational attainment* and *time since completion*.

## **Participants and Setting**

The participants for this quantitative, correlational research study were drawn from a US-based quota sample of the general public operating within the Prolific Academic online research platform. Social science research is frequently limited due to a reliance upon an unrepresentative sample of humanity (Henrich et al., 2010), and most commonly, American college students (Sears, 1986). Utilizing the Internet to collect data from sample populations has reduced biases often found within these relatively homogeneous samples (Gosling et al., 2004). Casler et al. (2013) determined that the survey-type studies conducted in the lab achieved equivalent results when repeated online. Prolific Academic's online research platform offers the potential to collect data more rapidly and less expensively from a more demographically diverse sample population than is found in traditional social science research (Peer et al., 2017). The Prolific Academic online research platform also contained all the elements necessary to complete this social science research study (Buhrmester et al., 2011, Peer et al., 2017). The Prolific Academic online research platform integrated with Qualtrics (Evernden, 2018), the online survey platform that administered both the demographic survey (see Appendix D) and the FNSM (see Appendix F) instrument employed within the present study.

Prolific Academic's online research platform connects researchers offering digital research assignments to more than 20,000 geographically diverse workers willing to complete research tasks (e.g., surveys, tests, etc.) in exchange for a nominal fee (Follmer et al., 2017; Peer et al., 2017). A wide range of ethnicities, education levels, age groups, professional and technical disciplines are represented within Prolific Academic's user base (Peer et al., 2017). More than 64% of Prolific Academic participants are in either the United States or the United Kingdom (Prolific Academic, 2021). Prolific Academic participants are demographically representative of

the general US population while meeting or exceeding all psychometric standards observed within the published research (Peer et al., 2017).

Compared with a cross-section of the U.S. population and other online research platforms, Prolific Academic research participants tend to hold higher educational qualifications, demonstrate high English fluency, have high-income levels, and offer high reliability from survey responses (Peer et al., 2017). The fact that Prolific Academic's online research platform requires Internet access and a certain amount of technological savvy, one should anticipate that elderly adults and those without the necessary financial resources, technical aptitude, or both, may be underrepresented within the sample populations drawn from Prolific Academic research participants (McDuffie, 2019; Peer et al., 2017). Along a similar vein, the diversity found among Prolific Academic research participants may not accurately represent the ethnic composition of the United States (Paolacci & Chandler, 2014; Peer et al., 2017). These disadvantages may impact results and limit the generalizability of these research findings.

Sample population quotas were filled through the use of participant qualifications. Qualifications allow the researcher to identify and select sample participants based on specific demographics. Employing Prolific Academic's qualifications feature, a sample population was assembled that ensures the broad generalizability of results. Prolific Academic supports the restriction of potential participants to residents of specific countries or other demographic criteria (Prolific Academic, 2021). The Prolific Academic online research platform integrates with the Qualtrics survey software utilized within the present study (Evernden, 2018). Online research platforms have demonstrated promise in obtaining more diverse sample populations than the undergraduate students often utilized within social science research (Follmer et al., 2017; Peer et al., 2017). Online research platforms like Prolific Academic have proven to be a valuable tool for



graduate research students seeking a diverse sample population in a reasonable time frame and for minimal cost (McDuffie, 2019). Completed participant submissions identified as sub-par, such as incomplete or dishonest survey responses, resulted in no participant compensation (Buhrmester et al., 2011). Sub-par participant efforts within the sample population were removed and replaced until the sample quota required for each educational attainment category was filled. These response screening measures decreased the survey completion rate while reducing the costs associated with obtaining the requisite number of usable questionnaires.

Participation was limited to a predefined sample population range for each of the seven educational attainment categories. Founded in 2014, the Prolific Academic online research platform is relatively new (Luke, 2019). Given the somewhat fluid nature of its user demographics, sample populations from online research platforms may change at any time (Buhrmester et al., 2011). As with other online research platforms, Prolific Academic participants are compensated upon completing a research assignment. The tasks for the present study consisted of the completion of the consent form (see Appendix B), the demographic survey (see Appendix D), and the FNSM instrument (see Appendix F).

Participants were each paid \$2.00 for approved surveys. The mean completion time for all sections (i.e., the consent form, the demographic survey, and the FNSM) was 11.39 minutes. On average, participants were compensated at a rate of \$10.53 per hour. The quotas for each educational attainment category were filled without needing to adjust payment. The value of compensation appears to have no effect on the quality of data retrieved (Buhrmester et al., 2011). The only noticeable impact from the compensation amount is that a more significant number of respondents may be assembled in less time with higher-paying tasks than lower-paying tasks (Buhrmester et al., 2011). All educational attainment quotas were filled in under three weeks.

Participants were pre-qualified based solely on their self-reports of age (18 and older) and current residency within the United States. Only adults (18 and older) currently residing within the United States were permitted to participate in the present research. Furthermore, quota sampling was employed to qualify participants. The Prolific Academic online research platform only enabled U.S.-based adults to access the solicitation for participants. Candidates were re-screened within the Qualtrics system by asking whether they were age 18 or older, a current resident of the U.S., and to identify their highest level of educational attainment. Unqualified candidates were rejected, while qualified candidates were placed into the appropriate quota sample group. Eligible participants were assigned to quota groups according to their highest level of educational attainment.

Within the United States, high school attendance is compulsory until the age of majority. Regardless, the potential educational attainment category of those without a GED or high school diploma was designated a quota group. This group included a few participants still enrolled in high school or a GED program and several adults 20 years of age and older not enrolled in any school program. Participants reporting a general equivalency diploma (GED) as their highest educational attainment level were assigned to a separate quota group from the high school diploma quota group. Each participant's highest level of educational attainment fell within only one of the seven ordinal categories of no secondary education (i.e., no GED or high school diploma), a general equivalency diploma (GED), a high school diploma, an associate's degree(s), a bachelor's degree(s), a master's degree(s), or a doctoral degree(s). Quota sampling for participants' highest level of educational attainment continued until a minimum of 30 participants completed the consent form (see Appendix B), the demographic survey (see

Appendix D), and the FNSM instrument (see Appendix F). The resulting sample population consisted of 245 U.S.-based adult participants.

To calculate the appropriate sample size for significance testing of individual predictors while achieving a medium effect size with a statistical power of 0.7 and alpha of  $\alpha = 0.05$ , Tabachnick et al. (2007) suggested the equation  $N > 104 + k$ , where  $k$  equals the number of predictor variables. The present study included two predictor variables, thus  $k = 2$ . The resulting recommended minimum sample population is  $N > 106$  (Warner, 2012, p. 458). Warner (2012) also advises that sample sizes should exceed the minimum by as much as possible. The sample population of 245 participants thoroughly exceeds the recommended minimum of 106 participants. G\*Power (Faul et al., 2013) calculates a sufficient sample population to achieve a medium effect size with a statistical power of 0.7 and alpha of  $\alpha = 0.05$  requires no fewer than 107 participants. The sample population of 245 participants also exceeds the minimum sample population computed within G\*Power.

The sample consisted of 245 ( $N = 245$ ) adult participants residing within the United States, comprised of 113 (46.1%) males and 132 (53.9%) females. Reported ethnicities were 19 (7.8%) Asians, 16 (6.5%) Blacks, 18 (7.3%) Hispanics, 185 (75.5%) Whites, and 7 (2.9%) Others. As defined by the U.S. Census Bureau (2018), participants reported residing within the following U.S. regions: 48 (19.6%) within the Northeastern region, 85 (34.7%) within the Southern region, 51 (20.8%) within the Midwestern region, and 61 (24.9%) within the Western region. The participants' self-reported ages totaled 58 (23.7%) between 18-24 years old, 100 (40.8%) between 25-34 years old, 46 (18.8%) between 35-44 years old, 21 (8.6%) between 45-54 years old, 16 (6.5%) between 55-64 years old, and 4 (1.6%) between 65-74 years old. The quota groups of highest educational attainment consisted of 31 (12.7%) with no secondary

education, 32 (13.1%) with only a general equivalency diploma (GED), 35 (14.2%) with only a high school diploma, 34 (13.9%) with an associate's degree(s), 35 (14.3%) with a bachelor's degree(s), 39 (15.9%) with a master's degree(s), and 39 (15.9%) with a doctoral degree(s). The participants' demographics for the present study are detailed in Table 1.

Table 1. *Participant Demographics*

<b>Gender</b>	<b>Female</b>	<b>Male</b>	<b>Total (N = 245)</b>
Total	132 (53.9%)	113 (46.1%)	245 (100%)
<b>Ethnicity</b>	<b>Female</b>	<b>Male</b>	<b>Total (N = 245)</b>
Asian	11 (4.5%)	8 (3.3%)	19 (7.8%)
Black	10 (4.1%)	6 (2.4%)	16 (6.5%)
Hispanic	6 (2.4%)	12 (4.9%)	18 (7.3%)
White	101 (41.2%)	84 (34.3%)	185 (75.5%)
Other	4 (1.6%)	3 (1.3%)	7 (2.9%)
<b>US Regions</b>	<b>Female</b>	<b>Male</b>	<b>Total (N = 245)</b>
Northeastern	26 (10.6%)	22 (9.0%)	48 (19.6%)
Southern	48 (19.6%)	37 (15.1%)	85 (34.7%)
Midwestern	24 (9.8%)	27 (11.0%)	51 (20.8%)
Western	34 (13.9%)	27 (11.0%)	61 (24.9%)
<b>Age Groups</b>	<b>Female</b>	<b>Male</b>	<b>Total (N = 245)</b>
18-24	36 (14.7%)	22 (9.0%)	58 (23.7%)
25-34	52 (21.2%)	48 (19.6%)	100 (40.8%)
35-44	19 (7.8%)	27 (11.0%)	46 (18.8%)

45-54	12 (4.9%)	9 (3.7%)	21 (8.6%)
55-64	11 (4.5%)	5 (2.0%)	16 (6.5%)
65-74	2 (0.8%)	2 (0.8%)	4 (1.6%)
<b>Education*</b>	<b>Female</b>	<b>Male</b>	<b>Total (N = 245)</b>
None	16 (6.5%)	15 (6.2%)	31 (12.7%)
GED	14 (5.7%)	18 (7.3%)	32 (13.1%)
HS Diploma	18 (7.3%)	17 (6.9%)	35 (14.2%)
Associate's Degree	22 (9.0%)	12 (4.9%)	34 (13.9%)
Bachelor's Degree	22 (9.0%)	13 (5.3%)	35 (14.3%)
Master's Degree	19 (7.6%)	20 (8.2%)	39 (15.9%)
Doctoral Degree	21 (8.6%)	18 (7.3%)	39 (15.9%)

\* Each participant's highest reported level of education.

### Instrumentation

One instrument was administered to study participants, the Five Need Satisfaction Measure (FNSM; see Appendix F), previously identified as valid and reliable through peer-reviewed, evidence-based research. This instrument was developed by Taormina and Gao (2013), based on Maslow's (1943, 1954, 1968) theory of the hierarchy of needs. The purpose of Taormina and Gao's (2013) research was to create a single instrument for universal use that simultaneously measured an individual's needs satisfaction. Taormina and Gao's study also found support for Maslow's assertion that needs are prepotent; lower-level needs must be met before individuals address the gratification of higher-level needs. Since its creation, this instrument has been employed within several studies (King, 2018; Taormina & Shamionov, 2016; Winston et al., 2017) and referenced in numerous research papers (Arnett et al., 2014;

Autin et al., 2019; Liu et al., 2016). The FNSM is the preferred instrument implemented by researchers to measure the satisfaction of Maslovian needs and has been cited positively in international books and journals more than 375 times.

This valid and reliable measure consisted of five scales totaling 72 questions: 15 questions for each of the four lower hierarchical levels of Maslovian needs and 12 questions for the self-actualization scale. To ascertain the validity of their instrument, Taormina and Gao (2013) selected a convenience sample of 386 participants from the general public to complete the 72-question survey, in conjunction with several other valid and reliable surveys measuring participants' levels of anxiety (Costa & McCrae, 1992; Peterson & Seligman, 2004), family emotional support (Procidano & Heller, 1983), life satisfaction (Sirgy et al., 1998; originated by Meadow et al., 1992), and traditional values (Taormina, 2009). Participants' scores on the FNSM (see Appendix F) were differentiated according to those various surveys. Through confirmatory factor analysis, the construct validity of the entire FNSM survey was substantiated. A known-groups validity test determined that the FNSM survey achieved concurrent validity. A comparison of FNSM results against the different surveys supported the finding that the FNSM instrument possessed both discriminant and convergent validity. The FNSM results were affirmed to be reliable within a large sample population ( $N = 386$ ). All five scales were deemed reliable in a pilot study. All reliability values exceeded the recommended minimum acceptable Cronbach's alpha of 0.70 (Nunnally, 1978). The Cronbach's alpha reliability scores yielded: 0.81 for the physiological needs scale; 0.87 for the safety-security needs scale; 0.90 for the belonging needs scale; 0.91 for the esteem needs scale; 0.86 for the self-actualization needs scale (Taormina & Gao, 2013).

Taormina and Gao (2013) achieved significant positive correlations amongst all five

levels of needs, with the most significant correlations among pairs of needs closest to one another within the hierarchy. Taormina and Gao identified family support, traditional values, and life satisfaction as positively and significantly correlated with the satisfaction of all five of Maslow's (1943, 1954, 1968) levels of need, suggesting that these factors weigh heavily into an individual's ability to fulfill needs at every level.

The FNSM is regarded as superior to the other two simultaneous measures of Maslow's hierarchy, one developed by Lester et al. (1983) and a second by Strong and Fiebert (1987). Interestingly, Lester (2013) investigated any potential correlation between the Lester et al. (1983) and the Strong and Fiebert instruments. Finding no relationship between the two surveys, Lester (2013) concluded that each instrument produced different scores in every level of needs satisfaction (except physiological needs) because the two instruments measured separate constructs. Lester suggested that the Lester et al. (1983) instrument, which he co-authored, measured actual need satisfaction while the Strong and Fiebert instrument instead measured the relative importance participants placed on each level of need. Neither the Lester et al. nor the Strong and Fiebert surveys have enjoyed widespread implementation, either for research or general use. Since its validation eight years ago, the FNSM has been the preferred instrument implemented by researchers to measure the satisfaction of Maslovian needs and has been cited positively in international books and journals more than 375 times.

The 72-question FNSM (see Appendix F) takes approximately 10 minutes to complete and may be administered unsupervised and online. Taormina and Gao (2013) provided no specific guidance for administration. Each question allows five possible responses, utilizing a five-point Likert-type scale ranging from 1 (strongly disagree) to 5 (strongly agree). The middle response has a value of 3 (no opinion). Each section's score is calculated by averaging the

section responses, with the resulting mean for a section falling between one (1) and five (5). Lower mean scores indicate unmet needs, while higher mean scores indicate well-met needs. The first level with middle-range scores below three (3) suggests the participant's current operational level within the hierarchy since needs are neither well-met nor completely unsatisfied. Scores above three (3) for need satisfaction indicate that the participant has sufficiently achieved satisfaction of that level and has moved to the next level. All levels above the current operational level within the hierarchy should also score below three (3) while an individual focuses on satisfying lower-level needs. Thus, the participants' operational level is the first level at which scores are low to middling, demonstrating that the participant is attempting to satisfy unmet needs at that level. The FNSM yields no composite score (Taormina & Gao, 2013) since each of the five scales within the FNSM measures an individual's need satisfaction for only one of the five levels defined by Maslow (1943, 1954, 1968). Instead, the FNSM identifies which levels have been satisfied, which remain unsatisfied, and the participants' current operational level.

With an Internet survey, there is no way of knowing how honest the participants may be nor how much attention they enlist in answering questions (McDuffie, 2019). In response, a series of attention and honesty checks were incorporated within the survey, a method that has proven beneficial for eliminating incomplete or dishonest answers amongst other Internet-sample populations (McDuffie, 2019). First, Prolific Academic enables researchers to compare sample participants' past demographic responses to those submitted within the present study to ensure consistency, which suggests participant honesty. Survey timers were implemented to identify participants too rushed to having read the questions (e.g., completing the entire 72-question survey in under a minute; Follmer et al., 2017). Only surveys submitted with a response time greater than three (3) standard deviations below the mean (i.e., response times below 4 minutes,



19 seconds) were deemed invalid. Surveys were screened for straight-lining, a practice where a participant provides the same response to all questions (e.g., responding “3 – no opinion” to all items). Surveys were screened for unrealistic responses, such as non-chronological graduation dates on the demographic survey.

Surveys missing responses or where “3 – Undecided” were selected three or more (3+) times within any of the five survey scales were deemed to be missing data and incomplete. A participant must be aware of whether one’s needs are being fulfilled to provide valuable data for the present research. Due to the brevity of each survey, a majority of survey questions must be answered. Selecting “3 - Undecided” is also a confounding response meant to overcome the central tendency of Likert-type questions (Sullivan & Artino, Jr., 2013). An FNSM (see Appendix F) survey where “3 – Undecided” was selected three or more (3+) times within any of the five survey scales was deemed invalid. In those cases, the researcher contacted participants by email to clarify their responses. Failing to respond to these email requests resulted in the invalidation of the survey, and those participants were removed from the sample population. A final question required participants to type a coherent reply, or the entire survey was considered invalid due to either dishonesty or inattentiveness. Participants with invalid surveys were eliminated from the sample and data analysis. Permission to use the FNSM was received from the instrument’s author, Dr. Robert J. Taormina (see Appendix G).

The predictor variables of educational attainment and time since completion were gathered within the demographic survey (see Appendix D) administered before the FNSM (see Appendix F). Educational attainment consisted of ordinal data assigned to one of the seven ordinal categories of no secondary education (i.e., no GED or high school diploma), a General Equivalency Diploma (GED), a high school diploma, an associate’s degree(s), a bachelor’s

degree(s), a master's degree(s), or a doctoral degree(s). Time since completion was collected for each educational attainment category through participants' self-reports of the month and year of graduation. This information was used to compute the number of months between participants' graduation dates and FNSM survey administration for each level of educational attainment.

Graduation at any level of education may not immediately impact the satisfaction of Maslovian needs. Educational attainment typically requires time for the beneficial effects to be realized, whether those effects come from a job change, an income enlargement, or some other modification impacting Maslovian need satisfaction. The inclusion of the time since completion predictor variable may strengthen or reduce any impact from educational attainment. For instance, a participant with a recent doctoral degree and a master's degree for 11-20 years may score more similarly on the FNSM to a second participant with only a master's degree for 11-20 years when compared to a third participant holding a doctoral degree for 11-20 years. In this example, the first participant may be more appropriately placed within the master's degree group for educational attainment simply because the effects of the doctoral degree on needs satisfaction have not yet surfaced. In this manner, the importance of both educational attainment and time since completion may be appropriately assessed.

Each participant was required to identify every level of educational attainment and the month and year of graduation for all education attainment levels. The graduation dates formed the basis for calculating the time since completion for all educational attainment groups ( $\text{Time since completion} = \text{Survey administration date} - \text{Graduation date}$ ). For instance, a participant with a master's degree was required to identify the months and years of graduation for high school, undergraduate schooling, and graduate schooling. Incomplete responses to demographic questions were deemed invalid. Participants submitting invalid demographic surveys (see

Appendix D) were contacted by email for clarification. Failing to respond resulted in the survey being deemed invalid. Participants with invalid surveys were eliminated from the sample population. Demographic survey responses were automatically retained within the Qualtrics survey platform and manually checked for consistency.

### **Procedures**

The present study was conducted with the following procedures. The Liberty University Institutional Review Board (IRB; see Appendix A) fully approved the performance of the present study before the researcher collected any data. Upon receiving full IRB approval, the researcher replicated the demographic survey (see Appendix D) and the FNSM instrument (see Appendix F) within the Qualtrics survey platform. The Qualtrics survey was then linked to a solicitation for qualified participants within the Prolific Academic online research platform. Potential US-based adult participants were screened for inclusion within one of the seven educational attainment categories. Up to 40 US-based adults from each educational attainment category were solicited to participate in the present study via a unique URL created by the Qualtrics online survey platform. Upon clicking the URL, participant qualifications (i.e., U.S.-based adults with educational attainment corresponding to the appropriate group) were re-verified within Qualtrics. Potential participants not residing within the U.S., not aged 18 years or older, or not holding one of the seven defined levels of educational attainment were disqualified. Disqualified participants were exited from the Qualtrics platform and prevented from attempting to participate in the future. Qualified participants proceeded to read and electronically sign a participant consent form (see Appendix B). Only participants who returned an electronically signed consent form were provided access to the demographic survey (see Appendix D) and the FNSM instrument (see Appendix F). Once finished, participants received a code signifying they had completed the

study. Participants entered this code into the Prolific Academic online research platform. Data screening verified the honesty and attentiveness of all participants. Participants with missing or conflicting responses were contacted via email for clarification. Failing to respond resulted in the survey being deemed invalid. Participants with invalid surveys were eliminated from the sample population. Participants identified as having submitted valid surveys received payment. Surveys were collected until a minimum of 30 surveys had been collected for each group of educational attainment.

The administration of the surveys within the present research was not directly supervised. Participants remotely accessed the consent form (see Appendix B), the demographic survey (see Appendix D), and the FNSM instrument (see Appendix F) via the Qualtrics online survey platform. Qualtrics is an online survey platform enabling researchers to create and administer questionnaires only accessible to participants who have been conferred a unique Uniform Resource Locator (URL). The present study's URL was provided exclusively to pre-qualified participants via the Prolific Academic online research platform. Surveys were available to qualified participants 24-hours per day, seven (7) days per week. Round-the-clock availability facilitated participant involvement regardless of time zone, work schedule, or other constraints. Consenting participants utilized the unique URL to access the surveys, at their convenience, from any Internet-connected computer, tablet, or another similar device. Duplicate participant responses were prevented by requiring each participant to enter their anonymous alphanumeric Prolific Academic participant-ID into the Qualtrics surveys. All surveys were verified to contain unique Prolific Academic participant-ID's. In the one instance where two or more participants entered the same Prolific Academic alphanumeric participant-ID (or the same participant completed the survey twice), both surveys were considered invalid and removed from the

sample. To be considered valid, all surveys required a unique alphanumeric Prolific Academic participant-ID corresponding to a pre-qualified, consenting Prolific Academic user. This requirement excluded unqualified or non-consenting participants who may have obtained the Qualtrics survey URL via other means.

Participants accessed the consent form (see Appendix B), the demographic survey (see Appendix D), survey instructions (see Appendix E), and the FNSM instrument (see Appendix F) during a three-week calendar period of March 11 through March 29, 2021. The consent form was provided to eligible participants before accessing the surveys. The Qualtrics URL provided to Prolific Academic participants remained valid and operational only during the same three-week period. Prolific Academic does not permit participants' personally identifying information to be requested or recorded (Prolific Team, 2019). The participants' only identifying record was the anonymous alphanumeric Prolific Academic participant-ID recorded within the completed surveys and stored on the Qualtrics online survey platform.

There is no direct method to ensure participants' honesty or attentiveness when responding to questions within an unsupervised online survey (McDuffie, 2019). Several indirect techniques were employed to address this limitation. Participants were required to complete both the demographic and FNSM surveys in one sitting by imposing a one-hour time limit. Before launching the surveys, participants were reminded not to proceed until well-rested and having allocated a minimum of 30-minutes to complete the surveys. Further, participants were reminded of the importance of answering all questions honestly. Participants were assured that all responses would remain anonymous and confidential.

Three methods were employed to ensure the honesty and accuracy of participants' demographic (see Appendix D) and FNSM (see Appendix F) responses. First, a timer recorded

the survey completion times. Surveys completed too quickly for a participant to have read and considered the questions were discarded as invalid (Follmer et al., 2017). Only surveys submitted with a response time greater than three (3) standard deviations below the mean (i.e., response times below 4 minutes, 19 seconds) were deemed invalid. Surveys not completed within sixty (60) minutes were ended automatically and deemed invalid. Participants violating either of these time constraints were excluded from the sample population.

Second, attention checks were incorporated within the surveys, a method proven beneficial for eliminating incomplete or dishonest responses amongst other Internet-sample populations (McDuffie, 2019). The demographic survey required participants to use drop-down boxes to denote their birth and graduation dates for each level of educational attainment. These dates were required to have been chronologically feasible (e.g., date of birth after graduation dates or doctoral degree graduation before high school and undergraduate degree graduations). Upon completion of both the demographic survey (see Appendix D) and the FNSM instrument (see Appendix F), participants were provided a short description of Maslow's (1943, 1954, 1968) hierarchy of needs and required to type the level they believe they are currently seeking to satisfy. A coherent, relevant response was needed. Unintelligible or missing answers rendered a participant's survey invalid, on the assumption that the participant had become inattentive sometime during survey administration. The completion of this final question concluded most participants' involvement within the present study.

Third, Prolific Academic allows researchers to email participants to reconcile any conflicts within participants' responses. While some participants were rejected due to straight-lining, several were contacted to verify conflicting dates and reconcile too many '3 - no opinion' responses. The surveys of participants who failed to respond to these email inquiries were

deemed invalid. Whether due to time limitations or failure to respond appropriately, all invalid surveys were removed from the sample population (Buhrmester et al., 2011). In total, 47 participants were eliminated from the sample for failing to respond to researcher inquiries.

All completed surveys were stored within the Qualtrics system, accessible only to the researcher via a unique username and alphanumeric password combination. No identifying names or other information were collected within the Qualtrics or Prolific Academic platforms. The only potentially identifiable information was the participants' anonymous alphanumeric Prolific Academic participant-ID and demographic information. All invalid surveys were permanently deleted from Qualtrics. Eliminated participants were notified via the Prolific Academic online research platform that their surveys were rejected as invalid, deleted, and no payment was remitted to the participant (Buhrmester et al., 2011). Rejected participants were disqualified from future attempts to participate in the present study. Online surveys have occasionally been discovered via automated "bots" that detect hidden URLs, such as those employed by the Qualtrics platform. Surveys unmatchable to pre-qualified, alphanumeric Prolific Academic participant-IDs were not included within the present study and were deleted from the Qualtrics system.

Data collected from the surveys was protected within the Qualtrics online platform before exporting to an alphanumerically password-protected, encrypted USB flash drive. IBM's Statistical Package for the Social Sciences (SPSS) version 27.0 software, residing on the researcher's username and alphanumeric password-protected laptop operating from an encrypted hard drive, was employed for data analysis. All data entered into and analyzed with the IBM SPSS software originated from the same alphanumerically password-protected, encrypted USB flash drive. After a successful study defense, all electronically collected data will

be stored for three years on the same alphanumerically password-protected, encrypted USB flash drive and housed within a locked filing cabinet in the researcher's private residence.

### **Data Analysis**

All data were input and analyzed within IBM's Statistical Package for the Social Sciences (SPSS) version 27.0 software. Multiple linear regression was employed to evaluate all five research questions. Multiple linear regression is appropriate when determining whether a statistically significant linear and predictive relationship exists between one continuous criterion variable and a combination of two or more continuous or categorical predictor variables (Gall et al., 2006; Warner, 2012). In the present study, the five criterion variables were the participants' needs satisfaction, as defined by Maslow's (1943, 1954, 1968) hierarchy of needs and measured by the Five Need Satisfaction Measure (FNSM; see Appendix F; Taormina & Gao, 2013). The two predictor variables were participants' highest educational attainment and time since completion. When a correlation between predictor and criterion variables exists, multiple linear regression analysis is a statistical technique that produces an equation describing the predictive relationship between variables (Warner, 2012). If a correlation exists between the predictor and criterion variables,  $R$  will demonstrate the relationship's strength, and  $R^2$  will determine any effect size. Supposing the analysis does not achieve a statistical significance higher than 0.05 ( $\alpha = 0.05$ ) for either predictor variable. The research question would be rejected in such a case while failing to reject the corresponding null hypothesis.

Before engaging in analysis, the data were screened for consistency, completeness, straight-lining, exceptional scores, and other inconsistencies. The demographic survey (see Appendix D) responses were validated for consistency and, by implication, participant honesty. For instance, graduation date responses were reviewed to ensure both chronological consistency



and completeness (i.e., participants included all graduation dates for each completed level of educational attainment). Invalid survey results were removed, such as those missing responses or where “3 – Undecided” was selected three or more (3+) times within any of the five survey scales. In cases where a conflict was identified, those participants were excluded.

The data were reviewed according to the participants’ satisfaction level within Maslow’s (1943, 1954, 1968) hierarchy of needs and scanned for discrepancies. Extreme outliers were assessed using a scatterplot for each group of criterion variables. No outliers were identified in any of the five sections of the FNSM (see Appendix F), which is typical for Likert surveys.

For multiple linear regression analysis, the five criterion variables of Maslovian need satisfaction were the five mean scores derived from each of the corresponding five sub-surveys within the FNSM (see Appendix F; Taormina & Gao, 2013). The predictor variable of time since completion was numerically coded as the number of months between a participant’s graduation date and administration of the FNSM survey. The predictor variable of educational attainment was numerically coded as follows:

- 1 = No secondary education (i.e., no GED or high school diploma)
- 2 = General Equivalency Diploma (GED)
- 3 = High school diploma
- 4 = Associate’s degree(s)
- 5 = Bachelor's degree(s)
- 6 = Master's degree(s)
- 7 = Doctoral degree(s)

Laerd Statistics (2018) and Warner (2012) recommend that when implementing multiple linear regression, the following eight assumptions be met:

1. *The criterion variables are parametric and measured on a continuous scale.*
2. *Two or more predictor variables are either continuous or categorical.*
3. *Observations are independent.*
4. *No multicollinearity exists between predictor variables.*
5. *A linear relationship exists between both the criterion variable and each predictor variable and between the criterion variable and predictor variables collectively.*
6. *The residuals are approximately normally distributed.*
7. *The data demonstrates homoscedasticity.*
8. *No significant outliers, high leverage points, or highly influential points exist.*

Multiple linear regression was employed to evaluate all five research questions relating to how accurately the predictor variables of educational attainment and time since completion correlate to the five criterion variables of Maslovian need satisfaction. Warner (2012) advised that sample sizes should exceed the minimum recommendations by as much as possible to achieve the most significant statistical power. Tabachnick et al. (2007) suggested the equation  $N > 104 + k$ , where  $k$  equals the number of predictor variables. The present study included two predictor variables, thus  $k = 2$ . The resulting recommended minimum sample population is  $N > 106$  (Warner, 2012, p. 458). G\*Power (Faul et al., 2013) calculated a sufficient sample population to achieve a medium effect size with a statistical power of 0.7 and alpha of  $\alpha = 0.05$  requires no fewer than 107 participants. The sample population of 245 participants thoroughly exceeded both the minimum sample population of 106 computed with the Tabachnick et al. (2007) equation and the 107 calculated within G\*Power. The present study achieved a medium effect size with a statistical power of at least 0.7 at an alpha of  $\alpha = 0.05$ .

## CHAPTER FOUR: FINDINGS

### Overview

The purpose of this quantitative, correlational research study was to investigate how accurately an individual's Maslovian needs satisfaction (i.e., the criterion variables) could be predicted from the combination of educational attainment and time since completion (i.e., the predictor variables) amongst a quota sample of 245 adult participants within the United States. This chapter details the quantitative measures employed within the present study. The research questions and null hypotheses are listed. The sample population's descriptive statistics are illustrated. Next, the results section includes assumptions testing and the statistical analyses employed to address each research question, organized by null hypothesis. Determinations for each null hypothesis are presented.

### Research Questions

The research questions for the present study were:

**RQ1:** How accurately can an individual's physiological needs satisfaction be predicted from a combination of *educational attainment* and *time since completion*?

**RQ2:** How accurately can an individual's safety-security needs satisfaction be predicted from a combination of *educational attainment* and *time since completion*?

**RQ3:** How accurately can an individual's belonging needs satisfaction be predicted from a combination of *educational attainment* and *time since completion*?

**RQ4:** How accurately can an individual's esteem needs satisfaction be predicted from a combination of *educational attainment* and *time since completion*?

**RQ5:** How accurately can an individual's self-actualization needs satisfaction be predicted from a combination of *educational attainment* and *time since completion*?

### Null Hypotheses

The null hypotheses for the present study were:

**H<sub>01</sub>:** There is no significant predictive relationship between an individual's *physiological needs satisfaction* score, as measured by the FNSM, and an individual's *educational attainment* and *time since completion*.

**H<sub>02</sub>:** There is no significant predictive relationship between an individual's *safety-security needs satisfaction* score, as measured by the FNSM, and an individual's *educational attainment* and *time since completion*.

**H<sub>03</sub>:** There is no significant predictive relationship between an individual's *belonging needs satisfaction* score, as measured by the FNSM, and an individual's *educational attainment* and *time since completion*.

**H<sub>04</sub>:** There is no significant predictive relationship between an individual's *esteem needs satisfaction* score, as measured by the FNSM, and an individual's *educational attainment* and *time since completion*.

**H<sub>05</sub>:** There is no significant predictive relationship between an individual's *self-actualization needs satisfaction* score, as measured by the FNSM, and an individual's *educational attainment* and *time since completion*.

### Descriptive Statistics

A total of 245 participants ( $N = 245$ ) completed the demographic and FNSM surveys. Participant demographics elucidating frequency and percentages are detailed in Table 1 within Chapter Three. Sample participants' gender distribution was roughly equal, with 53.9% female versus 46.1% male. The majority of participants (75.5%) reported white ethnicity. The geographic distribution of participants was varied, with 19.6% reporting residence in the

Northeastern U.S., 20.8% in the Midwestern U.S., 24.9% in the Western U.S., and 34.7% in the Southern U.S. The youngest participant was 18 years old and the oldest 71 years old.

Participants' mean age was 34.17 years ( $M = 34.17$  years,  $SD = 11.72$  years). Each quota group of highest educational attainment comprised between 31-39 participants.

The descriptive statistics for the predictor variables are provided in Table 2 below. Median and range for each group are supplied instead of mean and standard deviation. The median and range are preferred since the standard deviations for several sample groups were greater than the mean (Gall et al., 2006; Warner, 2012).

Table 2. *Descriptive Statistics for Educational Attainment and Time Since Completion*

	Median (Years)	Range (Years)	$N = 245$
No Diploma or GED	6.58	30.58	31
GED	12.96	51.08	32
High School	5.83	44.00	35
Associate	11.25	50.67	34
Bachelor	3.25	35.67	35
Master	6.00	43.25	39
Doctoral	5.60	24.75	39

The five criterion variables of Maslovian (1943, 1954, 1968) need satisfaction correspond to the five sections of the FNSM. The FNSM yields no composite score (Taormina & Gao, 2013) since each of the five scales within the FNSM measures an individual's need satisfaction for only one of the five levels defined by Maslow. Every FNSM question allows five possible responses, utilizing a five-point Likert-type scale ranging from 1 (strongly disagree) to 5 (strongly agree).

The middle response has a value of 3 (no opinion). Each section's score is calculated by averaging the section responses for all sample participants, with the resulting mean for a section falling between one (1) and five (5). Lower mean scores indicate unmet needs, while higher mean scores indicate well-met needs. Descriptive statistics for the criterion variables are provided in Table 3 below. The reliability and internal consistency of a scale may be ascertained using Cronbach's (1949) alpha coefficient, wherein scores fall between 0 and 1, with higher scores indicating superior reliability. Scores greater than 0.70 indicate high reliability (Warner, 2012). As seen in Table 3, all five FNSM scales achieved excellent reliability scores.

Table 3. *Descriptive Statistics for Individual Scales of the FNSM*

	Mean	Std. Deviation	Cronbach's $\alpha$	<i>N</i>
Physiological	3.74	0.21	0.837	245
Safety-Security	3.85	0.18	0.866	245
Belongingness	3.75	0.23	0.934	245
Esteem	3.55	0.30	0.965	245
Self-Actualization	2.92	0.25	0.934	245

## Results

All data were input and analyzed within IBM's Statistical Package for the Social Sciences (SPSS) version 27.0 software. Multiple linear regression was employed to evaluate all five research questions. Multiple linear regression is appropriate when determining whether a statistically significant linear and predictive relationship exists between one continuous criterion variable and a combination of two or more continuous or categorical predictor variables (Gall et al., 2006; Warner, 2012). In the present study, the five criterion variables were the participants'

needs satisfaction, as defined by Maslow's (1943, 1954, 1968) hierarchy of needs and measured by the Five Need Satisfaction Measure (FNSM; see Appendix F; Taormina & Gao, 2013). The two predictor variables were participants' highest educational attainment and time since completion. When a correlation between predictor and criterion variables exists, multiple linear regression analysis is a statistical technique that produces an equation describing the predictive relationship between variables (Warner, 2012). If a correlation exists between the predictor and criterion variables,  $R$  will demonstrate the relationship's strength, and  $R^2$  will determine any effect size. Supposing the analysis does not achieve a statistical significance higher than 0.05 ( $\alpha = 0.05$ ) for either predictor variable. The research question would be rejected in such a case while failing to reject the corresponding null hypothesis.

Before engaging in analysis, the data were screened for consistency, completeness, straight-lining, exceptional scores, and other inconsistencies. A timer recorded the survey completion times. Surveys submitted after more than 60 minutes and those completed too quickly for a participant to have read and considered the questions were discarded as invalid (Follmer et al., 2017). All demographic survey (see Appendix D) responses were validated for chronological consistency and completeness (i.e., participants included all graduation dates for each completed level of educational attainment). Attention checks were incorporated within the surveys, a method proven beneficial for eliminating incomplete or dishonest responses amongst other Internet-sample populations (McDuffie, 2019). Prolific Academic allows researchers to email participants to reconcile any conflicts within participants' responses. While some participants were rejected due to straight-lining, several were contacted to verify conflicting dates and reconcile too many '3 - no opinion' responses. The surveys of participants who failed to respond to these email inquiries were deemed invalid. Whether due to time limitations or

failure to respond appropriately, all invalid surveys were removed from the sample population (Buhrmester et al., 2011). In total, 47 participants were eliminated, leaving a sample population of 245 participants deemed to have successfully completed the surveys.

The data were reviewed according to the participants' satisfaction level within Maslow's (1943, 1954, 1968) hierarchy of needs and scanned for discrepancies. Extreme outliers were assessed using a scatterplot for each group of criterion variables (see Figures 6-10 below). No outliers were identified in any of the five sections of the FNSM (see Appendix F), which is typical for Likert surveys.

### **Assumptions Testing**

Laerd Statistics (2018) and Warner (2012) recommend that when implementing multiple linear regression, the following eight assumptions be met:

1. *The criterion variables are parametric and measured on a continuous scale.* Within the present study, the five criterion variables of Maslovian need satisfaction were the five mean scores derived from each of the corresponding five sub-surveys within the FNSM (see Appendix F; Taormina & Gao, 2013). The FNSM utilizes a Likert interval scale, fulfilling the requirement of measurement on a continuous scale. The present study employed the one-sample Kolmogorov-Smirnov test to verify the data were normally distributed (Gall et al., 2006; Warner, 2012). The values were statistically significant for each of the five scales within the FNSM (see Appendix F):
  - Physiological scale (0.069,  $df = 245$ ,  $p = 0.006$ )
  - Safety-security scale (0.065,  $df = 245$ ,  $p = 0.013$ )
  - Belongingness scale (0.101,  $df = 245$ ,  $p < 0.001$ )
  - Esteem scale (0.122,  $df = 245$ ,  $p < 0.001$ )



- Self-actualization scale (0.102,  $df = 245$ ,  $p < 0.001$ )

The first assumption was not tenable. Fortunately, this assumption is critical only when a sample comprises fewer than 100 participants (Allison, 1999). With a sample size of 245 participants, this assumption may be safely disregarded (Allison, 1999).

2. *Two or more predictor variables are either continuous or categorical.* The educational attainment predictor variable was numerically coded into seven distinct categories and met the requirement of a categorical variable. The predictor variable of time since completion was numerically coded as the number of months between graduation and survey completion and met the requirement of a continuous variable. The second assumption was met.
3. *Observations are independent.* The third assumption was verified during data screening after the anonymous alphanumeric Prolific Academic participant-IDs were matched between the Prolific Academic online research platform and the completed surveys within the Qualtrics platform. The third assumption was met.
4. *No multicollinearity exists between predictor variables.* The fourth assumption requires no multicollinearity between predictor variables. The predictor variables of educational attainment and time since completion measure different constructs, meaning there is no structural multicollinearity. Data multicollinearity was tested using the analysis of tolerance and Variance Inflation Factor (VIF). The predictor variables were not highly correlated (Educational attainment,  $T = 0.985$ ,  $VIF = 1.016$ ; Time since completion,  $T = 0.985$ ,  $VIF = 1.016$ ; Tabachnick et al., 2007). The fourth assumption was met.
5. *A linear relationship exists between both the criterion variable and each predictor variable and between the criterion variable and predictor variables collectively.* The

assumption of linearity was examined through normal probability plots of each dependent variable (Mertler & Reinhart, 2016). The fifth assumption was met (see Figures 1-5 below).

Figure 1. *Normal Probability Plot, Physiological Scale of FNSM*

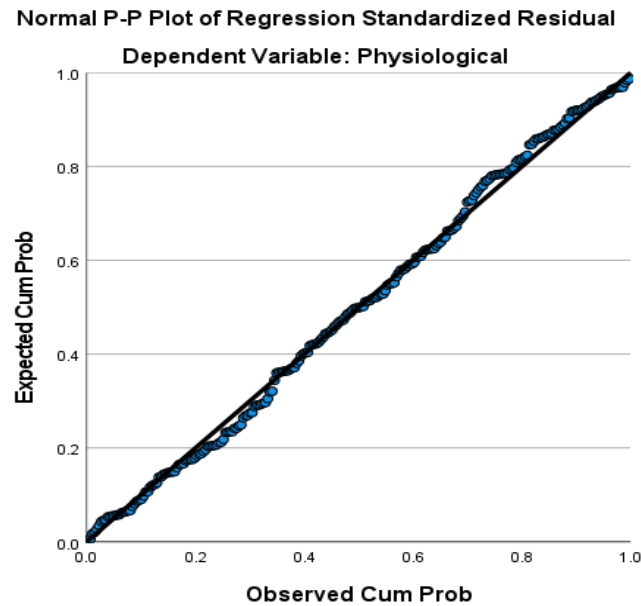


Figure 2. *Normal Probability Plot, Safety-Security Scale of FNSM*

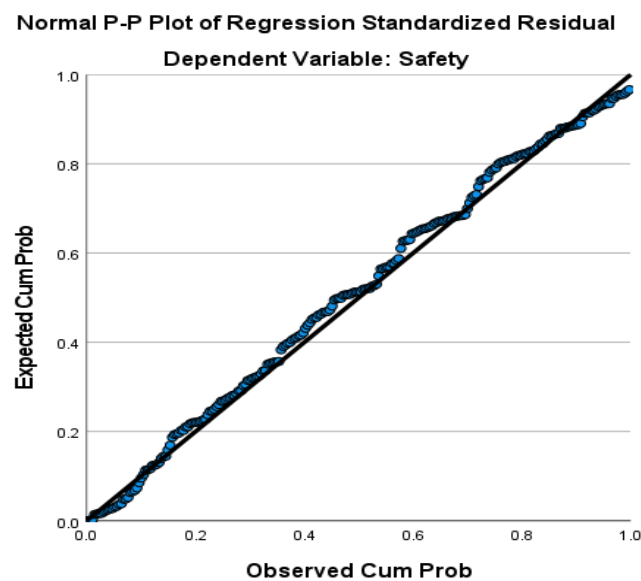


Figure 3. *Normal Probability Plot, Belongingness Scale of FNSM*

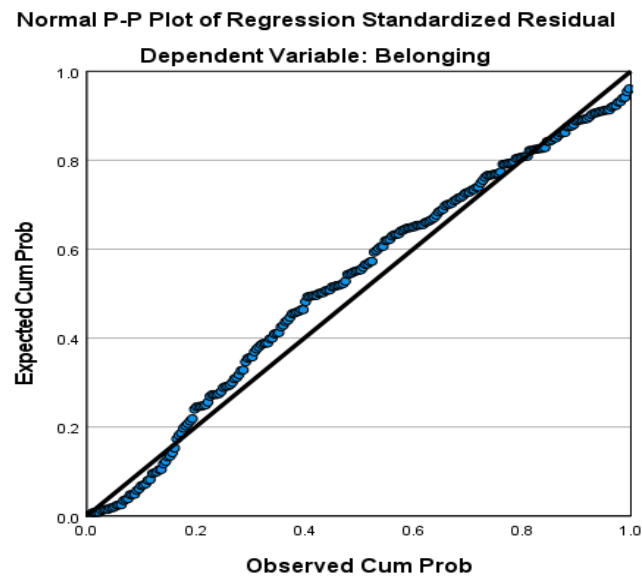


Figure 4. *Normal Probability Plot, Esteem Scale of FNSM*

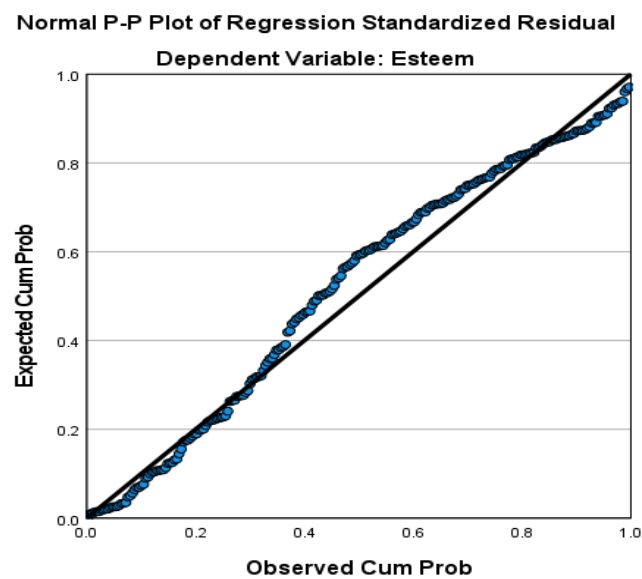
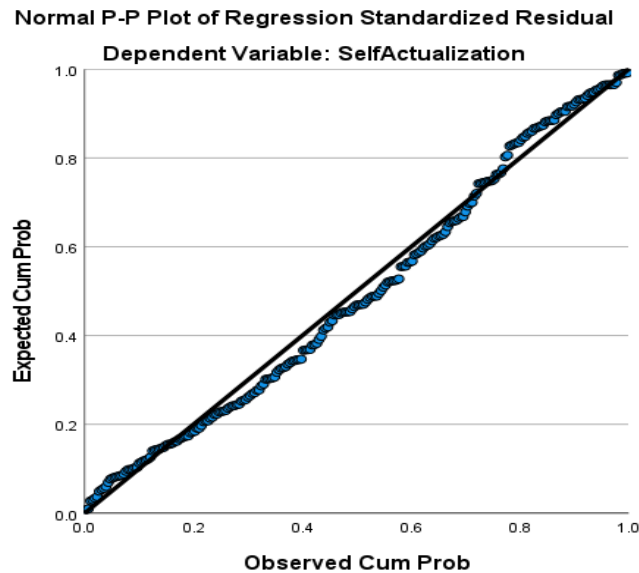


Figure 5. *Normal Probability Plot, Self-Actualization Scale of FNSM*



6. *The residuals are approximately normally distributed.* This assumption was examined through normal probability plots of each dependent variable (Mertler & Reinhart, 2016). The sixth assumption was met (see Figures 1-5 above).
7. *The data demonstrates homoscedasticity.* The assumption of homoscedasticity was verified visually through scatterplots (Gall et al., 2006). The seventh assumption was met (see Figures 6-10 below).

Figure 6. *Scatterplot, Physiological Scale of the FNSM*

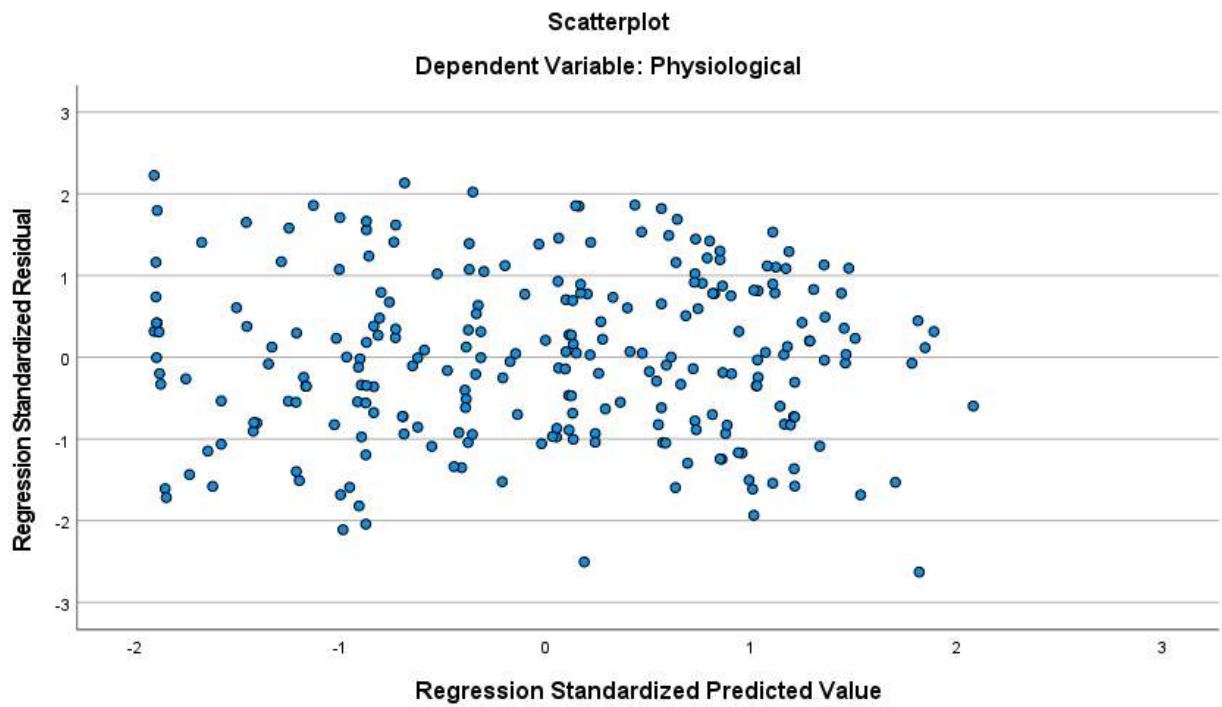


Figure 7. *Scatterplot, Safety-Security Scale of the FNSM*

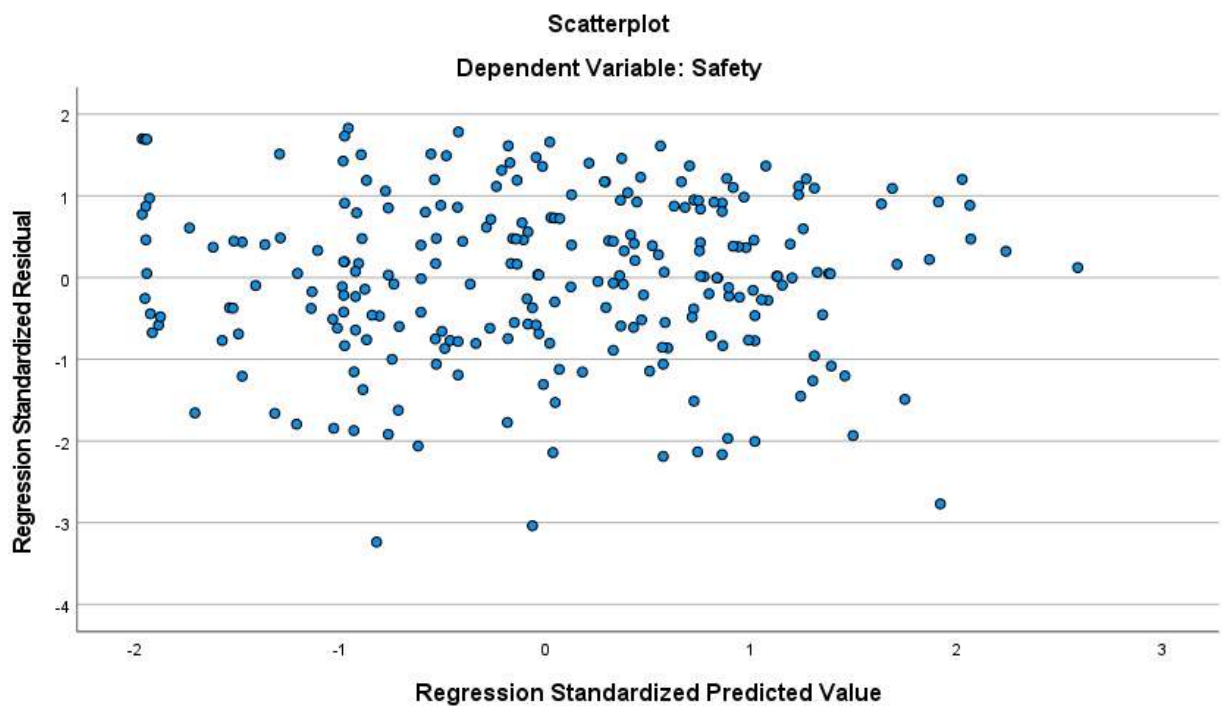


Figure 8. *Scatterplot, Belongingness Scale of the FNSM*

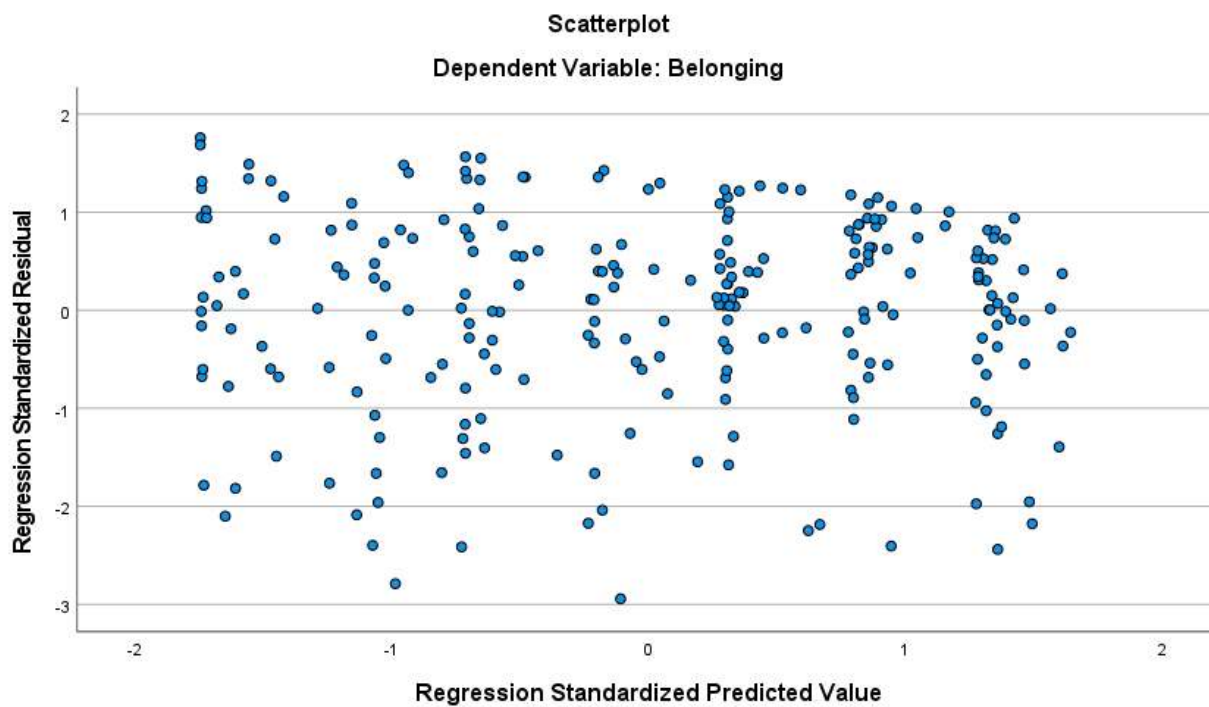


Figure 9. *Scatterplot, Esteem Scale of the FNSM*

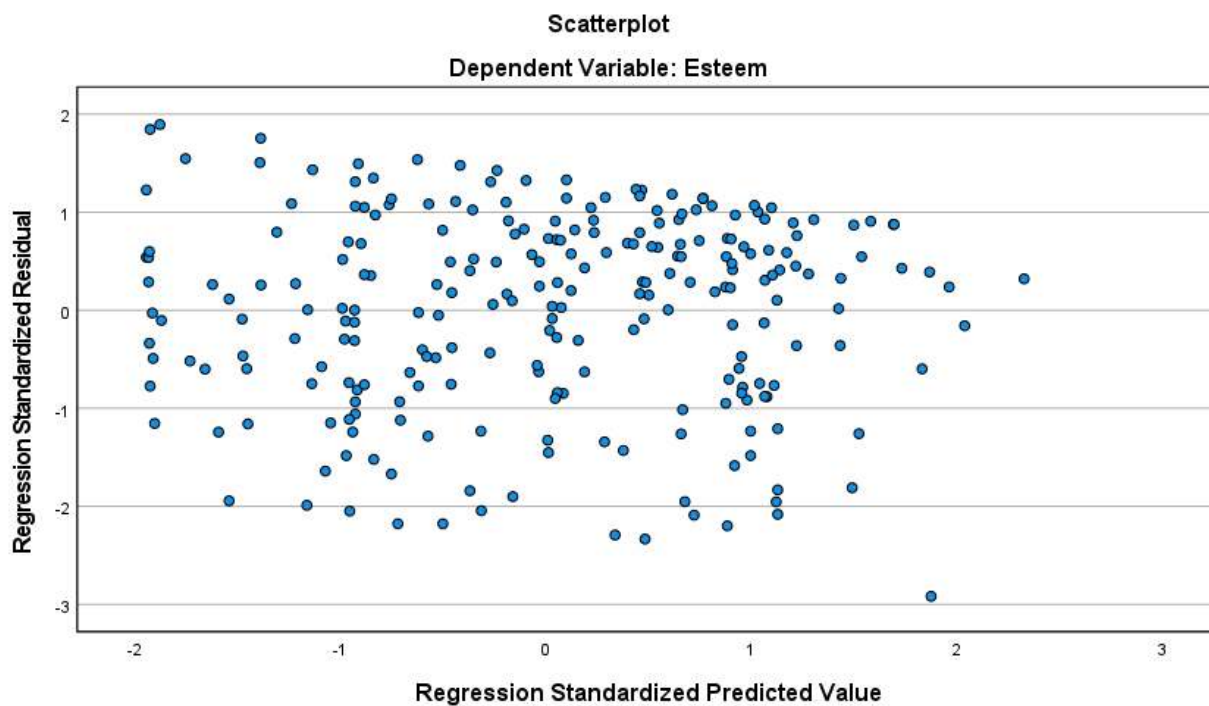
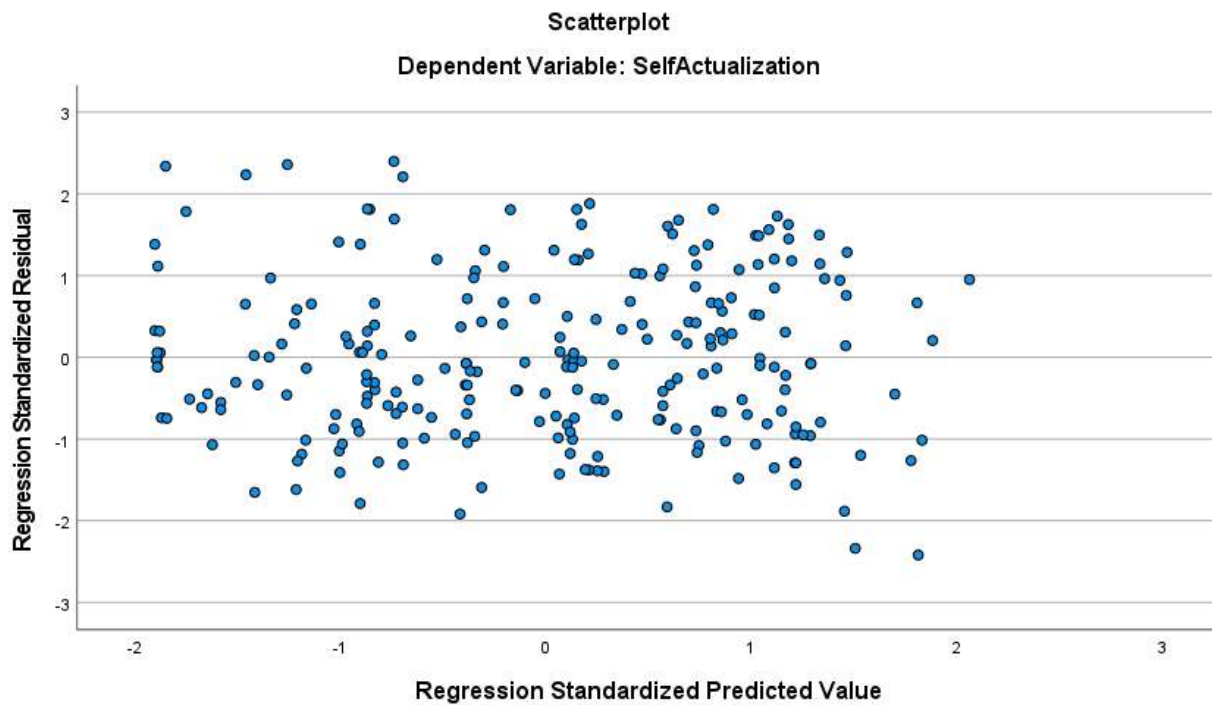


Figure 10. *Scatterplot, Self-Actualization Scale of the FNSM*



8. *No significant outliers, high leverage points, or highly influential points exist.* The seventh assumption was verified visually through the use of scatterplots (Gall et al., 2006). The eighth assumption was met (see Figures 6-10 above).

### Null Hypothesis One

**H<sub>0</sub>1:** There is no significant predictive relationship between an individual's *physiological needs satisfaction* score, as measured by the FNSM, and an individual's *educational attainment* and *time since completion*.

Given the tenability of the assumptions, a multiple linear regression analysis was conducted on the data of 245 participants to determine whether a significant predictive relationship exists between an individual's physiological needs satisfaction score, as measured by the FNSM, and the combination of an individual's educational attainment and time since completion. The results indicate a significant relationship exists between the predictive and

criterion variables ( $F = 13.764$ ,  $df = 2, 242$ ,  $p < 0.001$ ). See Table 4 below for results. Frost (2019) stressed that studies explaining human behavior generally return  $R^2$  values lower than 50%. The strength of the relationship was weakly positive ( $R = 0.32$ ,  $R^2 = 0.095$ ,  $p = 0.046$ ). This value demonstrates that 9.5% of the variation in physiological needs satisfaction may be explained by the predictor variables of educational attainment and time since completion.

Table 4. *Null Hypothesis One ANOVA<sup>a</sup>*

Model	Sum of Squares	df	Mean Square	F	Sig. ( $\alpha$ )
Regression	10.892	2	5.446	13.764	< 0.001
Residual	95.755	242	0.396		
Total	106.647	244			

a. Dependent Variable: Physiological Needs

A regression model of coefficients was completed to identify which predictor variable best foretold the criterion variable since a statistical significance was found for both predictor variables. The predictor variable of educational attainment ( $t = 5.059$ ,  $p < 0.001$ ) had the most significant impact on the criterion variable of Maslovian physiological need satisfaction. See Table 5 below for results.

Table 5. *Null Hypothesis One Coefficients<sup>a</sup>*

	Unstandardized		Standardized		
	Coefficients		Coefficients		
Model	B	Std. Error	Beta	<i>t</i>	Sig. ( <i>α</i> )
(Constant)	3.230	0.105			
Educational Attainment	0.103	0.020	0.311	5.059	< 0.001



Time Since Completion	0.001	0.000	0.123	2.009	0.046
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a. Dependent Variable: Physiological Needs

The results demonstrate a statistically significant relationship between an individual's ability to satisfy Maslovian physiological needs and the combination of educational attainment and time since completion. This finding may be interpreted to mean that educational attainment and time since completion positively influence the satisfaction of Maslovian physiological needs. The null hypothesis was rejected.

### Null Hypothesis Two

**H<sub>02</sub>:** There is no significant predictive relationship between an individual's *safety-security needs satisfaction* score, as measured by the FNSM, and an individual's *educational attainment and time since completion*.

Given the tenability of the assumptions, a multiple linear regression analysis was conducted on the data of 245 participants to determine whether a significant predictive relationship exists between an individual's safety-security needs satisfaction score, as measured by the FNSM, and the combination of an individual's educational attainment and time since completion. The results indicate a significant relationship exists between the predictive and criterion variables ( $F = 9.447$ ,  $df = 2, 242$ ,  $p < 0.001$ ). See Table 6 below for results. Frost (2019) stressed that studies explaining human behavior generally return  $R^2$  values lower than 50%. The strength of the relationship was weakly positive ( $R = 0.27$ ,  $R^2 = 0.073$ ,  $p = 0.014$ ). This value demonstrates that 7.3% of the variation in safety-security needs satisfaction may be explained by the predictor variables of educational attainment and time since completion.

Table 6. *Null Hypothesis Two ANOVA<sup>a</sup>*

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Model	Sum of Squares	df	Mean Square	F	Sig. ( $\alpha$ )
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Regression	8.002	2	4.001	9.477	< 0.001
Residual	102.172	242	0.422		
Total	110.174	244			

a. Dependent Variable: Safety-Security Needs

A regression model of coefficients was completed to identify which predictor variable best foretold the criterion variable since a statistical significance was found for both predictor variables. The predictor variable of educational attainment ( $t = 3.857, p < 0.001$ ) had the most significant impact on the criterion variable of Maslovian safety-security need satisfaction. See Table 7 below for results.

Table 7. *Null Hypothesis Two Coefficients<sup>a</sup>*

	Unstandardized		Standardized		
	Coefficients		Coefficients		
Model	B	Std. Error	Beta	<i>t</i>	Sig. ( $\alpha$ )
(Constant)	3.414	0.109			
Educational Attainment	0.081	0.021	0.241	3.857	< 0.001
Time Since Completion	0.001	0.000	0.155	2.483	0.014

a. Dependent Variable: Safety-Security Needs

The results demonstrate a statistically significant relationship between an individual's ability to satisfy Maslovian safety-security needs and the combination of educational attainment and time since completion. This finding may be interpreted to mean that educational attainment and time since completion positively influence the satisfaction of Maslovian safety-security needs. The null hypothesis was rejected.

### Null Hypothesis Three

**H<sub>03</sub>:** There is no significant predictive relationship between an individual's *belonging needs satisfaction* score, as measured by the FNSM, and an individual's *educational attainment* and *time since completion*.

Given the tenability of the assumptions, a multiple linear regression analysis was conducted on the data of 245 participants to determine whether a significant predictive relationship exists between an individual's belonging needs satisfaction score, as measured by the FNSM, and the combination of an individual's educational attainment and time since completion. The results indicate a significant relationship exists between the predictive and criterion variables ( $F = 16.026$ ,  $df = 1, 243$ ,  $p < 0.001$ ). See Table 8 below for results. Frost (2019) stressed that studies explaining human behavior generally return  $R^2$  values lower than 50%. The strength of the relationship was weakly positive ( $R = 0.249$ ,  $R^2 = 0.062$ ,  $p < 0.001$ ). This value demonstrates that 6.2% of the variation in belonging needs satisfaction may be explained by the predictor variables of educational attainment and time since completion.

Table 8. *Null Hypothesis Three ANOVA<sup>a</sup>*

Model	Sum of Squares	df	Mean Square	F	Sig. ( $\alpha$ )
Regression	13.060	1	13.060	16.026	< 0.001
Residual	198.021	243	0.815		
Total	211.081	244			

a. Dependent Variable: Belonging Needs

A regression model of coefficients was completed to identify which predictor variable best foretold the criterion variable since a statistical significance was found for both predictor variables. The predictor variable of educational attainment ( $t = 4.003$ ,  $p < 0.001$ ) had the most

significant impact on the criterion variable of Maslovian belonging need satisfaction. The predictor variable of time since completion added nothing to the model. See Table 9 below for results.

Table 9. *Null Hypothesis Three Coefficients<sup>a</sup>*

	Unstandardized		Standardized		
	Coefficients		Coefficients		
Model	B	Std. Error	Beta	<i>t</i>	Sig. ( $\alpha$ )
(Constant)	3.271	0.133		24.577	< 0.001
Educational Attainment	0.116	0.029	0.249	4.003	< 0.001
Time Since Completion	0.000	0.000	0.041	0.650	0.516

a. Dependent Variable: Belonging Needs

The results demonstrate a statistically significant relationship between an individual's ability to satisfy Maslovian belonging needs and educational attainment. This finding may be interpreted to mean that educational attainment and time since completion positively influence the satisfaction of Maslovian belonging needs. The null hypothesis was rejected.

#### Null Hypothesis Four

**H<sub>04</sub>:** There is no significant predictive relationship between an individual's *esteem needs satisfaction* score, as measured by the FNSM, and an individual's *educational attainment* and *time since completion*.

Given the tenability of the assumptions, a multiple linear regression analysis was conducted on the data of 245 participants to determine whether a significant predictive relationship exists between an individual's esteem needs satisfaction score, as measured by the FNSM, and the combination of an individual's educational attainment and time since completion.

The results indicate a significant relationship exists between the predictive and criterion variables ( $F = 9.921$ ,  $df = 2, 242$ ,  $p < 0.001$ ). See Table 10 below for results. Frost (2019) stressed that studies explaining human behavior generally return  $R^2$  values lower than 50%. The strength of the relationship was weakly positive ( $R = 0.275$ ,  $R^2 = 0.076$ ,  $p = 0.037$ ). This value demonstrates that 7.6% of the variation in esteem needs satisfaction may be explained by the predictor variables of educational attainment and time since completion.

Table 10. *Null Hypothesis Four ANOVA<sup>a</sup>*

Model	Sum of Squares	df	Mean Square	F	Sig. ( $\alpha$ )
Regression	22.681	2	11.340	9.921	< 0.001
Residual	276.615	242	1.143		
Total	299.296	244			

a. Dependent Variable: Esteem Needs

A regression model of coefficients was completed to identify which predictor variable best foretold the criterion variable since a statistical significance was found for both predictor variables. The predictor variable of educational attainment ( $t = 4.158$ ,  $p < 0.001$ ) had the most significant impact on the criterion variable of Maslovian esteem need satisfaction. See Table 11 below for results.

Table 11. *Null Hypothesis Four Coefficients<sup>a</sup>*

	Unstandardized		Standardized		
	Coefficients		Coefficients		
Model	B	Std. Error	Beta	$t$	Sig. ( $\alpha$ )
(Constant)	2.810	0.179			

Educational Attainment	0.143	0.034	0.259	4.158	< 0.001
Time Since Completion	0.001	0.001	0.131	2.102	0.037

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a. Dependent Variable: Esteem Needs

The results demonstrate a statistically significant relationship between an individual's ability to satisfy Maslovian esteem needs and the combination of educational attainment and time since completion. This finding may be interpreted to mean that educational attainment and time since completion positively influence the satisfaction of Maslovian esteem needs. The null hypothesis was rejected.

### Null Hypothesis Five

**H<sub>05</sub>:** There is no significant predictive relationship between an individual's *self-actualization needs satisfaction* score, as measured by the FNSM, and an individual's *educational attainment* and *time since completion*.

Given the tenability of the assumptions, a multiple linear regression analysis was conducted on the data of 245 participants to determine whether a significant predictive relationship exists between an individual's self-actualization needs satisfaction score, as measured by the FNSM, and the combination of an individual's educational attainment and time since completion. The results indicate a significant relationship exists between the predictive and criterion variables ( $F = 14.577$ ,  $df = 1, 243$ ,  $p < 0.001$ ). See Table 12 below for results. Frost (2019) stressed that studies explaining human behavior generally return  $R^2$  values lower than 50%. The strength of the relationship was weakly positive ( $R = 0.238$ ,  $R^2 = 0.057$ ,  $p < 0.001$ ). This value demonstrates that 5.7% of the variation in self-actualization needs satisfaction may be explained by the predictor variables of educational attainment and time since completion.

Table 12. *Null Hypothesis Five ANOVA<sup>a</sup>*

Model	Sum of Squares	df	Mean Square	F	Sig. ( $\alpha$ )
Regression	13.113	1	13.113	14.577	< 0.001
Residual	218.596	243	0.900		
Total	231.708	244			

a. Dependent Variable: Self-Actualization Needs

A regression model of coefficients was completed to identify which predictor variable best foretold the criterion variable since a statistical significance was found for both predictor variables. The predictor variable of educational attainment ( $t = 3.818, p < 0.001$ ) had the most significant impact on the criterion variable of Maslovian self-actualization need satisfaction. The predictor variable of time since completion added nothing to the model. See Table 13 below for results.

Table 13. *Null Hypothesis Five Coefficients<sup>a</sup>*

	Unstandardized		Standardized		
	Coefficients		Coefficients		
Model	B	Std. Error	Beta	<i>t</i>	Sig. ( <i>α</i> )
(Constant)	2.436	0.140		17.419	< 0.001
Educational Attainment	0.116	0.030	0.238	3.818	< 0.001
Time Since Completion	0.000	0.000	0.097	1.555	0.121

a. Dependent Variable: Self-Actualization Needs

The results demonstrate a statistically significant relationship between an individual's ability to satisfy Maslovian self-actualization needs and educational attainment. This finding may

be interpreted to mean that educational attainment and time since completion positively influence the satisfaction of Maslovian self-actualization needs. The null hypothesis was rejected.



## **CHAPTER FIVE: CONCLUSIONS**

### **Overview**

This chapter presents a discussion and the implications of the Chapter Four results related to each of the five research questions. As shown in Chapter Four, a weakly positive correlation exists for all five levels of Maslovian need satisfaction, and all five null hypotheses have been rejected. The limitations of the present study are outlined. Chapter Five closes with recommendations for future research.

### **Discussion**

The purpose of this quantitative, correlational research study was to investigate how accurately an individual's needs satisfaction (i.e., the criterion variables) may be predicted from the combination of educational attainment and time since completion (i.e., the predictor variables). The present study addresses a gap in the literature regarding whether secondary education, post-secondary education, or both, correlate to the satisfaction of Maslow's (1943, 1954, 1968) hierarchical needs across a broad spectrum sample of the United States population. A US-based quota sample of 245 paid adult participants operating on Prolific Academic's online research platform provided the data within a Qualtrics-hosted version of the Five Need Satisfaction Measure (see Appendix F). Sample participants were screened and assigned to quota-limited groups based on educational attainment. The data for this correlational study was analyzed with multiple linear regression testing to determine whether a relationship exists between the predictor and criterion variables.

No hypotheses were formed for the demographic survey (see Appendix D) variables. Nevertheless, correlations were explored to identify whether personal demographic factors may relate to the satisfaction of Maslovian needs. In addition, the relationships between each level of

Maslovian needs were assessed. The correlations within the present study's sample population were higher than those observed within Taormana and Gao's (2013) sample population. These data are shown in Table 14 below.

Table 14. *Demographic and Criterion Variable Correlations*

Variable	Phys.	S-S	Belong	Esteem	S-A	Sig. ( $\alpha$ )*
Physiological	<b>1.000</b>	0.536	0.517	0.540	0.527	< 0.001
Safety-Secure	0.536	<b>1.000</b>	0.438	0.467	0.506	< 0.001
Belongingness	0.517	0.438	<b>1.000</b>	0.649	0.588	< 0.001
Esteem	0.540	0.467	0.649	<b>1.000</b>	0.757	< 0.001
Self-Actual	0.527	0.506	0.588	0.757	<b>1.000</b>	< 0.001
Age	0.197	0.183	0.091**	0.198	0.179	< 0.002
Employment	-0.252	-0.183	-0.216	-0.217	-0.242	< 0.001
Ethnicity	-0.053**	0.051**	0.005**	-0.023**	-0.089**	> 0.082
Gender	-0.063	-0.137**	0.090**	-0.009**	0.013**	= 0.016
Income	0.247	0.208	0.231	0.170	0.200	< 0.005
Marital Status	-0.204	-0.097**	-0.207	-0.166	-0.156	< 0.007
Region	-0.051**	0.005**	0.055**	0.021**	-0.022**	> 0.195

\* The highest significance value of all statistically significant tests is shown, except when no test was statistically significant. When no test was statistically significant, the lowest value from all five tests is displayed (e.g., ethnicity and region).

\*\* Statistical significance exceeds 0.05 (i.e., not statistically significant).

### Null Hypothesis One

**H<sub>01</sub>:** There is no significant predictive relationship between an individual's *physiological needs satisfaction* score, as measured by the FNSM, and an individual's *educational attainment* and *time since completion*.

Within Maslow's (1943, 1954, 1968) hierarchical framework, the primary group consists of physiological needs, historically a common launching point for theories explaining human motivations. The requirements at this level center around an organism's attempts at maintaining homeostasis of the biological processes governing bodily fluids, blood sugar, oxygen saturation, consistent body temperature, and others. Psychologists agree that these base-level needs are of primary concern to most organisms and addressed before any other. This level is generally thought to be the most studied.

Maslow (1943, 1954, 1968) differentiated appetite from hunger at the physiological need level, the former a daily urge for sustenance and the latter a prolonged denial of nourishment. Maslow's distinction becomes significant when gauging urgency since a healthy appetite does not reflect an unmet need and is unlikely to modify behavior. Hunger-related behavioral alterations indicate an unfulfilled need for nutrients. Like appetite, minor environmental temperature fluctuations may trigger no behavioral change or merely result in the addition or removal of clothing. Excessive temperature variations will engender increasingly urgent behaviors, such as building a fire or assembling shelter, to address the need to maintain thermal homeostasis regardless of environmental conditions. Given the severe nature of environments expected to produce hunger or temperature extremes, Maslow posited that within most civilized societies, a preponderance of people enjoy the satisfaction of their physiological needs, absent such extreme circumstances of war, famine, societal collapse, or natural disaster.

A majority of participants reported satisfaction of their physiological level needs ( $M = 3.74$ ,  $SD = 0.21$ ). In fact, the physiological level of Maslovian needs presented the highest correlation to the combination of educational attainment and time since completion ( $R = 0.32$ ,  $R^2 = 0.095$ ,  $p = 0.046$ ). This finding is consistent with multiple studies demonstrating a strong

correlation between lifetime earning capacity and educational attainment (Andrews et al., 2016; Autor, 2014; Berger, 1988; Carnevale et al., 2015; Finnie & Frenette, 2003; Ford & Choi, 2018; Friedman, 2018; Goldrick-Rab et al., 2016; Hecker, 1996; Korn, 2015; Manzoni & Streib, 2019; Rumberger & Thomas, 1993; Thomas & Zhang, 2005; Valletta, 2016; Wolniak et al., 2008).

Higher earnings achieved through education would undoubtedly be allocated first to satisfying the most basic human needs of food, clothing, and shelter. Additionally, the present study identified a slightly weaker positive correlation between income and physiological needs satisfaction ( $R = 0.247$ ,  $R^2 = 0.061$ ,  $p < 0.005$ ).

The sample population's mean scores for physiological needs were lower than the mean scores for both the safety-security ( $M = 3.85$ ,  $SD = 0.18$ ) and the belongingness ( $M = 3.75$ ,  $SD = 0.23$ ) levels. This result is not entirely unexpected since need satisfaction is subjective; people decide individually whether their physiological needs have been sufficiently satisfied to merit the pursuit of higher-order needs.

The Covid pandemic resulted in economic slowdowns and increased death rates amongst the prospective U.S.-based sample population (Bauer et al., 2020). Despite sampling during this pandemic, the restrictions imposed on the U.S.-based sample population did not appear to impact participants at this level; however, survivorship bias may be a factor. The weakly positive correlation between physiological need satisfaction and the combination of education attainment and time since completion, detailed above, supports Griffin's (2016) discovery of enhanced non-market returns from a graduate education in the areas of individual physical health, self-esteem, and reported well-being. The finding is also consistent with Oreopoulos' and Salvanes' (2011) assertion that some of the benefits of education include lower rates of disability and better physical health.

Time since completion acts as an analog for time in general (Polidano & Ryan, 2016). This fact may explain why age also demonstrated a weakly positive correlation to physiological need satisfaction ( $R = 0.197$ ,  $R^2 = 0.039$ ,  $p < 0.002$ ). This finding supports Maslow's (1943, 1954, 1968) and Erikson's (1966) assertions that people more readily satisfy their essential needs as they gain life experience. Employment status returned a weakly negative correlation to physiological need satisfaction ( $R = -0.252$ ,  $R^2 = -0.064$ ,  $p < 0.001$ ). However, of the six employment options on the demographic survey (see Appendix D), only two involved part or full-time employment. The remaining four options included: seeking or unemployed, retired, student, and other. The fact that most employment options on the demographic survey (see Appendix D) were some level of non-income producing activity, coupled with the relatively young age of the sample population ( $M = 34.17$  years,  $SD = 11.72$  years), explains this negative correlation. Similarly, participants' marital status showed a weakly negative correlation ( $R = -0.204$ ,  $R^2 = -0.042$ ,  $p < 0.007$ ). Since only one of the four options (i.e., married or cohabitating) involves living with another adult, this finding suggests that solitary living conditions have a somewhat detrimental effect on physiological needs satisfaction.

Ethnicity resulted in no statistically significant correlation to any of the five levels of Maslovian needs. This finding supports Heckman et al.'s (2018b) research into non-market advantages from educational attainment and their conclusion that substantial benefits from educational attainment exist across all demographics. There was no statistically significant correlation between physiological need satisfaction and the U.S. region in which participants reside, suggesting that the results above might broadly generalize to the larger U.S. population.

The results demonstrate a statistically significant relationship between an individual's ability to satisfy Maslovian physiological needs and the combination of educational attainment

and time since completion. This finding may be interpreted to mean that educational attainment and time since completion positively influence the satisfaction of Maslovian physiological needs.

The null hypothesis was rejected.

### **Null Hypothesis Two**

**H<sub>02</sub>:** There is no significant predictive relationship between an *individual's safety-security needs satisfaction* score, as measured by the FNSM, and an individual's *educational attainment and time since completion*.

Maslow's (1954, 1968) second level consists of safety-security needs, which Maslow (1943) initially characterized as safety needs. In the original description, Maslow recognized that safety needs were most readily apparent amongst infants and children versus adults. Maslow attributed this to the fact that adults possess both greater physical motor control and more experience interacting with the world. On the other hand, infants and children lacking the same degrees of physical motor control and experience tend to view the world as more dangerous to their physical safety. Children's increased awareness of danger causes the young to react more visibly to environmental threats than adults. Maslow recognized that the need to avoid risk is present in all humans, regardless of age. Safety needs cause people to develop mental constructs through which they interpret the world and their day-to-day existence. Maslow felt that a normally operating society typically permits its members to feel safe from predatory animals, criminals, and tyranny. Just as a person whose appetite has been sated will no longer feel hunger, an individual enjoying safety will no longer feel physically endangered.

Maslow (1954, 1968) intended his addition of security at the second level to acknowledge the abstract realms of emotional, psychological, spiritual, and financial needs. Three examples of such abstract security needs are access to affordable healthcare, a belief in a just god controlling

humanity's fate, and retirement savings. Individual behavior will also begin to become more regulated within this level. For instance, a person quick to anger and become violent will soon learn they, directly and indirectly, jeopardize their physical safety through such behaviors. An individual risking criminal incarceration or physical health during a theft of goods intended to meet physiological needs will diminish hazardous activities in the furtherance of achieving higher-level safety-security needs. In other words, well-fed thieves tend to be less violent than starving thieves.

Maslow (1968) believed that individuals might work more purposefully or grow more responsible to meet enduring and future financial needs more capably. Maslow felt that social order was embedded at this level since social order fosters safety and security within one's community and immediate environs. Maslow stated that when social order broke down, people tend to flee to safer areas to satisfy safety-security needs, resulting in refugee crises that often accompany those conflicts and natural disasters of a severity sufficient to engender societal collapse.

The sample population's mean scores for safety-security needs were higher than for all other levels. A majority of participants reported satisfaction of their safety-security level needs ( $M = 3.85$ ,  $SD = 0.18$ ). Among the five Maslovian needs levels, the safety-security level exhibited the third highest correlation to the combination of educational attainment and time since completion ( $R = 0.27$ ,  $R^2 = 0.073$ ,  $p = 0.014$ ). This finding is also consistent with multiple studies demonstrating a strong correlation between lifetime earning capacity and educational attainment (Andrews et al., 2016; Autor, 2014; Berger, 1988; Carnevale et al., 2015; Finnie & Frenette, 2003; Ford & Choi, 2018; Friedman, 2018; Goldrick-Rab et al., 2016; Hecker, 1996; Korn, 2015; Manzoni & Streib, 2019; Rumberger & Thomas, 1993; Thomas & Zhang, 2005;

Valletta, 2016; Wolniak et al., 2008). Higher earnings achieved through education would undoubtedly be allocated to satisfying the tangible and intangible needs at the safety-security level. Additionally, the present study identified a slightly weaker positive correlation between income and safety-security needs satisfaction ( $R = 0.208$ ,  $R^2 = 0.043$ ,  $p < 0.005$ ).

The Covid pandemic resulted in economic slowdowns and increased death rates amongst the prospective U.S.-based sample population (Bauer et al., 2020). Despite sampling during this pandemic, the restrictions imposed on the U.S.-based sample population did not appear to impact participants at this level; however, survivorship bias may be a factor. The weakly positive correlation between safety-security need satisfaction and the combination of education attainment and time since completion, detailed above, supports Heckman et al.'s (2018b) research into potential non-market advantages from educational attainment, finding educational attainment resulted in improved mental health. The safety-security level demonstrated a strong correlation to the physiological level ( $R = 0.536$ ,  $R^2 = 0.287$ ,  $p < 0.001$ ), supporting Maslow's (1943, 1954, 1968) hierarchical ordering and the prepotency of needs.

Time since completion acts as an analog for time in general (Polidano & Ryan, 2016). This fact may explain why age also demonstrated a weakly positive correlation to safety-security need satisfaction ( $R = 0.183$ ,  $R^2 = 0.033$ ,  $p < 0.002$ ). This finding supports Maslow's (1943, 1954, 1968) and Erikson's (1966) assertions that people more readily satisfy their essential needs as they gain life experience. Employment status returned a weakly negative correlation to physiological need satisfaction ( $R = -0.183$ ,  $R^2 = -0.033$ ,  $p < 0.001$ ). However, of the six employment options on the demographic survey (see Appendix D), only two involved part or full-time employment. The remaining four options included: seeking or unemployed, retired, student, and other. This negative correlation is explained by the fact that most employment



options on the demographic survey were non-income-producing activities, coupled with the relatively young age of the sample population ( $M = 34.17$  years,  $SD = 11.72$  years). Participants' marital status did not achieve a statistically significant correlation to safety-security level needs.

Neither gender nor ethnicity resulted in a statistically significant correlation to the safety-security level of Maslovian needs. This finding supports Heckman et al.'s (2018b) research into non-market advantages from educational attainment and their conclusion that substantial benefits from educational attainment exist across all demographics. There was no statistically significant correlation between safety-security need satisfaction and the U.S. region where participants reside, suggesting that the results above might broadly generalize to the larger U.S. population.

The results demonstrate a statistically significant relationship between an individual's ability to satisfy Maslovian safety-security needs and the combination of educational attainment and time since completion. This finding may be interpreted to mean that educational attainment and time since completion positively influence the satisfaction of Maslovian safety-security needs. The null hypothesis was rejected.

### **Null Hypothesis Three**

**H<sub>03</sub>:** There is no significant predictive relationship between an *individual's belonging needs satisfaction* score, as measured by the FNSM, and an individual's *educational attainment* and *time since completion*.

Maslow's (1943) third level consists of love needs. Maslow (1954, 1968) later re-characterized this level as belonging needs. This change was meant to broaden the definition of this level's needs to include non-familial and non-romantic relationships. After physiological and safety-security needs have been sufficiently gratified, individuals will seek to satisfy needs relating to belonging within a broader community. Needs associated with belonging may

manifest in romantic relationships, amicable relationships, or both, as well as deepened familial and community relationships. Maslow alleged that the denial of belonging needs provoked a majority of the cases of psychological maladjustment. For this reason, the belonging level of Maslow's hierarchy is the second-most studied after physiological needs.

The belonging level is the first point in the Maslovian (1943, 1954, 1968) hierarchy at which entirely abstract needs appear. Belonging needs are purely psychological, relating to feelings of affection, attachment, and bonding with others, but this level may not be satisfied merely by surrounding an individual with other people. Belonging needs may manifest and be satisfied through physical acts, such as sexual relationships, spending time with friends and family, or attending events comprised of like-minded groups. The primary distinguisher of need satisfaction at this level is that an individual both supplies and receives feelings of belonging, desire, love, and affection. Maslow stated that a person might satisfy needs at this level through membership in an active political party, entering a religious community, or enjoying a hobby with others, despite having no close familial relationships or engaging in physical contact or intimacy.

The sample population's mean scores for belonging needs were second only to the mean scores for safety-security level need satisfaction. A majority of participants reported satisfaction of their belonging level needs ( $M = 3.75$ ,  $SD = 0.23$ ). By including *time since completion* as a predictor variable, the present study intended to compensate for the time necessary to satisfy needs following degree attainment (Polidano & Ryan, 2016). However, the inclusion of this predictor variable added nothing to the model. This discovery may be due to the pandemic restrictions experienced by the U.S.-based sample population, which could have reduced people's sense of belonging within their communities (Bauer et al., 2020). Among the five Maslovian

needs levels, the belonging level exhibited the fourth-highest correlation to educational attainment ( $R = 0.249$ ,  $R^2 = 0.062$ ,  $p < 0.001$ ). The belonging level shows a high correlation to the safety-security level ( $R = 0.438$ ,  $R^2 = 0.192$ ,  $p < 0.001$ ), supporting Maslow's (1943, 1954, 1968) hierarchical ordering and the prepotency of needs.

At the belonging level, it remains likely that earning a post-secondary degree allows immediate membership within certain social groups. This possibility would account for the fact that *time since completion* failed to add to the model. Rubin and Wright (2017) discovered the positive impacts of wealth on social status at universities, such as admission to desirable clubs and organizations. Manzoni and Streib (2019) investigated the social mobility effects of college majors. McClure and Ryder (2018) concluded that spending generously has positive effects on social relationships. Multiple studies demonstrated a strong correlation between lifetime earning capacity and educational attainment (Andrews et al., 2016; Autor, 2014; Berger, 1988; Carnevale et al., 2015; Finnie & Frenette, 2003; Ford & Choi, 2018; Friedman, 2018; Goldrick-Rab et al., 2016; Hecker, 1996; Korn, 2015; Manzoni & Streib, 2019; Rumberger & Thomas, 1993; Thomas & Zhang, 2005; Valletta, 2016; Wolniak et al., 2008).

Additionally, the present study identified a weakly positive correlation between income and belonging needs satisfaction ( $R = 0.231$ ,  $R^2 = 0.053$ ,  $p < 0.005$ ). Bearman and Franklin (2018) studied how individuals have begun creating collective giving groups to harness financial resources while building a sense of community among group members and donation recipients. Parsons (2019) studied how these small group donating activities contribute to increased giving, reciprocal activities, and the formation of larger social hierarchies within communities. Oreopoulos and Salvanes (2011) reported several benefits from education, including improved happiness, enhanced occupational prestige, lower probabilities for divorce, and improved trust.

The Covid pandemic resulted in economic slowdowns and increased death rates amongst the prospective U.S.-based sample population (Bauer et al., 2020). Despite sampling during this pandemic, the restrictions imposed on the U.S.-based sample population did not appear to impact participants at this level; however, survivorship bias may be a factor.

Employment status returned a weakly negative correlation to belonging need satisfaction ( $R = -0.216$ ,  $R^2 = -0.047$ ,  $p < 0.001$ ). However, of the six employment options on the demographic survey (see Appendix D), only two involved part or full-time employment. The remaining four options included: seeking or unemployed, retired, student, and other. The fact that most employment options on the demographic survey (see Appendix D) were some level of non-income producing activity, coupled with the relatively young age of the sample population ( $M = 34.17$  years,  $SD = 11.72$  years), explains this negative correlation. Participants' marital status also resulted in a weakly negative correlation ( $R = -0.207$ ,  $R^2 = -0.043$ ,  $p < 0.007$ ). Since only one of the four options (i.e., married or cohabitating) on the demographic survey (see Appendix D) involves living with another adult, this finding suggests that solitary living conditions have a somewhat detrimental effect on belonging needs satisfaction.

Neither age, ethnicity, or gender resulted in a statistically significant correlation to the belonging level of Maslovian needs. This finding supports Heckman et al.'s (2018b) research into non-market advantages from educational attainment and their conclusion that substantial benefits from educational attainment exist across all demographics. There was no statistically significant correlation between belonging need satisfaction and the U.S. region in which participants reside, suggesting that the results above might broadly generalize to the larger U.S. population.

The results demonstrate a statistically significant relationship between an individual's ability to satisfy Maslovian belonging needs and educational attainment. This finding may be interpreted to mean that educational attainment and time since completion positively influence the satisfaction of Maslovian belonging needs. The null hypothesis was rejected.

#### **Null Hypothesis Four**

**H<sub>0</sub>4:** There is no significant predictive relationship between an individual's *esteem needs satisfaction* score, as measured by the FNSM, and an individual's *educational attainment* and *time since completion*.

Maslow's (1943, 1954, 1968) fourth hierarchical level was designated as esteem needs. Maslow believed that, barring a pathological condition, everyone shares a need to hold a positive self-evaluation, enjoying the respect and admiration of oneself and others. Maslow divided esteem needs into two related sub-categories. First, Maslow declared that people want to feel capable and confident within the world. Second, Maslow believed that people desire a reputation and respect from others founded on how they behave and interact with the world around them. Maslow asserted that achieving satisfaction at the esteem level should result in genuine self-confidence as opposed to false bravado. Maslow stated that a failure to satisfy needs at this level tended to lead to discouragement, depression, and neuroticism. Maslow failed to decide the question of whether self-respect is more important than respect from others. Instead, Maslow judged that either should adequately satisfy this level of need since the two are often co-occurring.

The sample population's mean scores for esteem needs were the fourth-lowest of the five levels, yet most participants reported satisfaction of their esteem level needs ( $M = 3.55$ ,  $SD = 0.30$ ). Amongst the five levels of Maslovian needs, the esteem level exhibited the second-highest

correlation to the combination of educational attainment and time since completion ( $R = 0.275$ ,  $R^2 = 0.076$ ,  $p = 0.037$ ). The esteem level returned a high correlation to belonging need satisfaction ( $R = 0.649$ ,  $R^2 = 0.421$ ,  $p < 0.001$ ), supporting Maslow's (1943, 1954, 1968) hierarchical ordering and the prepotency of needs.

This finding is also consistent with multiple studies demonstrating a strong correlation between lifetime earning capacity and educational attainment (Andrews et al., 2016; Autor, 2014; Berger, 1988; Carnevale et al., 2015; Finnie & Frenette, 2003; Ford & Choi, 2018; Friedman, 2018; Goldrick-Rab et al., 2016; Hecker, 1996; Korn, 2015; Manzoni & Streib, 2019; Rumberger & Thomas, 1993; Thomas & Zhang, 2005; Valletta, 2016; Wolniak et al., 2008). Additionally, the present study identified a slightly weaker positive correlation between income and esteem needs satisfaction ( $R = 0.170$ ,  $R^2 = 0.029$ ,  $p < 0.005$ ). Rubin and Wright (2017) discovered the positive impacts of wealth on social status. Griffin (2016) discovered enhanced non-market returns from a graduate education in the areas of self-esteem and reported well-being. Oreopoulos and Salvanes (2011) reported benefits from education in the areas of improved trust, increased happiness, and enhanced occupational prestige.

The Covid pandemic resulted in economic slowdowns and increased death rates amongst the prospective U.S.-based sample population (Bauer et al., 2020). Despite sampling during this pandemic, the restrictions imposed on the U.S.-based sample population did not appear to impact participants at this level; however, survivorship bias may be a factor. The weakly positive correlation between esteem need satisfaction and the combination of education attainment and time since completion, detailed above, supports Heckman et al.'s (2018b) research into potential non-market advantages from educational attainment, finding educational attainment resulted in improved mental health.

Time since completion acts as an analog for time in general (Polidano & Ryan, 2016). This fact may explain why age also demonstrated a weakly positive correlation to esteem need satisfaction ( $R = 0.198$ ,  $R^2 = 0.039$ ,  $p < 0.002$ ). This finding supports Maslow's (1943, 1954, 1968) and Erikson's (1966) assertions that people more readily satisfy their essential needs as they gain life experience.

Employment status returned a weakly negative correlation to esteem need satisfaction ( $R = -0.217$ ,  $R^2 = -0.047$ ,  $p < 0.001$ ). However, of the six employment options on the demographic survey (see Appendix D), only two involved part or full-time employment. The remaining four options included: seeking or unemployed, retired, student, and other. This negative correlation is explained by the fact that most employment options on the demographic survey were non-income producing activities, coupled with the relatively young age of the sample population ( $M = 34.17$  years,  $SD = 11.72$  years). Participants' marital status also resulted in a weakly negative correlation ( $R = -0.166$ ,  $R^2 = -0.028$ ,  $p < 0.007$ ). Since only one of the four options (i.e., married or cohabitating) on the demographic survey involves living with another adult, this finding suggests that solitary living conditions have a somewhat detrimental effect on esteem needs satisfaction. Being married and employed tend to be viewed as positive within the U.S., which could account for these findings.

Neither gender nor ethnicity resulted in a statistically significant correlation to the esteem level of Maslovian needs. This finding supports Heckman et al.'s (2018b) research into non-market advantages from educational attainment and their conclusion that substantial benefits from educational attainment exist across all demographics. There was no statistically significant correlation between safety-security need satisfaction and the U.S. region in which participants reside, suggesting that the results above might broadly generalize to the larger U.S. population.

The results demonstrate a statistically significant relationship between an individual's ability to satisfy Maslovian esteem needs and the combination of educational attainment and time since completion. This finding may be interpreted to mean that educational attainment and time since completion positively influence the satisfaction of Maslovian esteem needs. The null hypothesis was rejected.

### **Null Hypothesis Five**

**H<sub>05</sub>:** There is no significant predictive relationship between an *individual's self-actualization needs satisfaction* score, as measured by the FNSM, and an individual's *educational attainment and time since completion*.

The fifth and final level of Maslow's (1943, 1954, 1968, 1971) hierarchy was labeled self-actualization needs. Initially, the self-actualization level included only abstract descriptors of people Maslow held in high regard, especially his mentors Dr. Adler, Dr. Benedict, and Dr. Wertheimer. When defining this level, Maslow posited that self-actualization was realized when people fulfilled their highest purpose in life. Just as an acorn can only become an oak, Maslow asserted that a musician, businessman, poet, or dancer must also achieve the fullness of their potential to satisfy their self-actualization needs. The self-actualization level, and each preceding lower level, could only be addressed when all the lower-level needs were simultaneously and sufficiently met.

Maslow (1968, 1971) later revised his self-actualization definition as immeasurable by any other but self. Maslow asserted that self-actualized individuals enjoyed recurring "peak experiences," which he defined as moments when an individual either feels or knows one has elevated oneself to the utmost heights of human possibility. Peak experiences would be akin to a baseball player pitching a perfect game or a composer authoring her magnum opus. Anyone



achieving pre-eminence within their field may be assumed to be satisfying self-actualization needs, although only the individual would know with certainty.

The sample population's mean scores for self-actualization needs were the lowest of all five levels, with few participants reporting satisfaction of these needs ( $M = 2.92$ ,  $SD = 0.25$ ). Additionally, the self-actualization level exhibited the lowest correlation to educational attainment ( $R = 0.238$ ,  $R^2 = 0.057$ ,  $p < 0.001$ ). The weakly positive correlation between self-actualization need satisfaction and education attainment supports Heckman et al.'s (2018b) research into potential non-market advantages from educational attainment, finding educational attainment resulted in improved mental health. Also supported is Griffin's (2016) discovery of the enhanced non-market returns from a graduate education in the areas of individual physical health, self-esteem, and reported well-being.

By including *time since completion* as a predictor variable, the present study intended to compensate for the time necessary to satisfy needs following degree attainment (Polidano & Ryan, 2016). However, the inclusion of this predictor variable added nothing to the model. The self-actualization level shows a high correlation to the esteem level ( $R = 0.757$ ,  $R^2 = 0.573$ ,  $p < 0.001$ ), supporting Maslow's (1943, 1954, 1968) hierarchical ordering and the prepotency of needs.

The Covid pandemic resulted in economic slowdowns and increased death rates amongst the prospective U.S.-based sample population (Bauer et al., 2020). Surveying during this pandemic may have negatively impacted the U.S.-based sample population. Maslow (1943, 1954, 1968) believed that people generally did not achieve self-actualization until later in life. Participant age returned a weakly positive correlation to self-actualization need satisfaction ( $R =$

0.179,  $R^2 = 0.032$ ,  $p < 0.002$ ). The relatively young sample population may account for the low scores at this level ( $M = 34.17$  years,  $SD = 11.72$  years).

The present study identified a weakly positive correlation between income and self-actualization needs satisfaction ( $R = 0.200$ ,  $R^2 = 0.040$ ,  $p < 0.005$ ). Employment status also returned a weakly negative correlation ( $R = -0.242$ ,  $R^2 = -0.059$ ,  $p < 0.001$ ). However, of the six employment options on the demographic survey (see Appendix D), only two involved part or full-time employment. The remaining four options included: seeking or unemployed, retired, student, and other. The fact that most employment options on the demographic survey were some level of non-income producing activity, coupled with the relatively young age of the sample population, explains this negative correlation. Participants' marital status showed a weakly negative correlation ( $R = -0.156$ ,  $R^2 = -0.024$ ,  $p < 0.007$ ). Since only one of the four options (i.e., married or cohabitating) involves living with another adult, this finding suggests that solitary living conditions have a somewhat detrimental effect on self-actualization needs satisfaction.

Neither gender nor ethnicity resulted in a statistically significant correlation to the esteem level of Maslovian needs. This finding supports Heckman et al.'s (2018b) research into non-market advantages from educational attainment and their conclusion that substantial benefits from educational attainment exist across all demographics. There was no statistically significant correlation between safety-security need satisfaction and the U.S. region in which participants reside, suggesting that the above might broadly generalize to the larger U.S. population.

The results demonstrate a statistically significant relationship between an individual's ability to satisfy Maslovian self-actualization needs and educational attainment. This finding may be interpreted to mean that educational attainment and time since completion positively influence the satisfaction of Maslovian self-actualization needs. The null hypothesis was rejected.

## **Implications**

A gap in the literature exists correlating educational attainment and time since completion to the satisfaction of Maslow's (1943, 1954, 1968) hierarchy of needs. The problem is that the literature has failed to address whether secondary education, post-secondary education, or both, facilitate the satisfaction of Maslow's hierarchical needs across a broad spectrum sample of the United States population. The present study attempted to highlight the essential impact of educational attainment and time since completion on Maslovian need fulfillment.

Time since completion rarely appears within the literature. The periods covering individuals' time since completing secondary and post-secondary schooling are regularly ignored (Desjardins, 2003; Pamphilon, 2005; Wister et al., 2010; Yamashita & Brown, 2017). The present study identified that time since completion was statistically significant for only three of the five Maslovian (1943, 1954, 1968) levels of need satisfaction. This finding is surprising, as the researcher had assumed that time would be necessary after graduation before realizing any benefits from educational attainment. Unfortunately, the present study does not offer any clues as to why educational attainment alone supports the satisfaction of belonging and self-actualization needs. It may be that educational attainment is a deciding factor when socializing. For example, people with law, medical, or doctoral degrees may associate primarily with other lawyers and doctors. People without a high school education may feel uncomfortable associating with more educated peers. Another possibility is that cohorts at all educational levels tend to socialize with others at the same level of instruction, so merely attempting each level of education allows individuals access to an entirely new group of people at a similar level.

At the self-actualization level, the present study failed to attract many older, educated individuals. This deficiency should have been anticipated; quotas were filled based on

educational attainment alone with no regard for the age of participants. The only age-related criterion was that all participants must be adults aged 18 years or older. No effort was made to select both older and younger participants at each level of education. The present study supports Maslow's (1943, 1956, 1968) assertion that self-actualization most often transpired later in life, if at all. Amongst the relatively young sample population, the self-actualization level of needs satisfaction returned the lowest score ( $M = 2.92$ ,  $SD = 0.25$ ). The lack of older participants at all levels of educational attainment confounds any attempts to theorize why self-actualization needs are satisfied through educational attainment alone without any impact from the time since completion. Given the lack of older participants, this weakly positive correlation might be due to sampling error, and the actual correlation could be higher.

Mittelman (1991) criticized Maslow's decision to study only the healthiest 1% of the population. Maslow (1954, 1968, 1971) asserted that his focus on the most mentally healthy people promoted a perfect understanding of psychology, while other psychologists' focus on the mentally ill resulted in a sick and imperfect grasp of psychology (Mittelman, 1991). Maslow believed mental illness could not be cured without first understanding mental health (Maslow, 1968, 1971). Maslow felt it best to examine mental health in those possessing the most optimal levels.

Maslow believed that good mental health during a person's lifetime involved successful satisfaction of needs throughout various life stages. Maslow asserted and Sirgy (2020) revealed that mental health improved consistently as individuals continually satisfied each subsequently higher level of needs. Maslow (1954) contended that individual advancement through his hierarchical model was informally achieved both through trial and error (e.g., an infant learning to walk and talk) and formally (e.g., attending school or other structured training).

Taormina and Gao (2013) found support for Maslow's (1943, 1954, 1968) hierarchical ordering and the prepotency of needs. However, their study was validated amongst a sample population drawn from a collectivistic culture. The present study was the first time the FNSM (see Appendix F) was administered to participants within an individualistic culture. Replicating Taormina and Gao's findings confounds both Hofstede's (1984) and Cianci and Gambrel's (2003) assertions that Maslow's hierarchy lacks universal cultural applicability. Similarly, replicating Taormina and Gao's results proves the FNSM's suitability for the western audiences for whom it was initially intended.

Educational attainment has been advocated, debated, and researched for decades. The present study identified non-market benefits resulting from educational attainment across all ages and education levels. These benefits extend beyond the market benefits uncovered by other studies whose advantages are achieved primarily during an individual's working years. No other studies correlate educational attainment to Maslow's (1943, 1954, 1968) hierarchy of needs. The present study highlights the essential impact of educational attainment and time since completion on Maslovian need satisfaction.

Unfortunately, the bulk of research regarding education and Maslow's hierarchy of needs has not been as holistic as Maslow intended. The literature focuses mainly on school environments hoping to help students achieve academic success or increase teacher efficacy and retention. Morrical et al. (2018) positively correlated Maslovian (1943, 1954, 1968) need satisfaction with post-secondary academic persistence. Aravind and Prasad (2016) found a relationship between teacher efficacy and the satisfaction of Maslow's needs. Chalermnirundorn (2018) identified teacher needs satisfaction as crucial to persistence within the profession. Fisher and Royster (2016) applied Maslow's hierarchy to resolving issues surrounding teacher retention.

Freitas and Leonard (2011) identified a relationship between student academic success and the satisfaction of needs. Though learning has been acknowledged within both Erikson's (1966) and Maslow's theories, both were developed and proposed during a time in U.S. history when post-secondary education was neither as affordable nor readily available to the average U.S. citizen as it is today.

Maslow (1943, 1985, 1968) believed, and Sirgy's (2020) research supports, that good mental health is tied to the satisfaction of universal needs. However, the overlooked fragment has been to what extent post-secondary education assists an individual's lifelong development. The present study suggests that post-secondary education combined with time since completion positively correlates to the satisfaction of all five levels of Maslovian needs. Though the correlation identified is weakly positive, these findings indicate that the achievement of post-secondary education would advance an individual's ability to satisfy universal needs and result in increasingly positive mental health over the entirety of one's life.

### **Limitations**

The present study suffered several limitations that warrant consideration. The study employed a cross-sectional design requiring participants to answer the demographic (see Appendix D) and FNSM (see Appendix F) surveys in an unsupervised, online environment. The sample was drawn exclusively from users of the Prolific Academic online research platform. Though this platform boasts tens of thousands of users, the population may not represent the general U.S. population. Though efforts were made to verify the accuracy of responses, no method exists to ensure the honesty of participants. Threats to internal and external validity are discussed below.

### **Threats to Internal Validity**

Internal validity refers to how a study's results may assist in determine causal inferences (Warner, 2012). The internal validity of the present study suffered from the following limitations. First, the FNSM (see Appendix F) was initially written in English for an English-speaking audience but was validated among an Asian sample population. The present study was the first instance of large-scale application of the FNSM within the United States. It quickly became apparent that a western audience experienced difficulty responding to some of the questions. For instance, the physiological scale references both the quality and quantity of sexual activity in which participants engage. Many participants felt uncomfortable answering these questions, even when shielded with the anonymity of an online survey. Additionally, within the safety-security scale of the FNSM, questions referenced natural disasters, terrorism, acts of war, and other situations typically rare for U.S.-based participants to encounter. Participants often responded to these questions with “no opinion.”

Within the belonging scale of the FNSM, many participants struggled to respond to the questions about spouses, friends, relatives, and colleagues, which may have been due to the social distancing limitations enforced during the COVID-19 pandemic. Within the esteem scale, many users struggled to respond to the questions about how others perceived them. These questions asked how much honor, prestige, or high regard participants received from others, something not typically perceived, sought after, or desired within the western world's individualistic culture. The FNSM appears culturally unsuited to a U.S.-based audience, despite being written and intended for native English speakers. This weakness was not evident until the data collection phase of the study. The FNSM could be improved to incorporate questions worded for a western audience.

Next, the scoring of the FNSM instrument raised concerns. In Likert surveys, the middle option of "no opinion" is meant to eliminate participants who are unwilling or unable to share an opinion and identify straight-lining. Scoring these responses is typically accepted as worthless since they offer no information and are used to eliminate questionnaires. Taormina and Gao (2013) instead awarded "no opinion" responses a score of three (3) points. This scoring has a reductive effect on negative responses valued at either one (1) or two (2) points. A single "no opinion" response can effectively negate two to three (2-3) negative responses. This negation can significantly increase a participant's need satisfaction score for each 12 to 15-item scale within the FNSM. The present study limited "no opinion" responses to three or fewer responses per FNSM subscale to combat this problem. The effect of this limit was that the resulting data were non-parametric. Additionally, the final mean scores were skewed by the inclusion of a meaningless value of three (3) in the middle of the scale. The FNSM would benefit from scoring that follows Likert's (Sullivan & Artino, Jr., 2013) recommendations.

### **Threats to External Validity**

The present study also suffers issues of external validity. The Hawthorne effect was unavoidable, a phenomenon wherein performance improves simply because participants know they are being observed (Gall et al., 2006). Federal law administered by and through the Food and Drug Administration requires all studies involving human subjects to obtain informed consent from participants before participation. Compliance with these laws is overseen by Liberty University's Institutional Review Board (IRB) and documented by requiring each participant to complete a consent form (see Appendix B). The consent form includes information regarding the study purpose, potential risks and benefits, and how personal information (including participant responses) will be used and stored. All participants were made aware that



their responses would be collected, stored, and analyzed. Also, numerous participants were emailed after survey completion to clarify conflicting or missing answers. Participants may have responded to the FNSM questions differently had they answered outside of the present study.

The sample population demographics also threaten the external validity of the present research. Gall et al. (2006) warned that population validity concerns arise when study results are more descriptive of a sample population than the general population. While the sample population was drawn from across the United States, a sample population of only 245 participants operating within the Prolific Academic online platform may not accurately describe the entirety of the 330+ million U.S. population. A larger sample population would be required before generalizing the present study's results to the whole of the U.S.

Furthermore, the sample population was predominantly younger individuals. Fully 64.5% of participants (158 of 245 participants) were aged 34 years or younger, and 83.3% (204 of 245 participants) were 44 years or younger. Participants reported possessing post-secondary degrees for a median of 3.25 to 6.0 years, while those without a secondary education or a secondary diploma had done so for 5.83 to 12.96 years. Both Maslow (1943, 1954, 1968) and Erikson (1966) asserted that people pass through several life stages, culminating in significantly more need satisfaction over time. The younger age of the sample population combined with the shorter periods participants held post-secondary education (compared to secondary education) potentially reduced the magnitude of impacts from educational attainment and time since completion.

Consequently, time since completion was not even a contributory factor in two models, despite educational attainment demonstrating a statistically significant impact on all five levels of need satisfaction. Taormina and Gao (2013) indicated an approximately 1% impact from

education on need satisfaction within their sample population. However, Taormina and Gao's sample population reported significantly lower levels of education than the population in the present study. The present study demonstrated that education impacts need satisfaction, but the magnitude of that influence remains uncertain.

### **Recommendations for Future Research**

Since Maslow (1943, 1954, 1968) first presented his hierarchical ordering of needs, several methods have been employed to measure their importance, universality, and satisfaction. Despite several specific applications of Maslow's theories, no universally applicable instrument for the simultaneous measurement of all five levels of needs existed until 2013 (Taormina & Gao, 2013). As discovered during the data collection phase of the present study, this instrument is poorly worded for a western audience. During data analysis, a weakness in the scoring methodology was also evident. This instrument would benefit from re-wording and validation amongst a western audience, using a Likert-approved (Sullivan & Artino, Jr., 2013) scoring methodology.

The researcher also recommends repeating the study with a larger sample size that emphasizes older, well-educated participants. Taormina and Gao (2013) collected a sample population of 386 ( $N = 386$ ) participants with a mean age of 31.44 years ( $SD = 12.78$ ), 76.2% of whom had only secondary education or less. The Taormina and Gao study identified a 1% impact from education on the need satisfaction of their primarily young, somewhat uneducated sample population. The present study identified a 5.7% to 9.5% impact from education on the need satisfaction of a slightly older ( $M = 34.17$  years) but considerably more educated, U.S.-based sample population. Both Taormina and Gao and the present study identified a statistically significant impact from education on the satisfaction of needs. However, a larger sample size

with a more substantial number of older, well-educated participants could clarify the total extent to which education impacts need satisfaction.

## REFERENCES

- Allison, P. D. (1999). *Multiple regression: A primer*. Pine Forge Press.
- Amazon Mechanical Turk. (2018). *FAQs about Amazon Mechanical Turk*. <https://www.mturk.com/help>
- Anderson, D. L. (2016). *Organization development: The process of leading organizational change*. Sage Publications.
- Andrews, R. J., Li, J., & Lovenheim, M. F. (2016). Quantile treatment effects of college quality on earnings. *Journal of Human Resources*, 51(1), 200-238. <https://doi.org/10.3368/jhr.51.1.200>
- Aravind, A., & Prasad, R. (2016). A study on the relationship between self-actualization level of teachers and their teaching effectiveness at a post-graduate management program. *Procedia-Social and Behavioral Sciences*, 89(2013), 911-915.
- Arnett, J., Henry, B., & Fankell, A. (2014). Managing late effects of breast cancer treatment. *Clinical Journal of Oncology Nursing*, 18(5), 32-35. <https://doi.org/10.1188/14.CJON.S2.32-35>
- Assari, S. (2018). Blacks' diminished return of education attainment on subjective health; mediating effect of income. *Brain sciences*, 8(9), E176. <https://doi.org/10.3390/brainsci8090176>
- Assari, S. (2019). Education attainment and obesity: Differential returns based on sexual orientation. *Behavioral Sciences*, 9(2), 16. <https://doi.org/10.3390/bs9020016>
- Assari, S., & Bazargan, M. (2019). Protective effects of educational attainment against cigarette smoking; diminished returns of American Indians and Alaska natives in the national health interview survey. *International Journal of Travel Medicine and Global Health*,

- 7(3), 105. <https://doi.org/10.15171/ijtmgh.2019.22>
- Assari, S., Bazargan, M., & Caldwell, C. H. (2019a). Parental educational attainment and chronic medical conditions among American youth; minorities' diminished returns. *Children*, 6(9), 96. <https://doi.org/10.3390/children6090096>
- Assari, S., Farokhnia, M., & Mistry, R. (2019b). Education attainment and alcohol binge drinking: Diminished returns of Hispanics in Los Angeles. *Behavioral Sciences*, 9(1), 9. <https://doi.org/10.3390/bs9010009>
- Assari, S., & Mistry, R. (2018). Educational attainment and smoking status in a national sample of American adults; evidence for the Blacks' diminished return. *International Journal of Environmental Research and Public Health*, 15(4), 763. <https://doi.org/10.3390/ijerph15040763>.
- Augustine, J. M., & Negraia, D. V. (2018). Can increased educational attainment among lower-educated mothers reduce inequalities in children's skill development? *Demography*, 55(1), 59-82. <https://doi.org/10.1007/s13524-017-0637-4>
- Autin, K. L., Duffy, R. D., Blustein, D. L., Gensmer, N. P., Douglass, R. P., England, J. W., & Allan, B. A. (2019). The development and initial validation of need satisfaction scales within the psychology of working theory. *Journal of Counseling Psychology*, 66(2), 195. <https://doi.org/10.1037/cou0000323>
- Autor, D. (2014). Skills, education, and the rise of earnings inequality among the "other 99 percent." *Science*, 344(6186), 843–851. <https://dx.doi.org/10.1126/science.1251868>
- Barling, J. (1981). A cross-cultural study of Maslow's motivation theory in industry. *South African Journal of Psychology*, 11(1), 447-50. <https://doi.org/10.1177/008124638101100107>

- Bastedo, M., Altbach, P. & Gumport, P. (2016). *American higher education in the twenty-first century: Social, political, and economic challenges*. Johns Hopkins University Press.
- Bauer, L., Broady, K. E., Edelberg, W., & O'Donnell, J. (2020, September 17). *Ten facts about COVID-19 and the U.S. economy*. The Brookings Institution. <https://www.brookings.edu/research/ten-facts-about-covid-19-and-the-u-s-economy/>
- Baumeister, R. F., & Leary, M. R. (1995). The need to belong: Desire for interpersonal attachments as a fundamental human motivation. *Psychological Bulletin*, 117(3), 497. <https://doi.org/10.1037/0033-2909.117.3.497>
- Bearman, J., & Franklin, J. (2018). Dynamics of hosting: Giving circles and collective giving groups. Johnson Center. <https://johnsoncenter.org/wp-content/uploads/2018/11/Giving-Circles-Hosting-Full-Report-WEB.pdf>
- Becker, G. S. (1965). Human capital: A theoretical and empirical analysis, with special reference to education. *The Annals of the American Academy of Political and Social Science*, 360(1), 208–209. <https://doi.org/10.1177/000271626536000153>
- Benoit, P., & Tu, K. (2020, July 23). *Is China still a developing country? And why it matters for energy and climate*. Columbia Center on Global Energy Policy. <https://www.energypolicy.columbia.edu/research/report/china-still-developing-country-and-why-it-matters-energy-and-climate>
- Berger, M. C. (1988). Predicted future earnings and choice of college major. *Industrial & Labor Relations Review*, 41(3), 418–429. <https://doi.org/10.2307/2523907>
- Berners-Lee, T. J. (1989). Information management: A proposal (No. CERN-DD-89-001-OC). Technical report. European Organization for Nuclear Research. <https://cds.cern.ch/record/369245/files/dd-89-001.pdf>

- Buhrmester, M., Kwang, T., & Gosling, S. D. (2011). Amazon's Mechanical Turk: A new source of inexpensive, yet high-quality data? *Perspectives on Psychological Science*, 6(1), 3–5. <https://doi.org/10.1177/1745691610393980>
- Burleson, S. E., & Thoron, A. C. (2014). *Maslow's hierarchy of needs and its relation to learning and achievement*. Department of Agricultural Education and Communication.
- Burns, W., & Rossi, S. (2019). Business giving motivations and vehicles: Developing trends in Australia. *Third Sector Review*, 25(1), 81-103.
- Bustamante, J. (2019, June 7). *College enrollment & student demographic statistics*. Education Data.Org. <https://educationdata.org/college-enrollment-statistics>
- Carnevale, A. P., Cheah, B., & Hanson, A. R. (2015). *The economic value of college majors*. Center on Education and the Workforce, Georgetown University.
- Casler, K., Bickel, L., & Hackett, E. (2013). Separate but equal? A comparison of participants and data gathered via Amazon's MTurk, social media, and face-to-face behavioral testing. *Computers in Human Behavior*, 29(6), 2156-2160. <https://doi.org/10.1016/j.chb.2013.05.009>
- Chalermnirundorn, N. (2018). Teacher motivation: A factor affecting persistency in profession. *Silpakorn University Veridian E-Journal*, 11(4), 502-523.
- Chapman, B., Rodrigues, M., & Ryan, C. (2008). An Analysis of FEE-HELP in the vocational education and training sector. *Australian Economic Review*, 41(1), 1-14.
- Christensen, C. M., & Horn, M. B. (2013). *Innovation imperative: Change everything*. New York Times. <https://www.nytimes.com/2013/11/03/education/edlife/online-education-as-an-agent-of-transformation.html>
- Cronbach, L. J. (1949). *Essentials of psychological testing*. Harper & Row.

- <https://doi.org/10.1002/sce.3730350432>
- Chung, E., Mathew, V. N., & Subramaniam, G. (2019). In the pursuit of happiness: The role of personality. *International Journal of Academic Research in Business and Social Sciences*, 9(11), 10-19. <https://doi.org/10.6007/IJARBSS/v9-i11/6512>
- Cohen, S., Murphy, M. L., & Prather, A. A. (2019). Ten surprising facts about stressful life events and disease risk. *Annual Review of Psychology*, 70(1), 577-597. <https://doi.org/10.1146/annurev-psych-010418-102857>
- Cook, D. A., Blachman, M. J., West, C. P., & Wittich, C. M. (2016, October). Physician attitudes about maintenance of certification: A cross-specialty national survey. *Mayo Clinic Proceedings*, 91(10), 1336-1345. <https://doi.org/10.1016/j.mayocp.2016.07.004>
- Costa, P. T. Jr., & McCrae, R. R. (1992). *Revised NEO Personality Inventory (NEO-PI-R) and NEO Five-Factor Inventory (NEO-FFI) professional manual*. Psychological Assessment Resources.
- Dale, M. (2010). Trends in the age composition of college and university students and graduates. *Education Matters: Insights on Education, Learning and Training in Canada*, 7(5). <https://www150.statcan.gc.ca/n1/pub/81-004-x/2010005/article/11386-eng.htm>
- de Guzman, M.C., & Kim, M. (2017). Community hierarchy of needs and policing models: Toward a new theory of police organizational behavior. *Police Practice and Research* 18(4), 352-365. <https://doi.org/10.1080/15614263.2016.1242425>
- Desjardins R. (2003) Determinants of literacy proficiency: A lifelong-lifewide learning perspective. *International Journal of Educational Research*, 39(3), 205–245. <https://doi.org/10.1016/j.ijer.2004.04.004>
- Dowden, A. R., Gray, K., White, N., Ethridge, G., Spencer, N., & Boston, Q. (2018). A



- phenomenological analysis of the impact of teen pregnancy on education attainment: Implications for school counselors. *Journal of School Counseling*, 16(8), n8.
- Driscoll, S. W., Geis, C. C., Raddatz, M. M., Kinney, C. L., & Robinson, L. R. (2018). Predictors of performance on the American Board of Physical Medicine and Rehabilitation Maintenance of Certification examination. *Physical Medicine & Rehabilitation*, 10(12), 1361-1365. <https://doi.org/10.1016/j.pmrj.2018.06.009>
- Enestvedt, B. K., Diamond, S., Laird, A., & Rodriguez, S. A. (2020). A gender comparison of motivations for seeking leadership positions among gastroenterologists. *Gastrointestinal endoscopy*, 91(1), 26-32. <https://doi.org/10.1016/j.gie.2019.08.045>
- Erikson, E. H. (1966). Eight ages of man. *International Journal of Psychiatry*, 2(3), 281–300.
- European Centre for the Development of Vocational Training (2013). *Benefits of vocational education and training in Europe for people, organisations, and countries*. Publications office. [http://www.cedefop.europa.eu/EN/Files/4121\\_en.pdf](http://www.cedefop.europa.eu/EN/Files/4121_en.pdf)
- Evernden, Z. (2018, September 12). *Qualtrics integration guide*. Prolific Academic. <https://researcher-help.prolific.co/hc/en-gb/articles/360009224113-Qualtrics-Integration-Guide>
- Faul, F., Erdfelder, E., Buchner, A., & Lang, A. G. (2013). *G\*Power Version 3.1.9.6* [computer software]. Universität Kiel, Germany. <http://www.pscho.uniduesseldorf.de/abteilungen/aap/gpower3/download-and-register>
- Finnie, R., & Frenette, M. (2003). Earning differences by major field of study: Evidence from three cohorts of recent Canadian graduates. *Economics of Education Review*, 22(2), 179–192. [https://doi.org/10.1016/S0272-7757\(02\)00003-1](https://doi.org/10.1016/S0272-7757(02)00003-1)
- Finnie, R., Pavlic, D., & Childs, S. (2018). Earnings of university bachelor's degree graduates in

- information and communication technology programs: A tax data analysis. *Canadian Public Policy*, 44(S1), S13-S29. <https://doi.org/10.3138/cpp.2018-051>
- Fisher, M. H., & Royster, D. (2016). Mathematics teachers' support and retention: Using Maslow's hierarchy to understand teachers' needs. *International Journal of Mathematical Education in Science and Technology*, 47(7), 993-1008. <https://doi.org/10.1080/0020739X.2016.1162333>
- Follmer, D. J., Sperling, R. A., & Suen, H. K. (2017). The role of MTurk in education research: Advantages, issues, and future directions. *Educational Researcher*, 46, 329–334. <https://doi.org/10.3102/0013189X17725519>
- Ford, K., & Choi, J. (2018). *The importance of skills and majors in determining future earnings*. American Institutes for Research.
- Freitas, F. A., & Leonard, L. J. (2011). Maslow's hierarchy of needs and student academic success. *Teaching and Learning in Nursing*, 6(1), 9-13. <https://doi.org/10.1016/j.teln.2010.07.004>
- Frey, C. B., & Osborne, M. A. (2017). The future of employment: How susceptible are jobs to computerization? *Technological Forecasting & Social Change*, 114, 254–280. <https://doi.org/10.1016/j.techfore.2016.08.019>
- Friedman, Z. (2018). *Student loan debt statistics in 2018: A \$1.5 trillion crisis*. Forbes.
- Frost, J. (2019). *Regression analysis: An intuitive guide*. Author.
- Gall, M. D., Gall, J. P., & Borg, W. R. (2006). *Educational research: An introduction* (8th ed.). Pearson.
- Gardner, D. D. (2017). The association of school absences with education attainment in children with asthma in San Antonio, Texas, from 2011-2016 (Doctoral dissertation). Texas

- Medical Center, Houston, TX. <https://digitalcommons.library.tmc.edu/dissertations/AAI10685635>
- Goldrick-Rab, S., Kelchen, R., Harris, D. N., & Benson, J. (2016). Reducing income inequality in educational attainment: Experimental evidence on the impact of financial aid on college completion. *American Journal of Sociology*, 121(6), 1762-1817. <https://doi.org/10.1086/685442>
- Goodman, J. K., Cryder, C. E., & Cheema, A. (2013). Data collection in a flat world: The strengths and weaknesses of Mechanical Turk samples. *Journal of Behavioral Decision Making*, 26, 213–224. <https://doi.org/10.1002/bdm.1753>
- Goodman, R. A. (1968). On the operationality of the Maslow need hierarchy. *British Journal of Industrial Relations*, 6(1), 51. <https://doi.org/10.1111/j.1467-8543.1968.tb00528.x>
- Gosling, S.D., Vazire, S., Srivastava, S., & John, O.P. (2004). Should we trust web-based studies? A comparative analysis of six preconceptions about Internet questionnaires. *American Psychologist*, 59, 93–104. <https://doi.org/10.1037/0003-066X.59.2.93>
- Green, S. B., & Salkind, N. (2017). *Using SPSS for Windows and Macintosh: Analyzing and understanding data* (8th ed.). Pearson.
- Griffin, T. (2016). *Costs and benefits of education and training for the economy, business, and individuals*. National Centre for Vocational Education Research. <https://www.ncver.edu.au/publications/publications/all-publications/2873>
- Hall, D. T., & Nougain, K. E. (1968). An examination of Maslow's need hierarchy in an organizational setting. *Organizational Behavior and Human Performance*, 3(1), 12-35. [https://doi.org/10.1016/0030-5073\(68\)90024-X](https://doi.org/10.1016/0030-5073(68)90024-X)
- Han, J. T., Egbert, M. A., Dodson, T. B., & Susarla, S. M. (2018). Is formal research training

- associated with academic success in oral and maxillofacial surgery? *Journal of Oral and Maxillofacial Surgery*, 76(1), 27-33. <https://doi.org/10.1016/j.joms.2017.08.040>
- Hancock, T. (1993). Health, human development and the community ecosystem: Three ecological models. *Health Promotion International*, 8(1), 41-47. <https://doi.org/10.1093/heapro/8.1.41>
- Haymes, M., & Green, L. (1982). The assessment of motivation within Maslow's framework. *Journal of Research in Personality*, 16(2), 179-192. [https://doi.org/10.1016/0092-6566\(82\)90074-5](https://doi.org/10.1016/0092-6566(82)90074-5)
- Hecker, D. E. (1996). Earnings and major field of study of college graduates. *Occupational Outlook Quarterly*, 40(2), 10–21.
- Heckman, J. J., & Pollock, S. (1974). Empirical evidence on the functional form of the earnings-schooling relationship. *Journal of the American Statistical Association*, 69(346), 350–354. <https://doi.org/10.1080/01621459.1974.10482952>
- Heckman, J. J., Humphries, J. E., & Veramendi, G. (2018a). Returns to education: The causal effects of education on earnings, health, and smoking. *Journal of Political Economy*, 126(S1), S197-S246. <https://doi.org/10.1086/698760>
- Heckman, J. J., Humphries, J. E., & Veramendi, G. (2018b). The nonmarket benefits of education and ability. *Journal of Human Capital*, 12(2), 282-304. <https://doi.org/10.1086/697535>
- Henrich, J., Heine, S.J., & Norenzayan, A. (2010). The weirdest people in the world? *Behavioral and Brain Sciences*, 33(2-3), 62–135. <https://doi.org/10.1017/S0140525X0999152X>
- Herd, P., Freese, J., Sicinski, K., Domingue, B. W., Mullan Harris, K., Wei, C., & Hauser, R. M. (2019). Genes, gender inequality, and educational attainment. *American Sociological*

- Review*, 84(6), 1069-1098. <https://doi.org/10.1177/0003122419886550>
- Hoffman, E. (1988). *The right to be human: A biography of Abraham Maslow*. JP Tarcher.
- Hofstede, G. (1984). The cultural relativity of the quality of life concept. *Academy of Management Review*, 9(3), 389-398. <https://doi.org/10.2307/258280>
- Hyman, J. (2017). Does money matter in the long run? Effects of school spending on educational attainment. *American Economic Journal: Economic Policy*, 9(4), 256-280. <https://doi.org/10.1257/pol.20150249>
- James, K. (2016). Barriers to Treatment and the Connection to Maslow's Hierarchy of Needs. *Counselor Education Capstone*, 18. [https://digitalcommons.brockport.edu/edc\\_capstone/18](https://digitalcommons.brockport.edu/edc_capstone/18)
- Karaxha, H. (2019). The importance of implementing changes in organizations. *Romanian Economic Journal*, 22(72), 25-36. <https://www.rejournal.eu/>
- Kenrick, D. T., Griskevicius, V., Neuberg, S. L., & Schaller, M. (2010). Renovating the pyramid of needs: Contemporary extensions built upon ancient foundations. *Perspectives on Psychological Science*, 5(3), 292-314. <https://doi.org/10.1177/1745691610369469>
- Kiel, J. M. (1999). Reshaping Maslow's hierarchy of needs to reflect today's educational and managerial philosophies. *Journal of Instructional Psychology*, 26(3), 167-167.
- King, E. (2018). *Religious commitment, religious support, and need satisfaction: A correlational study* (Doctoral dissertation). Baylor University, Waco, TX. [https://baylor-ir.tdl.org/bitstream/handle/2104/10265/emma\\_king\\_honorsthesis.pdf](https://baylor-ir.tdl.org/bitstream/handle/2104/10265/emma_king_honorsthesis.pdf)
- Kirov, B. (2016). *Heraclitus: Quotes & facts* (1st ed.). Create Space Independent Publishing.
- Kislev, E. (2016). The effect of education policies on higher-education attainment of immigrants in Western Europe: A cross-classified multilevel analysis. *Journal of European Social*

- Policy*, 26(2), 183-199. <http://doi.org/10.1177/0958928716637142>
- Koltko-Rivera, M. E. (2006). Rediscovering the later version of Maslow's hierarchy of needs: Self-transcendence and opportunities for theory, research, and unification. *Review of General Psychology*, 10(4), 302-317. <https://doi.org/10.1037/1089-2680.10.4.302>
- Korn, M. (2015, May 7). *College majors figure big in earnings*. Wall Street Journal. <https://www.wsj.com/articles/college-majors-figure-big-in-earnings-1430971261>
- Laerd Statistics. (2018). Multiple regression analysis using SPSS statistics. <https://statistics.laerd.com/spss-tutorials/multiple-regression-using-spss-statistics.php>
- Lange, C., & Pearce, R. (2017). Exploration of diabetes knowledge among registered nurses working in an NHS Trust. *Journal of Diabetes Nursing*, 21(6), 203-207.
- Lee, J. M., & Hanna, S. D. (2015). Savings goals and saving behavior from a perspective of Maslow's hierarchy of needs. *Journal of Financial Counseling and Planning*, 26(2), 129-147. <https://doi.org/10.1891/1052-3073.26.2.129>
- Lee, W. S., & Coelli, M. (2010). *Analysis of private returns to vocational education and training*. National Centre for Vocational Education Research.
- Leigh, A. (2008). Returns to education in Australia. *Economic Papers: A Journal of Applied Economics and Policy*, 27(3), 233-249.
- Lester, D. (1990). Maslow's hierarchy of needs and personality. *Personality and Individual Differences*, 11(11), 1187-1188. [https://doi.org/10.1016/0191-8869\(90\)90032-M](https://doi.org/10.1016/0191-8869(90)90032-M)
- Lester, D. (2013). Measuring Maslow's hierarchy of needs. *Psychological Reports*, 113(1), 15-17. <https://doi.org/10.2466/02.20.PR0.113x16z1>
- Lester, D., Hvezda, J., Sullivan, S., & Plourde, R. (1983). Maslow's hierarchy of needs and psychological health. *The Journal of General Psychology*, 109(1), 83-85. <https://doi.org/>

10.1080/00221309.1983.9711513

- Liu, Q. X., Fang, X. Y., Wan, J. J., & Zhou, Z. K. (2016). Need satisfaction and adolescent pathological Internet use: Comparison of satisfaction perceived online and offline. *Computers in Human Behavior*, 55, 695-700. <https://doi.org/10.1016/j.chb.2015.09.048>
- Lollar, D. (1974). An operationalization and validation of the Maslow need hierarchy. *Educational and Psychological Measurement*, 34, 639-651. <https://doi.org/10.1177/001316447403400316>
- Looney, A., & Yannelis, C. (2019). The consequences of student loan credit expansions: Evidence from three decades of default cycles. Working papers 19-32, Federal Reserve Bank of Philadelphia. <https://vtechworks.lib.vt.edu/bitstream/handle/10919/96124/StudentLoanCredit.pdf>
- Luke, C. (2019, February 28). *Prolific practices and security systems*. Prolific Academic. <https://researcher-help.prolific.co/hc/en-gb/articles/360018895214-Prolific-Practices-and-Security-Systems>
- Manzoni, A., & Streib, J. (2019). The equalizing power of a college degree for first-generation college students: Disparities across institutions, majors, and achievement levels. *Research in Higher Education*, 60(5), 577-605. <https://doi.org/10.1007/s11162-018-9523-1>
- Maslow, A. H. (1943). A theory of human motivation. *Psychological Review*, 50(4), 370-396. <https://doi.org/10.1037/h0054346>
- Maslow, A. H. (1954). *Motivation and personality*. Harper & Row.
- Maslow, A. H. (1965). Self-actualization and beyond. New England Board of Higher Education.
- Maslow, A. H. (1968). *Toward a psychology of being*. Litton Educational.

- Maslow, A. H. (1969). The farther reaches of human nature. *Journal of Transpersonal Psychology, 1*(1), 1–9.
- Maslow, A. H. (1971). *The farther reaches of human nature*. Viking.
- Maslow, A. H. (1979). *The journals of A. H. Maslow*. R. J. Lowry (Ed.). Brooks/Cole Publishing Company.
- Maslow, A. (1982). *The journals of Abraham Maslow*. Lewis Publishing Company.
- Maslow, A. H., & Lewis, K. J. (1987). Maslow's hierarchy of needs. *Salenger Incorporated, 14*, 987.
- Mathes, E. W. (1981). Maslow's hierarchy of needs as a guide for living. *Journal of Humanistic Psychology, 21*, 69-72. <https://doi.org/10.1177/002216788102100406>
- Mauer, M. (2019, October). Long-term sentences: Time to reconsider the scale of punishment. *UMKC Law Review, 87*(1), 113-132. <https://www.sentencingproject.org/publications/long-term-sentences-time-reconsider-scale-punishment/>
- McClure, K., & Ryder, A. J. (2018). The costs of belonging: How spending money influences social relationships in college. *Journal of Student Affairs Research and Practice, 55*(2), 196-209. <https://doi.org/10.1080/19496591.2017.1360190>
- McDuffie, D. (2019). Using Amazon's Mechanical Turk: Benefits, drawbacks, and suggestions. *Association for Psychological Science Observer, 32*(2).
- Meadow, H. L., Mentzer, J. T., Rahtz, D. R., & Sirgy, M. J. (1992). A life satisfaction measure based on judgment theory. *Social Indicators Research, 26*(1), 23–59. <https://doi.org/10.1007/BF00303824>
- Mertler, C. A., & Reinhart, R. V. (2016). *Advanced and multivariate statistical methods: Practical application and interpretation*. Taylor & Francis.



- Nagpaul, T., & Chen, J. (2019). Self-determination theory as a framework for understanding needs of youth-at-risk: Perspectives of social service professionals and the youth themselves. *Children and Youth Services Review*, 99, 328-342. <https://doi.org/10.1016/j.childyouth.2019.02.015>
- Nunnally, J. C. (1978). *Psychometric theory*. McGraw-Hill.
- Okbay, A., Beauchamp, J., Fontana, M., Lee, J. J., Pers, T. H., Rietveld, C. A., Turley, P., Chen, G., Emilsson, V., Meddens, S. F. W., Oskarsson, S., Pickrell, J. K., Thom, K., Timshel, P., de Vlaming, R., Abdellaoui, A., Ahluwalia, T. S., Bacelis, J., Baumbach, C., ... & Benjamin, D. J. (2016). Genome-wide association study identifies 74 loci associated with educational attainment. *Nature*, 533(7604), 539-542. <https://doi.org/10.1038/nature17671>
- Oreopoulos, P., & Salvanes, K. G. (2011). Priceless: The nonpecuniary benefits of schooling. *Journal of Economic Perspectives*, 25(1), 159-84. <https://doi.org/10.1257/jep.25.1.159>
- Pamphilon B. (2005) How aged women remember their life-long/life-wide learning: Making the best of life. *Educational Gerontology*, 31(4), 283–299. <https://doi.org/10.1080/03601270590916795>
- Pan, J. S., & Vinitwatanakhun, W. (2019). A study of the relationship between students' perception towards school climate and students' satisfaction at a selected school for the blind in Myanmar. *SSRN Electronic Journal*. <https://doi.org/10.2139/ssrn.3361512>
- Paolacci, G., & Chandler, J. (2014). Inside the Turk: Understanding Mechanical Turk as a participant pool. *Current Directions in Psychological Science*, 23(3), 184–188. <https://doi.org/10.1177/0963721414531598>
- Parsons, L. (2019). Giving as a total social phenomenon: Towards a human geography of reciprocity. *The Geographical Journal*, 185(2), 142-155. <https://doi.org/10.1111/>

geoj.12298

- Pateman, J., & Pateman, J. (2018). *Managing cultural change in public libraries: Marx, Maslow and management*. Routledge.
- Peer, E., Brandimarte, L., Samat, S., & Acquisti, A. (2017). Beyond the Turk: Alternative platforms for crowdsourcing behavioral research. *Journal of Experimental Social Psychology*, 70, 153-163. <https://doi.org/10.1016/j.jesp.2017.01.006>
- Peterson, C., & Seligman, M. E. P. (2004). *Character strengths and virtues: A classification and handbook*. Oxford University Press.
- Petrucci, C. J. (2009). A primer for social worker researchers on how to conduct a multinomial logistic regression. *Journal of Social Service Research*, 35, 193-205. <https://doi.org/10.1080/01488370802678983>
- Polidano, C., & Ryan, C. (2016). Long-term outcomes from Australian vocational education. *Political Economy: Government Expenditures & Related Policies eJournal*. The University of Melbourne. [https://minerva-access.unimelb.edu.au/bitstream/handle/11343/123432/Polidano\\_Long-Term%20Outcomes%20from%20Australian%20Vocational%20Education.pdf](https://minerva-access.unimelb.edu.au/bitstream/handle/11343/123432/Polidano_Long-Term%20Outcomes%20from%20Australian%20Vocational%20Education.pdf)
- Porter, L. (1962). A study of perceived need satisfaction in bottom and middle management jobs. *Journal of Applied Psychology*, 45(1), 1-10. <https://doi.org/10.1037/h0043121>
- Procidano, M. E., & Heller, K. (1983). Measures of perceived social support from friends and family. *American Journal of Community Psychology*, 11(1), 1-23. <https://doi.org/10.1007/BF00898416>
- Prolific Academic. (2021). *Recruit your target audience*. <https://www.prolific.co/demographics/>
- Prolific Team (2019, January 8). *Can I ask participants for their personal*

- information/identifiers? Prolific Academic. <https://researcher-help.prolific.co/hc/en-gb/articles/360015378834-Can-I-ask-Participants-for-their-Personal-Information-Identifiers->
- Ryan, R. (2002). Making VET in schools work: A review of policy and practice in the implementation of vocational education and training in Australian schools. *Journal of Educational Enquiry*, 3(1), 1-16. National Centre for Vocational Education Research. <http://hdl.voced.edu.au/10707/104610>
- Roy, B., Kiefe, C. I., Jacobs, D. R., Goff, D. C., Lloyd-Jones, D., Shikany, J. M., Reis, J. P., Gordon-Larsen, P., & Lewis, C. E. (2020). Education, race/ethnicity, and causes of premature mortality among middle-aged adults in 4 US urban communities: Results from CARDIA, 1985–2017. *American Journal of Public Health*, (0), e1-e7. <https://doi.org/10.2105/AJPH.2019.305506>
- Rubin, M., & Wright, C. L. (2017). Time and money explain social class differences in students' social integration at university. *Studies in Higher Education*, 42(2), 315-330. <https://doi.org/10.1080/03075079.2015.1045481>
- Rumberger, R. W., & Thomas, S. L. (1993). The economic returns to college major, quality and performance: A multilevel analysis of recent graduates. *Economics of Education Review*, 12(1), 1–19. [https://doi.org/10.1016/0272-7757\(93\)90040-N](https://doi.org/10.1016/0272-7757(93)90040-N)
- Scheller, D.S. (2016). Neighborhood hierarchy of needs. *Journal of Urban Affairs* 38(3), 429-449. <https://doi.org/10.1111/juaf.12229>
- Sears, D.O. (1986). College sophomores in the lab: Influences of a narrow database on social psychology's view of human nature. *Journal of Personality and Social Psychology*, 51, 515–530. <https://doi.org/10.1037/0022-3514.51.3.515>

- Sirgy, M. J. (2020). *Positive balance: A theory of well-being and positive mental health* (Vol. 80). Springer Nature.
- Sirgy, M. J., Lee, D. J., Kosenko, R., Meadow, H. L., Rahtz, D., Cicic, M., Jin, G. X., Yarsuvat, D., Blenkhorn, D. L., & Wright, N. (1998). Does television viewership play a role in the perception of quality of life? *Journal of Advertising*, 27(1), 125–142. <https://doi.org/10.1080/00913367.1998.10673547>
- Skinner, B. F. (1938). *The behavior of organisms: An experimental analysis*. Appleton-Century.
- Strong, L. L., & Fiebert, M. S. (1987). Using paired comparisons to assess Maslow's hierarchy of needs. *Perceptual and Motor Skills*, 64(2), 492–494. <https://doi.org/10.2466/pms.1987.64.2.492>
- Sullivan, G. M., & Artino, A. R., Jr. (2013). Analyzing and interpreting data from Likert-type scales. *Journal of Graduate Medical Education*, 5(4), 541-542. <https://doi.org/10.4300/JGME-5-4-18>
- Tabachnick, B. G., Fidell, L. S., & Ullman, J. B. (2007). Using multivariate statistics (Vol. 5, pp. 481-498). Pearson.
- Taormina, R. J. (2009). Social and personality concomitants of gambling attitudes and behavior among Chinese residents in the casino economy of Macau. *Journal of Social and Personal Relationships*, 26(8), 1047–1071. <https://doi.org/10.1177/0265407509347935>
- Taormina, R. J., & Gao, J. (2013). Maslow and the motivation hierarchy: Measuring satisfaction of the needs. *The American Journal of Psychology*, 126(2), 155-177. <https://doi.org/10.5406/amerjpsyc.126.2.0155>
- Taormina, R. J., & Shamionov, R. M. (2016). A new measure of traditional values across cultures: China and Russia compared. *Psychological Thought*, 9(2), 197-221. <https://doi.org/10.5964/psyc.126.2.0155>

doi.org/10.5964/psyct.v9i2.202

- Taylor, E. (2018). Curating risk, selling safety? Fear of crime, responsibilisation and the surveillance school economy. In Lee, M. and Mythen, G. (Eds.), *The Routledge International Handbook on Fear of Crime* (pp. 312-321). Routledge. <https://openaccess.city.ac.uk/id/eprint/21563/>
- U.S. Census Bureau. (2017, December 14). High school completion rate is highest in U.S. history. <https://www.census.gov/newsroom/press-releases/2017/educational-attainment-2017.html>
- U.S. Census Bureau. (2018, August 20). 2010 census regions and divisions of the United States. <https://www.census.gov/geographies/reference-maps/2010/geo/2010-census-regions-and-divisions-of-the-united-states.html>
- Valletta, R. G. (2016). *Recent flattening in the higher education wage premium: Polarization, skill downgrading, or both?* (NBER Working Paper No. w22935). National Bureau of Economic Research.
- Warner, R. M. (2012). *Applied statistics: From bivariate through multivariate techniques* (2nd ed.). Sage Publications.
- Whipps, M. D. (2017). Education attainment and parity explain the relationship between maternal age and breastfeeding duration in US mothers. *Journal of Human Lactation*, 33(1), 220-224. <https://doi.org/10.1177/0890334416679385>
- Winston, C. N., Maher, H., & Easvaradoss, V. (2017). Needs and values: An exploration. *The Humanistic Psychologist*, 45(3), 295. <https://doi.org/10.1037/hum0000054>
- Wister, A. V., Malloy-Weir, L. J., Rootman, I., & Desjardins, R. (2010). Lifelong educational practices and resources in enabling health literacy among older adults. *Journal of Aging*

- and Health*, 22, 826–854. <https://doi.org/10.1177/0898264310373502>
- Wolniak, G. C., & Engberg, M. E. (2019). Do "high-impact" college experiences affect early career outcomes? *The Review of Higher Education*, 42(3), 825-858. <https://doi.org/10.1353/rhe.2019.0021>
- Wolniak, G. C., Seifert, T. A., Reed, E. J., & Pascarella, E. T. (2008). College majors and social mobility. *Research in Social Stratification and Mobility*, 26, 123–139. <http://doi.org/10.1016/j.rssm.2008.02.00>
- Yamashita, T., & Brown, J. S. (2017). Does cohort matter in the association between education, health literacy and health in the USA? *Health Promotion International*, 32(1), 16-24. <https://doi.org/10.1093/heapro/dat076>
- Yates, M. R., Saunders, R., & Watkins, J. F. (1980). A program based on Maslow's hierarchy helps students in trouble. *Online Submission*, 61(10), 712-713.
- Zalenski, R.J., Raspa, R. (2006). Maslow's hierarchy of needs: A framework for achieving human potential in hospice. *Journal of Palliative Medicine* 9(5), 1120-1127. <https://doi.org/10.1089/jpm.2006.9.1120>
- Zhao, Y., & Zhu, Q. (2014). Evaluation of crowdsourcing research: Current status and future direction. *Information Systems Frontiers*, 16(3), 417–434. <https://doi.org/10.1007/s10796-012-9350-4>

## APPENDICES

### Appendix A: Liberty University IRB Approval

January 12, 2021

Re: IRB Exemption - IRB-FY20-21-463 CORRELATING MASLOW'S NEEDS

SATISFACTION TO EDUCATIONAL ATTAINMENT AND TIME SINCE COMPLETION

Dear Anthony Babbitt, Gary Kuhne:

The Liberty University Institutional Review Board (IRB) has reviewed your application in accordance with the Office for Human Research Protections (OHRP) and Food and Drug Administration (FDA) regulations and finds your study to be exempt from further IRB review. This means you may begin your research with the data safeguarding methods mentioned in your approved application, and no further IRB oversight is required.

Your study falls under the following exemption category, which identifies specific situations in which human participants research is exempt from the policy set forth in 45 CFR 46:

101(b):

Category 2. (iii). Research that only includes interactions involving educational tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures, or observation of public behavior (including visual or auditory recording) if at least one of the following criteria is met:

The information obtained is recorded by the investigator in such a manner that the identity of the human subjects can readily be ascertained, directly or through identifiers linked to

the subjects, and an IRB conducts a limited IRB review to make the determination required by §46.111(a)(7).

Your stamped consent form can be found under the Attachments tab within the Submission Details section of your study on Cayuse IRB. This form should be copied and used to gain the consent of your research participants. If you plan to provide your consent information electronically, the contents of the attached consent document should be made available without alteration.

Please note that this exemption only applies to your current research application, and any modifications to your protocol must be reported to the Liberty University IRB for verification of continued exemption status. You may report these changes by completing a modification submission through your Cayuse IRB account.

If you have any questions about this exemption or need assistance in determining whether possible modifications to your protocol would change your exemption status, please email us at [email@redacted.edu](mailto:email@redacted.edu).

Sincerely,

G. Michele Baker, MA, CIP

Administrative Chair of Institutional Research

Research Ethics Office



## **Appendix B: Participant Consent Form**

### **CONSENT FORM TO PARTICIPATE IN RESEARCH**

**Title of the Study:** Correlating Maslow's Needs Satisfaction to Educational Attainment and Time Since Completion

**Principal Investigator:** Anthony Babbitt, Ph.D.(c), M.S., Liberty University

#### **Invitation to Participate in a Research Study**

You are invited to participate in a research study. To participate, you must be age 18 or older and reside within the United States. Furthermore, you must have earned at least a high school diploma or GED, an associate's degree(s), a bachelor's degree(s), a master's degree(s), and/or a doctoral degree(s). Taking part in this research project is voluntary. Please take time to read this entire form and ask questions before deciding whether to participate in this research project.

#### **What is the study about and why is it being done?**

The purpose of the study is to identify whether a relationship exists between a person's ability to satisfy their Maslovian needs and the amount of education they have completed. Maslovian needs include food, shelter, friendships, self-respect, and fulfilling one's potential. The education levels are high school diploma or GED, associate's degree(s), bachelor's degree(s), master's degree(s), and doctoral degree(s).

#### **What will happen if you take part in this study?**

If you agree to be in this study, I would ask you to do the following: honestly and accurately complete the following survey collecting information about your demographics (i.e., age, ethnicity, gender, etc.) and how well your Maslovian needs are satisfied. This survey is comprised of almost 90 questions and should take 10-30 minutes to complete.

#### **How could you or others benefit from this study?**

Participants should not expect to receive a direct benefit from taking part in this study. However, the survey's honest and accurate completion will result in the agreed-upon payment via the Prolific Academic platform. Benefits to society include a greater understanding of the possible benefits to a person's lifetime mental health resulting from continued education beyond high school.

**What risks might you experience from being in this study?**

The risks involved in this study are minimal, which means they are equal to the risks you would encounter in everyday life.

**How will personal information be protected?**

The records of this study will be kept private. Research records will be stored securely, and only the researcher will have access to the records. Participant responses will be anonymous, as guaranteed by the Prolific Academic platform. All study data will be stored for a federally mandated period of three years within an encrypted, password-protected USB drive kept in a fireproof safe within the researcher's principal residence.

**How will you be compensated for being part of the study?**

Participants will be compensated for participating in this study at the rate agreed upon within the Prolific.co platform. Payment will be made only for the honest and accurate completion of the following survey. No payment will be made for partial or incomplete surveys. Upon survey completion, you will be provided a completion code to enter within the Prolific Academic platform. Once your survey is approved, payment will be remitted to you according to Prolific Academic's payment policies.

**Is study participation voluntary?**

Participation in this study is voluntary. Your decision about whether to participate will not affect your current or future relations with Liberty University. If you decide to participate, you are free to refuse to answer any question or withdraw at any time prior to submitting the survey without affecting those relationships.

**What should you do if you decide to withdraw from the study?**

If you choose to withdraw from the study, please exit the survey and close your internet browser. Your responses will not be recorded or included in the study.

**Whom do you contact if you have questions or concerns about the study?**

The researcher conducting this study is Anthony Babbitt, Ph.D.(c), M.S. You may ask any questions you have now. If you have questions later, you are encouraged to contact him at email@redacted.edu. You may also contact the researcher's faculty sponsor, Dr. Gary Kuhne, at email@redacted.edu.

**Whom do you contact if you have questions about your rights as a research participant?**

If you have any questions or concerns regarding this study and would like to talk to someone other than the researcher, you are encouraged to contact the Institutional Review Board, REDACTED, or email at email@redacted.edu

**Your Consent**

Before agreeing to be part of the research, please be sure that you understand what the study is about. You can print a copy of this page for your records. If you have any questions about the study later, you can contact the researcher using the information provided above.

- ☐ I have read and understood the above information. I consent to participate in the study.
- ☐ I DO NOT consent to participate in the study. Please end the survey.

### **Appendix C: Prolific Academic Screening Questions**

The following three questions were used to verify participants' qualifications for inclusion within the study and assignment to the appropriate quota group. Prolific Academic initially screened all participants. Per Prolific Academic's recommendations, all participants were re-screened within the Qualtrics survey platform. The additional screening was performed in case a participants' qualifications had changed since enrolling in the Prolific Academic platform (e.g., a participant had moved out of the United States, or a participant held only a bachelor's degree when registering but has since completed a master's degree.).

**Are you age 18 or older?** (Must select Yes to proceed.)

- ☐ Yes
- ☐ No

**Do you currently reside within the United States?** (Must select Yes to proceed.)

- ☐ Yes
- ☐ No

**Which of the following degrees and diplomas have you earned, if any?**

- ☐ GED (Graduate Equivalency Diploma)
- ☐ High School Diploma
- ☐ Associate's Degree
- ☐ Bachelor's Degree
- ☐ Master's Degree
- ☐ Doctoral Degree
- ☐ None of the Above - No Formal Qualifications

Selecting 'No' to the first two questions resulted in the participant being removed from the study before the survey was delivered. The third question was used to assign participants to the appropriate quota group. Only the highest level of education was used to place participants within the correct quota group. The responses to the third question were later compared to participants' graduation date responses within the demographic survey to verify quota group assignment and response integrity.

## **Appendix D: Demographic Survey**

**In which state do you currently reside?** (to calculate US region)

- ☐ (All 50 states listed alphabetically)

**In what month and year were you born?** (to calculate age)

- ☐ Month and year

**What is your biological gender?**

- ☐ Female
- ☐ Male

**What is your ethnicity?**

- ☐ Asian
- ☐ Black
- ☐ Hispanic
- ☐ Native American
- ☐ White
- ☐ Other

**What is your marital status?**

- ☐ Divorced or separated
- ☐ Married or Co-habiting
- ☐ Single
- ☐ Widowed

**What is your current employment status?**

- ☐ Full-Time
- ☐ Part-Time

- ☐ Seeking or Unemployed
- ☐ Retired
- ☐ Student
- ☐ Other

**What is your approximate household income?**

- ☐ Less than \$25,000
- ☐ \$25,000 - \$50,000
- ☐ \$50,000 - \$100,000
- ☐ \$100,000 - \$200,000
- ☐ More than \$200,000

**Have you experienced any of the following events in the past twelve (12) months? (multiple choices possible)**

- ☐ Job Loss or Retirement
- ☐ Bankruptcy or Foreclosure
- ☐ Death of Loved One
- ☐ Divorce or Breakup
- ☐ Move or Relocation
- ☐ Major Illness or Injury
- ☐ None of the Above. No to all.

**Educational Attainment & Graduation Dates:** (only relevant options displayed based on participants' quota group)

- ☐ **HS Diploma or GED:** Graduation month and year
- ☐ **Associate's Degree:** Graduation month and year

- ☐ **Bachelor's Degree:** Graduation month and year
- ☐ **Master's Degree:** Graduation month and year
- ☐ **Doctoral Degree:** Graduation month and year

**Are you currently enrolled in a degree-earning educational program? Yes / No**

**(If Yes) What level of program are you currently enrolled?**

**Degree Program:**

- ☐ Associate's
- ☐ Bachelor's
- ☐ Master's
- ☐ Doctoral

**Percent Complete:**

- ☐ 0%-25%
- ☐ 26%-50%
- ☐ 51%-75%
- ☐ 76%-100%

Final question after the survey:

**Based on the levels defined, please type your current level of need satisfaction:**

(Participants must type a response either *physiological*, *safety-security*, *belongingness*, *esteem*, or *self-actualization*. Definitions of each level are provided above the question.)



## **Appendix E: FNSM Participant Instructions**

You need a basic understanding of need fulfillment to complete this survey. This survey assumes we all share common needs. Deciding whether a need is satisfied or not is mainly determined by how reliably a need is satisfied or if it is satisfied at all.

### **1. When to select "Completely Satisfied" or "Partially Satisfied":**

Once a need is satisfied, it becomes less important, and you start focusing on other needs. If you are thirsty, hungry, and cold, you will usually drink water first. Now you are not thirsty and can focus on your hunger or coldness. Once you eat, you can focus on not being cold.

Even though you will be hungry and thirsty again in a few hours, if you have a reliable source of food and water, these needs are partially or completely satisfied. Another example is if you have a relationship/spouse but it could be better. This need would be partially satisfied. If you are reliably engaging in sexual activity (even if only with yourself) but would like it to be better, this need would be partially satisfied.

If your needs are met reliably, and you have no desire to make them better, these needs are completely satisfied. For example, you have a reliable supply of good food and clean water, or you have a reliable relationship/spouse and/or sex-life that you do not want to improve. These needs are completely satisfied.

Partially satisfied needs are reliably satisfied but could be improved. Completely satisfied needs are reliably 100% satisfied. Most needs must only be partially satisfied before you begin working on other needs.

### **2. When to select "Partially Unsatisfied" or "Completely unsatisfied":**

We all share needs that remain unsatisfied because we are focused on more urgent needs, like thirst, hunger, and shelter. For instance, you may not have a reliable source of heat during

cold weather. Sometimes you have a warm shelter, but it may not be reliably warm. Your need for warmth is partially unsatisfied. If sometimes you have a relationship/spouse or engage in sexual activity (even with yourself), but not reliably, these needs are partially unsatisfied.

Similarly, if you do not have a relationship/spouse, this need is completely unsatisfied even if you are not seeking a relationship/spouse. If you are not engaging in sexual activity (even with yourself), this need would be completely unsatisfied. If you never have heat during cold weather, your need for warmth is completely unsatisfied.

Partially unsatisfied needs are satisfied sometimes, but not reliably. Completely unsatisfied needs are never satisfied, even if you never try to satisfy them.

### **3. When to select "No Opinion":**

"No Opinion" should be selected if you do not recognize the need or if you do not understand the question. If you mark "No Opinion" too many times, you may be contacted after the survey to clarify the questions you did not understand.

### **PLEASE READ THE INSTRUCTIONS ABOVE!**

After reading the information above, how satisfied are you that you understand the instructions?

- ☐ Completely Unsatisfied
- ☐ Partially Unsatisfied
- ☐ No Opinion
- ☐ Partially Satisfied
- ☐ Completely Satisfied

(The first three options end the survey and remove the participant from the study. Only participants who selected *Partially Satisfied* or *Completely Satisfied* were allowed to proceed.)

## **Appendix F: Five Need Satisfaction Measure**

Responses to each question on the first four scales utilize a 4-point Likert scale:

1 – Completely Unsatisfied   2 – Partially Unsatisfied   3 – No Opinion   4 – Partially Satisfied  
5 – Completely Satisfied

### **Physiological Needs Satisfaction Scale:**

1. I am satisfied with the quality of the food I eat every day.
2. I am satisfied with the amount of food that I eat every day.
3. I am satisfied with the quality of the water I drink every day.
4. I am satisfied with the amount of water that I drink every day.
5. I am satisfied with the amount of heating I have when the weather is cold.
6. I am satisfied with the amount of cooling I have when the weather is hot.
7. I am satisfied with the quality of the air I breathe every day.
8. I am satisfied with the amount of sex I am having.
9. I am satisfied with the quality of sex I am having.
10. I am satisfied with every aspect of my physical health.
11. I am satisfied with the amount of sleep I get to feel thoroughly relaxed.
12. I am satisfied with the quality of sleep I get to feel fully refreshed.
13. I am satisfied with the amount of exercise I get to keep me healthy.
14. I am satisfied with the type of exercise I get to keep my body toned.
15. I am satisfied with my overall physical strength.

### **Safety-Security Needs Satisfaction Scale:**

1. I am satisfied with the quality of the house/apartment I am living in.
2. I am satisfied with the space available for me in my house/apartment.

3. I am satisfied with how secure I am in my house/apartment.
4. I am satisfied with how safe I am from being physically attacked.
5. I am satisfied with the safety of my neighborhood.
6. I am satisfied with how safe I am from catching any diseases.
7. I am satisfied with how secure I am from disasters.
8. I am satisfied with how protected I am from dangers in the environment.
9. I am satisfied with the protection that the police provide for me.
10. I am satisfied with the protection that the law provides for me.
11. I am satisfied with how safe I am from destructive terrorist acts.
12. I am satisfied with how safe I am from acts of war.
13. I am satisfied with my financial security.
14. I am satisfied with my ability to get money whenever I need it.
15. I am satisfied with the money I reserved for me to have a secure retirement.

**Belongingness Needs Satisfaction Scale:**

1. I am satisfied with the amount of rapport I share with the people I know.
2. I am satisfied with the quality of the relationships I have with my friends.
3. I am satisfied with the love I receive from my spouse/partner.
4. I am satisfied with the intimacy I share with my immediate family.
5. I am satisfied with the camaraderie I share with my colleagues.
6. I am satisfied with how much I am welcomed in my community.
7. I am satisfied with the warmth I share with my relatives.
8. I am satisfied with the emotional support I receive from my friends.
9. I am satisfied with the feeling of togetherness I have with my family.

10. I am satisfied with how much I am cared for by my spouse/partner.
11. I am satisfied with the happiness I share with my companions.
12. I am satisfied with the sympathy I receive from my confidants.
13. I am satisfied with the enjoyment I share with associates.
14. I am satisfied with the affection shown to me by my friends.
15. I am satisfied with the closeness I feel with my associates.

**Esteem Needs Satisfaction Scale:**

1. I am satisfied with the admiration given to me by others.
2. I am satisfied with the honor that many people give me.
3. I am satisfied with how much other people respect me as a person.
4. I am satisfied with the prestige I have in the eyes of other people.
5. I am satisfied with how highly other people think of me.
6. I am satisfied with the high esteem that other people have for me.
7. I am satisfied with the recognition I receive from various people.
8. I am satisfied with the high regard that other people have for me.
9. I am satisfied with how much I like the person that I am.
10. I am satisfied with how sure I am of myself.
11. I am satisfied with how much respect I have for myself.
12. I am satisfied with all the good qualities I have as a person.
13. I am satisfied with my sense of self-worth.
14. I am satisfied with the amount of esteem I have for myself.
15. I am satisfied with how positive I feel about myself as a person.

Responses to each question on the Self-Actualization Scale utilize a 4-point Likert scale:

1 – Strongly Disagree 2 – Disagree 3 – No Opinion 4 – Agree 5 – Strongly Agree

**Self-actualization Needs Satisfaction Scale:**

1. I am totally comfortable with all facets of my personality.
2. I feel that I am completely self-fulfilled.
3. I am now being the person I always wanted to be.
4. I am finally realizing all of my innermost desires.
5. I indulge myself as much as I want.
6. I am now enjoying everything I ever wanted from my life.
7. I completely accept all aspects of myself.
8. My actions are always according to my own values.
9. I am living my life the way I want.
10. I do the things I like to do whenever I want.
11. I am actually living up to all my capabilities.
12. I am living my life to the fullest.

### **Appendix G: Permission To Use FNSM**

Created: Wed, Sep 25, 2019, at 6:39 PM (Delivered after 17 seconds)

From: "Robert Joseph Taormina" <email@redacted.edu>

To: "Babbitt, Anthony" <email@redacted.edu >

Subject: Re: The Five Need Satisfaction Measure.

Dear Mr. Babbitt,

Thanks for being interested in my Maslow measure. You said you were reading the article, but did not say where or how much of it.

I ask that question because the measure is in the Appendix of that article. If you did not see it, I am attaching a PDF copy for you. The measure can be found on Pages 176 & 177.

You may use it, as long as you cite it properly and completely in your writings.

Good luck with your study!

Prof. Robert Taormina

Professor Robert J. Taormina

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Emeritus Full Professor of Psychology

Chartered Psychologist (Brit. Psych. Society)

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