

AN INVESTIGATION OF THE RELATIONSHIP BETWEEN ACADEMIC ACHIEVEMENT
AND HIGH SCHOOL STUDENTS' PERCEIVED LEVEL OF
SATISFACTION OF NEEDS IN SELECTED
SOUTHEAST TENNESSEE SCHOOLS

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ABSTRACT

“Lack of motivation is a real and pressing problem. Upwards of 40 percent of high school students are chronically disengaged from school” (Crotty, 2013, para. 3). This problem highlights the purpose of this research, which was twofold. First, the research was designed to develop an assessment to measure students’ level of needs satisfaction using Maslow’s Hierarchy of Needs. Secondly, the assessment instrument was used to investigate the relationship between the level of satisfaction of needs and the academic achievement of high school students.

The theoretical basis for this research was Maslow’s Hierarchy of Needs, which was classified as an aspect of humanistic motivation theory (Schunk, 2011; Weiner, 1992). Humanistic motivation is based on the study of the whole person, including self-awareness and personal choices (Schunk, 2011). The Hierarchy of Needs is a pyramid with the most primal needs at the base, and the more complex toward the top. This hierarchy consists of five tiers of needs: physiological, safety, belonging, esteem, and self-actualization (Maslow, 1943; Schunk, 2011; Weiner, 1992).

The Need Satisfaction Assessment for Students (NSAS) was developed based on the seminal work of Abraham Maslow (1943) and his Hierarchy of Needs. A pilot was conducted in one high school in 2013 to ensure reliability and validity. This assessment was used to identify which of the students’ need(s) were satisfied. These needs and items from the NSAS were then analyzed with the students’ academic achievement in an attempt to find relationships.

The results from this research revealed statistically significant findings. Two items from the NSAS had a statistically significant relationship with academic achievement: “When I use the bathroom it is not because I feel sick ($p = .003$).” and “I do not eat enough to stay healthy ($p = .008$).” There was also a statistically significant relationship between the father’s education level and the student’s academic achievement ($p = .016$). Another statistically significant relationship was found between athletic participation and the following need domains: Safety and Relationship Needs ($p = .001$) and Esteem and Physiological Needs ($p = .008$).

DEDICATION

I would like to dedicate this research to my family for supporting me emotionally and physically during this process. My wife, Lindsay, was always there as a sounding board and coach when I just got tired. My son, Jack, your unending positivity and love motivates me to be the best possible version of myself. My parents, Mark and Beth, in different ways provided me with excellent examples of what hard work and diligence can produce. I would also like to dedicate this research to my Papa and Bubby, Jack and Mozelle, who pushed me to do better and try to change the world. My Grandma and Grandpa, Donna and Michael, who always instilled in me that everyone is deserving of love and patience. Finally, my brother, Josh, your passion for life is truly infectious and makes me want to seize the world. I love you all very much!

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LIST OF ABBREVIATIONS

EOC, End of Course Test

EPN, Esteem and Physiological Need

GPA, Grade Point Average

ID, Identification

IRB, Institutional Review Board

NSAS, Need Satisfaction Assessment for Students

SLN, Selflessness Need

SRN, Safety and Relationship Need

SPSS, Statistical Package for the Social Sciences

TVAAS, Tennessee Value-Added Assessment System

CHAPTER I

INTRODUCTION

“One of the most prominent academic problems plaguing today’s teenage youth is a lack of motivation toward academic activities” (Legault, Green-Demers, & Pelletier, 2006, p. 567). In general, academic motivation decreases as the students’ ages increase as they progress through school. It is important to note that schools do not control all of the factors which contribute to a student’s academic motivation. The balance of these contributing factors is controlled by the student’s family and community (Engagement & Learn, 2003).

Abraham Maslow’s Hierarchy of Needs explains the importance of family and community relationships using the concept of humanistic needs (Maslow, 1943; Maslow, Frager, Fadiman, McReynolds, & Cox, 1970; Maslow & Lowry, 1968; Schunk, 2011; Weiner, 1992). These needs begin with the most primal physiological needs necessary for survival. Once these needs are met, they evolve to include safety needs, love and belonging needs, esteem needs, and self-actualizing needs (Maslow, 1943; Maslow et al., 1970; Maslow & Lowry, 1968).

Research findings reveal humanistic needs, in the form of family and community support, impact student academic motivation (Gonzales, 1996). While these needs correlate positively with academic achievement, further research into other humanistic needs, which yield the same academic results, is warranted. Legault et al. (2006) reveal its importance by stating, “The question is what motivates students to achieve is central to education and educational

psychology” (p. 567). In other words, the central issue of the current educational system is to find what motivates the students to succeed academically.

In order to find a method to accurately define students’ satisfied needs, a scale must be used for this research; after a search of existing research, no such scale was found. This led to the creation of the Need Satisfaction Assessment for Students (NSAS). The theoretical basis for the NSAS is the seminal work of Abraham Maslow (1943) and his Hierarchy of Needs. This assessment should be able to identify which of the students’ needs are satisfied in an attempt to correlate the students’ level of need satisfaction and their academic achievement.

Statement of the Problem

Lack of academic interest and motivation in high school students is a real and pressing problem facing students in the United States’ educational system (Crotty, 2013). Research has been conducted to explore reasons for this statistic. One study of schools explored students’ perception of their danger risk at school and academic achievement. This perception of their safety is a humanistic need that did not indicate whether or not the student was in actual danger, rather it was only how the student felt. The results revealed that as the students’ perceived danger increased, their academic achievement decreased (Bowen & Bowen, 1999). Another study’s results revealed a student’s sense of belongingness, another humanistic need, is linked positively with academic achievement (Gonzales, 1996; E. Kim & Irwin, 2013). This information highlights the main desire of educators, which is to find which satisfied needs correlate with academic achievement.

Purpose of the Study

The purpose of the study is twofold. First, the researcher intends to develop an assessment to measure students' level of needs satisfaction. The second purpose of this study is to investigate the relationship between the level of satisfaction of needs and the academic achievement of high school students in Hamilton County, located in southeast Tennessee. The goal is to determine if the satisfaction of certain needs demonstrates a relationship with student academic achievement.

Primary Research Questions

1. What is the relationship between high school students' academic achievement level and the level of need satisfaction?
2. Are there specific needs that are present at specific achievement levels of high school students?
3. What is the relationship between the following variables and the students' level of need satisfaction?
 - a. Ethnicity
 - b. Gender
 - c. Grade Level
 - d. Socioeconomic Status

Secondary Research Questions

1. What is the relationship between academic achievement and the following extraneous variables?

- a. Student's Number of Siblings
 - b. Parent/Guardian Education Level
2. What is the relationship between the students' level of need satisfaction and the following extraneous variables?
 - a. Student's Number of Siblings
 - b. Parent/Guardian Education Level
3. Is there a difference in the need satisfaction of students based on whether or not they are involved in a school athletic program?

Rationale for the Study

The rationale for this study is to discover which, if any, satisfied needs motivate students toward academic achievement. Some students desire to succeed academically, while others are motivated toward other activities. However, not all of the other activities are beneficial for the students or their communities (O'Brien, Daffern, Chu, & Thomas, 2013). The importance of the research is to determine which satisfied needs, if any, contribute to the academic achievement of high school students.

Theoretical/Conceptual Framework

The theoretical basis for this research is Maslow's Hierarchy of Needs (see Figure 1.1), a humanistic motivation theory. The theory of humanistic motivation is based on the study of the whole person, which includes one's self-awareness and choices (Schunk, 2011). The Hierarchy of Needs is a pyramid in which the most primal needs exist at the base, with the needs becoming more complex as one moves toward the top of the pyramid. The hierarchy consists of five tiers:

physiological, safety, belonging, esteem, and self-actualization (Maslow, 1943; Schunk, 2011; Weiner, 1992). Once a person's basic needs are met, the individual seeks to satisfy needs in the next level of the hierarchy (Maslow, 1943; Schunk, 2011; Weiner, 1992). However, Maslow (1943) theorized higher tier needs may be sought before all lower level needs are met. This theory posits there is a higher percentage of unmet needs at the upper levels of the hierarchy when compared to the lower levels (Maslow, 1943). In other words, all needs are not required to be satisfied on the second tier before the needs of the third tier are sought, but there will be more needs met within tier two when compared to tier three.

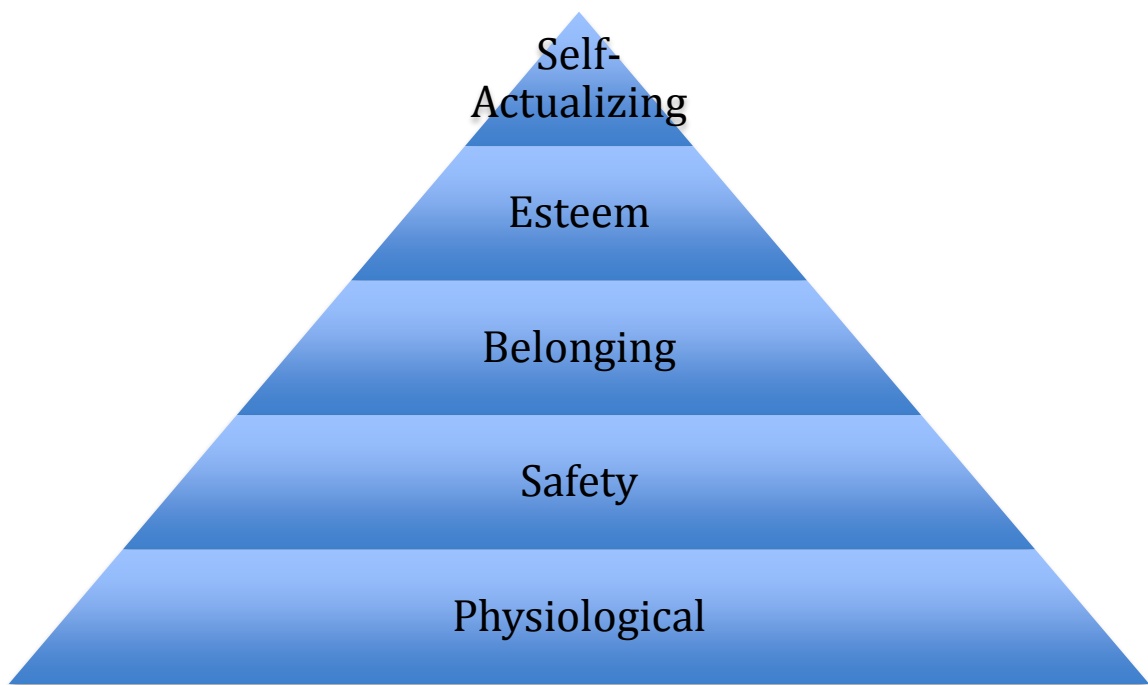


Figure 1.1 Maslow's Hierarchy of Needs

Furthermore, needs may be rearranged depending on the individual's values, the culture's values, or they may change as the person progresses through life (Maslow, 1943). This adjustment may be the result of a major life change such as a marriage, the birth of a child, or a

career change. The reprioritizing of needs depends on the perception of what the person deems important and the Hierarchy of Needs becomes readjusted (Maslow, 1943). For instance, a high school student makes the decision to skip lunch in order to go to the gym to work with the basketball team on their plays. In this case, the student has chosen to bypass lunch and leave the hunger need unsatisfied (tier one) to work with the team (tier three). In this scenario, a tier three need has been satisfied rather than a tier one need. However, this may not be a permanent change in the person's Hierarchy of Needs. Also, according to Maslow's (1943) theory, a higher percentage of the tier one needs will be met in relation to the student's tier three needs.

Tier one needs are classified as physiological needs. These needs are necessary to maintain homeostasis and ensure survival (Maslow, 1943; Maslow et al., 1970; Maslow & Lowry, 1968). In order to maintain homeostasis, the individual satisfies the needs necessary for the body to maintain normal processes such as digestion, breathing, excretion, and metabolism. These needs include sleep, food, water, oxygen, and sex. It is important to note while the topic of sex was used in Maslow's study of adults, this research will not incorporate the topic of sexual needs due to the age of the participants (Maslow, 1943).

The second tier is the group of safety needs. These needs could be physical, mental, or financial (Maslow, 1943). For example, a student works 30 hours each week in addition to attending school each day. The student feels the need to work because the added money provides the student with financial stability and security. This financial security allows the student to not worry about having enough money to participate in whatever activities s/he chooses. This financial security is what drives the student to work so many hours beyond school responsibilities.

Tier three needs are categorized by an individual's sense of belonging. This could be the love of family, friends, or membership on a team or in an organization (Maslow, 1943). For instance, a tier three need was reflected in the desire of a student to change the way s/he dresses in order to fit in with their peers. The need to belong to this group drives the individual to make this change.

In tier four, the individual focuses on self-esteem. At this point, the person becomes focused on earning respect and begins to covet awards. These actions are signified by an increased confidence in one's abilities (Maslow, 1943). For example, a student seeking to satisfy tier four needs will work tirelessly for the respect of the teachers. This desire to earn respect will cause the student to stay afterschool for tutoring, volunteer to help the teacher, and/or take advantage of any extra credit assignments.

The final and most difficult tier to achieve is the self-actualizing needs of tier five. These needs describe an individual's desire to become one with nature, people, and/or the world. This could be accomplished by playing music, landscaping, or searching the universe for the reason of being (Maslow, 1943).

Need Satisfaction Assessment

A search was completed to find an existing assessment of needs aligned with Maslow's Hierarchy of Needs. The search yielded no usable results. Therefore, in order to properly assess the students' needs, an instrument was created called the Need Satisfaction Assessment for Students (NSAS). This assessment was developed to measure the level of satisfaction of needs of high school students. The NSAS consists of 48 items and describes different tiers of Maslow's Hierarchy (Maslow, 1943). The participant scores each item using a 7-point Likert scale. Each

individual item was designed to address only one topic of a particular tier on Maslow's Hierarchy. In other words, the NSAS does not contain any items that address multiple topics within one or more tiers of the hierarchy.

Significance of the Study

The goal of the research is to find what needs, if any, are present or absent in students who achieve academically. The purpose of this study is to determine which needs, if any, are perceived to be satisfied in students at different levels of academic achievement. The significance of the study is to explore the connection between satisfied needs and academic achievement. A successful connection will provide stakeholders an avenue to increase student motivation based on the research results. Currently there are educational programs focused on the satisfaction of these students' needs.

Humanistic theory is the basis of educational programs used across the United States designed to provide help to our nation's students in need (Desautels, 2014). These programs include Head Start and the federally funded Title 1 free or reduced lunch program (Families, 2014; Gunderson, 2013). During the 2012-2013 school year, 964,000 students were enrolled in the Head Start Program and 31 million students received free or reduced lunches each day in the United States ("Head Start," 2014; "National school lunch program," 2013). The free and reduced lunch program had an operating cost of \$11.6 billion in 2012 ("National school lunch program," 2013). For the 2012 school year, the Head Start Program received just under \$8 million of federal funding ("Head start program facts fiscal year 2012," 2014).

Research findings from the Head Start Program showed by the end of the first grade any positive measures of the program had dissolved when compared to the control group (Puma et

al., 2010). The free and reduced lunch program research findings have yielded similar results. Students who participated in the program had worse health outcomes when compared to similar students. However, the same study revealed food insecurity was reduced by 6%, poor health by 33%, and obesity by 21% (Gundersen, Kreider, & Pepper, 2012).

The significance of the study is to take the existing knowledge of motivation theory, from a Humanistic standpoint, and postulate what extrinsic motivational needs, if any, play a defining role in student academic achievement. The NSAS will be used to identify humanistic domains, which will be used to determine if there is any correlation between the satisfaction of participant needs and to what extent they achieve academically.

Definition of Terms

- Amotivation is defined as a scenario when no connection is made between outcomes of tasks or projects and the efforts of the individual (Deci, 1992; Deci & Ryan, 2008).
- Belonging needs are described as a person's desire to feel as if they are a part of a group or groups (Maslow, 1943).
- End of course (EOC) exam is defined as a test given to a student at the conclusion of the high school course. Examples of these courses are math, United States history, English, and biology (Domaleski, 2011; "Student Assessment in Tennessee," 2014)
- Esteem needs are the individual's desire to be respected and earn honors (Maslow, 1943).
- Goals are defined as an end point of a task in which effort or energy was used to complete it (Schunk, 2011).
- Academic achievement is defined by student cumulative GPA (Fan & Chen, 2001; Jeynes, 2003; K. Kim & Rohner, 2002).

- Love needs are described as a person's belief that they are loved (Maslow, 1943).
- Motivational factors, for the purpose of this research, are defined by the investigator as factors or needs which, when left unsatisfied, stimulate the individual into action in an attempt to fulfill those particular factors or needs (Bassy, 2002; Chalofsky & Krishna, 2009; Huitt, 2001b).
- Motivation is defined as a drive, force, stimulus, or influence an individual uses to decide what task should be attempted. It is what guides and maintains an individual's push to complete a project (Schunk, 2011).
- Physiological needs are homeostatic needs necessary for survival (Maslow, 1943).
- Qualtrics is an online service that allows one to create online surveys. Once these surveys have been taken by the sample the responses can be exported into SPSS for statistical analysis ("Qualtrics Research Suite," 2016)
- Safety needs are the individual's perception of one's own safety. This includes feeling safe at home and at school as well as having a sense of financial security (Maslow, 1943).
- Self-actualizing needs of an individual are needs which, when accomplished, leave the person feeling at one with the universe, helping humanity, and/or satisfying the person's true purpose for being on this planet (Maslow, 1943).
- Self-efficacy is having confidence in one's abilities and using it to complete challenging obstacles. The person is able to rebound and use defeats and unsuccessful attempts to grow as a learner and to develop an interest or motivation in one's tasks (Bandura, 1997).
- Self-esteem is defined as an individual's overall self-worth or personal value (Schunk, 2011).

- Self-worth is defined as an individual's value for oneself in the completion of tasks and projects (Schunk, 2011).
- Tennessee Value-Added Assessment System (TVAAS) measures the impact teachers and schools have on students' academic achievement (W. L. R. Sanders, J.C., 1996).

Methodological Assumptions

Several methodological assumptions were considered in the research.

- The first assumption was that the sample used to conduct the research accurately reflected the population. To account for this assumption, the participating schools were located in varying locations (i.e., rural, urban, and inner city).
- The second assumption was that the data received from the Department of Education were accurate and trustworthy.
- A third assumption was that all students were given equal opportunity to participate in the research at each location.
- The final assumption made was that students did respond honestly.

Delimitations of the Study

1. Students being assessed attended multiple schools within the Hamilton County Public School System.
2. Purposive sampling was used to identify participant schools. Contact was made with the administrator(s) of each high school in Hamilton County, Tennessee, in order to recruit an appropriate number of participants.
3. Student grade point averages (GPA) were to measure academic achievement.

Limitations of the Study

1. The sample of respondents was not as large as originally desired due to absences and lack of consent.
2. The NSAS was administered to males and females regardless of ethnicity. This process led to a skewed sample of a particular ethnicity.
3. Students who were absent on the day the NSAS was administered did not participate in the research.
4. The participating schools (i.e., urban, rural, or suburban) were not equally distributed by location.
5. The number of siblings of the participants was not used as a variable due to lack of differentiation among the data.
6. The variable class start time was not used in statistical testing as a variable because of the homogeneity of the sample schools.
7. The following extraneous variables were not used in the study due to the difficulty in obtaining the data: Special education status, classroom size of students, and teacher experience.
8. The variable class scheduling was not used due to the difficulty in identifying the exact schedule. At this time there are too many different schedules used by the county and this variable would be too difficult to discern if this were the true reason for the effect on academic achievement or if it were due to the instructor, school culture, or any other school specific specialty.
9. The variables prerequisite course knowledge, school attendance, and teacher quality were not used because of the sensitive nature and difficulty in obtaining the data.

10. GPA was used instead of EOC scores because the data obtained from the EOC scores were sporadic. There were few students that had taken the same test, which would make academic achievement comparison impossible.

CHAPTER II

LITERATURE REVIEW

Introduction

A large body of literature focusing on the topic of motivation theory is the basis for the current study. This section will explain the search process in reviewing literature and examining the theoretical and empirical studies in the field. The literature review will link the concepts of need satisfaction and the scores of high school students on end of course test assessments.

Humanistic Views of Motivation

“It is quite true that man lives by bread alone – when there is no bread. But what happens to man’s desires when there is plenty of bread and when his belly is chronically filled” (Maslow, 1943, p. 375). This choice of what an individual does once their need to eat has been satisfied is governed by the present need of the individual. According to Maslow (1943), this need can be categorized into one of five groups: physiological needs, safety needs, love needs, esteem needs, and the need for self-actualization. The foundation of the hierarchy and the most basic and primal of needs are physiological needs. The needs continue up the hierarchy with safety, love, and esteem. Finally, the pinnacle of the Hierarchy of Needs is self-actualization (Maslow, 1943).

A person’s physiological needs, the base of the pyramidal humanistic hierarchy of motivation, are characterized by what the individual must do in order to maintain normal body homeostasis. This could be eating, drinking, maintaining body temperature, rest, activity, and/or

sex (Maslow, 1943). Physiological needs are considered our most primal of needs. They determine whether or not the organism or species will survive. These physiological needs are similar to what was described by Hull (1944) as primary needs. These primary needs are necessary for survival. “For example, of course hungry people are concerned with little else besides finding food” (Neher, 1991, p. 91). In other words, because hunger is a basic physiological need necessary for survival, the motivation for satiety will be greater than nearly any other need.

The safety needs of an individual occupy the second tier of the hierarchy. These needs are predicated by the person’s desire to protect one’s self, family, property, and health. Safety needs are not solely concerned with physical well-being. It could be leaving a mentally abusive relationship. Also in an adult, the desire to satisfy this need can be viewed in the person’s motivation to find a dependable job, obtain insurance for the self/family/property, and manage a savings account (Maslow, 1943). For example, a student was bullied in the lunchroom will avoid the same area for fear of being bullied again. This desire to avoid the bully and another confrontation aids the student in the satisfaction of safety needs.

The third tier of the hierarchy describes the person’s need for love and/or belongingness. This level of needs is characterized by the desire to be loved by another person or belong to a group. Needs at this level are focused on the passion to build relationships. These relationships may occur with an individual or a group. This could be anything from a spouse to a club, a team, or even a gang (Poston, 2009). The idea is once physiological and safety needs are met, the individual will then long for the companionship of someone else (Maslow, 1943).

Esteem needs occupy the fourth tier of the hierarchy. These needs can be summarized as a person’s desire to have the respect of others, as well as having respect for one’s self. (Maslow,

1943). Esteem needs begin with satisfying one's ego, which centers on the desire to be respected by others. Validation is often needed in this area of esteem need satisfaction. Once the ego has been satisfied, the individual seeks self-respect (Poston, 2009). The self-respect described within the fourth tier is manifested by an individual's self-efficacy and self-esteem. Self-efficacy refers to the set of beliefs an individual possesses based on his abilities (Bandura, 1997). These beliefs are used cognitively by an individual when deciding whether or not s/he should accomplish a task. If the task represents an action the person can produce from a skill set, then one's self-efficacy would be considered high. The respect of others can be observed by the person's longing to obtain prestige and hold a desired reputation. Satisfied needs on this level lead to increased self-worth and self-confidence (Maslow, 1943).

The fifth and final tier of the hierarchy is the person's need for self-actualization. At this point, the individual realizes what s/he desires to accomplish and is motivated toward this task (Maslow, 1943). In other words, the person has a motivation to spend his/her time fulfilling those needs the individual perceives as his/her life's purpose. Maslow (1943) sums up the fifth tier of the hierarchy by stating, "What a man *can* be, he *must* be" (p. 382). Maslow's quote portrays the concept of self-actualization by describing the importance of the person's perceived purpose. This perception is what the person can be, while the need to act on this perception is what the person must be.

The five tiers of the Hierarchy of Needs are further subcategorized into two groups: deficiency needs and growth needs. The deficiency needs subgroup is the first four tiers of the hierarchy. When these needs are not satisfied the person is left in a state of wanting. Growth needs, however, are needs that when satisfied lead to personal growth. An individual seeks growth needs once the deficiency needs are met (Huitt, 2001a).

The growth needs are subcategorized in ascending order by priority. The highest priority listed first: cognitive needs, aesthetic needs, self-actualization needs, and self-transcending needs. Similar to the lower levels of the hierarchy of needs, individuals are first motivated toward the higher priority needs until these needs are satisfied.

Cognitive needs are defined as the need to explore and understand concepts (Huitt, 2001a). An example of this need is to develop an understanding of a topic by showing interest in that topic. The interest, which drives the individual to continue to study a topic, exemplifies this growth need. The person desires to continue to seek knowledge and this desire becomes a prioritized need.

Aesthetic needs are defined as the desire for order and beauty (Huitt, 2001a). These needs are characterized by the individual attempting to find a relationship within the environment. The individual seeks self-actualization needs as one attempt to satisfy their own perception and reason for being (Huitt, 2001a).

The need of self-actualization defines what a person can accomplish. Maslow (1943) states, “A musician must make music, an artist must paint, a poet must write, if he is to be ultimately happy” (p. 382). In other words, a person is driven by the need to spend time doing what brings happiness. Finally, self-transcendence is a motivation to help others reach self-actualization and act beyond themselves (Huitt, 2001a; Maslow & Lowry, 1968). For example, some individuals seek a higher power through religion and use spirituality to guide their actions to act beyond themselves.

It is commonly believed an individual must meet all of the needs in one category before the person will become motivated to attempt a need in the next level of the hierarchy (Schunk, 2011). However, Maslow (1943) described his Hierarchy of Needs as a guide, not as a checklist.

He stated the hierarchies are completed as a percentage measure of satisfaction or dissatisfaction. In the majority of the adolescent and adult human population, there will be an increased level of need satisfaction as one moves down the hierarchy and an increased level of need dissatisfaction as one works up the hierarchy and approaches the needs for self-actualization (Maslow, 1943). The increased level of unsatisfied needs in higher tiers represents the needs, which the individual desires at the lower, more basic tiers.

Theoretically, once the lower tier needs become satisfied, the individual will seek to satisfy higher tier needs and work toward the satisfaction of self-actualizing needs. It is possible to strive for needs in all hierarchal levels, but there will be more unfulfilled needs or less satisfaction as one works up the pyramid. For example, two students prepare to take a 4 hour standardized test beginning at 8:00 A.M. One student goes to sleep at a reasonable time the night before in preparation for this test and receives the recommended 8 hours of rest. The other student only received 4 hours of sleep the night before the test because the student must work to help pay her family's monthly rent. During the exam, both students start well with high energy. However, the second student still must go back to work immediately following the test, so she falls asleep in the middle of the test. In the case of the first student it would appear her tier one and two needs are met, which allow her to focus and place priority on the standardized test. This could be to satisfy a tier three need, the desire to belong to a particular college or academic club, or a tier four need, the desire to earn respect and accolades for a superior test score. The second student, however, is lacking sleep, a tier one need, and has to work to help her family afford their rent, a tier two need. This student places her job and rest at a higher priority than her test score. She has placed higher priority in satisfying her tier one and two needs rather than seeking a possible tier three or four need.

Academic Achievement

Academic achievement has been used in many studies to gauge the success of a program, classroom management style, and teaching style (Cengiz Gulek & Demirtas, 2005; Gamoran, Porter, Smithson, & White, 1997; Lawrence & McPherson, 2000a; Okpala, Okpala, & Smith, 2001; W. L. Sanders & Horn, 1998). To accurately measure academic achievement, required data of several aspects of the student's personal and academic history are necessary. The data include the history of the student's family, community, and school in regards to academia, relationships, and finances (Rivkin, 2005; Sirin, 2005; Karl R White, 1982). Instead of attempting to secure the plethora of historical data, statisticians have chosen to define academic achievement as the "rate of learning over specific time periods" (Rivkin, 2005, p. 422).

Academic achievement was used by Sanders and Rivers (1996) to validate the results of the Tennessee Value-Added Assessment System (TVAAS). In this research, the students' achievement scores were correlated with the teacher of record in order to evaluate the effectiveness of the teacher. The measurement of academic achievement in Sanders and Rivers (1996) research was the students' state required EOC test.

In Sirin's (2005) meta-analysis correlating the socioeconomic statuses of students' families and the students' levels of academic achievement, state and national achievement tests and grade point averages (GPA) were used to measure academic achievement. In addition to these measures of achievement, White (1982) added class rank and intelligence quotient (IQ) measurements could define academic achievement. More importantly, "Single subject achievement measures, such as verbal achievement, math achievement, and science achievement, yielded significantly larger correlations than general achievement measures (e.g., GPA or a composite achievement)" (Sirin, 2005, p. 440). Other measures of academic achievement used in

research studies were word reading, highest grade level attained, IQ test, reading level, GPA, standardized test scores, and self-report of grades (Donnelly & Lambourne, 2011; Estes, Rivera, Bryan, Cali, & Dawson, 2011; MacCann, Fogarty, Zeidner, & Roberts, 2011; Nakamoto & Schwartz, 2010; Nikulina, Widom, & Czaja, 2011).

Humanistic Factors and Motivation

Gonzales, Cauce, Friedman, and Mason (1996) conducted a study to examine the ability of familial and peer relationships to counteract the possible negative influences of a high poverty neighborhood. From a humanistic standpoint, this research sought to examine if the love and belongingness needs of students were met by the students' family and friends. If these positive relationships were met this would lead to the perception of satisfaction of the youth's safety needs. In other words, the study was designed to determine if the satisfaction of these two tiers of the Hierarchy of Needs would result in the students' ability to become motivated by higher level needs such as esteem, rewards, and self-actualization (Maslow, 1943). Rewards in the school setting could be receiving a high grade on an assignment or praise from the teacher.

The research results revealed several key findings. First, there was no correlation between the students' family status, parenting relationships, and GPA. Another result indicated peer support (i.e., a sense of belongingness) had a positive relationship with the students' grades in low-risk neighborhoods. However, in high-risk neighborhoods there was no relationship between this peer support and academic achievement. In addition, the findings revealed no predictive behavior with adolescent academic achievement according to family income, parent education level, and number of parents in the students' homes. However, maternal presence and interest in the children's lives showed a significant correlation with students' academic achievement. In a

low-risk neighborhood this relationship is negative, while in a high-risk neighborhood the relationship is positive (Gonzales, 1996).

This relationship could be explained by the program “Moving to Opportunity” (Clampet-Lundquist, Edin, Kling, & Duncan, 2006). In this program, approximately 1,300 families were moved from high-risk neighborhoods to low-risk neighborhoods through the use of vouchers. This research revealed children with same-sex parent involvement succeeded at a higher rate in their new communities, and single mothers led the majority of the households from high-risk neighborhoods. Most of the males in the research did not have same-sex role models to guide them in their new environment (Clampet-Lundquist et al., 2006). Since these males had little to no male role models, the presence of a determined mother to influence her children helped in the explanation of why there was a correlation between maternal involvement and students’ academic achievement. However, low-risk neighborhood children benefited from greater autonomy in their schooling and less maternal influence (Gonzales, 1996). In other words, low-risk students benefit from greater autonomy, a tier five need, because their basic needs have been satisfied. On the other hand, high-risk students benefit from the strong maternal influence because it provides them with a degree of safety, respect, and/or esteem.

The results of Gonzales’s (1996) study correlate with the Humanistic view of motivation. The positive relationship between peer support and GPA suggest love and belongingness (tier three) of similar aged people play a pivotal role in the academic success of the student. However, this was only true in low-risk neighborhoods (Gonzales, 1996). The positive relationship between peer support and GPA revealed that since the need for the relationship has been filled, the relationship does not necessarily equate to positive academic results. There was an opposite effect on academic results when the peer relationship took place in a high-risk neighborhood

(Gonzales, 1996). The newly forged peer relationship may alter the individual's core values and change the path to self-actualization. However, this change in the students' path may not be for the positive, because the environment or culture in which the peer relationship occurs plays a pivot role in the academic success of the students (Gonzales, 1996; Maslow, 1943).

Finally, the family income level did not play a predicative role in the academic success of the student. For example, if a student does not understand or have an accurate perception of the true financial status of their family, then the financial safety needs do not belong in the second tier of the adolescent's Hierarchy of Needs. It is important to remember the sample for this study was only African-American students (Gonzales, 1996). The ethnicity of the population sample is important because extrapolation of this data may not be useful in research with a different ethnic sample. However, it does provide a valid starting point for future research on this matter.

CHAPTER III

METHODOLOGY

Description of the Population and Sample

The population of this research was defined as high school students. The purposeful sample was public high school students attending six Hamilton County Schools in southeast Tennessee. The participating students were male and female, regardless of ethnicity. In order to address all research questions, the six schools were selected to ensure all ethnic groups were represented in the research. All participants were required to obtain parental consent and complete a participant consent form in order to be able to participate in the research.

Identification and Classification of the Variables

The independent variable in this research was the students' scores on the Need Satisfaction Assessment for Students (NSAS). These data were interval. Each domain from the NSAS was compared to the students' academic achievement. The students' gender was used in an attempt to find commonalities in the students' academic achievement and scores on the NSAS. Since the gender of the students was either male or female, the data were nominal. Another independent variable in this research was the socioeconomic status of the students. This was determined by whether or not the child qualified for free or reduced lunch; therefore, these data were nominal. Finally, student ethnicity was used to investigate correlations between ethnicity, academic achievement, and NSAS scores. These data were nominal.

The dependent variable of this research was the academic achievement of the high school students. Academic achievement was identified by the students' cumulative GPA, which ranged from 0 to 4.0. The scale of measurement for this variable was ratio in nature.

There were numerous extraneous variables involved in this research. Teacher quality was ranked on a scale of 1 to 5 and was assigned to the teacher by a combination of their TVAAS scores and teacher observation results. This datum was ordinal due to the scale being ranked. School attendance of the student pertained to the number of absences the student incurred while enrolled in the course. Since zero absences was important and makes a difference in the datum, it was ratio in nature. Prerequisite course knowledge referred to the students' grade in the prerequisite course. Again because zero was a real part of the grade's scales the datum type was ratio. The special education status of the student was simply denoted with a "yes" or "no" which made the datum type nominal. The size of the classroom was nominal because the classes was grouped by the number of students as follows: 6-15, 16-25, 26-35, or 35 and up. Teacher experience was simply the number of previous years the teacher had taught the course. Since zero years' experience was important, the datum type was ratio. The time of class was nominal in nature because the datum was grouped by whether the course was in the morning or afternoon. The start time of school was also nominal because the times were grouped as follows: 7:00 to 7:59 AM, 8:00 to 8:59 AM, or 9:00 to 9:59 AM. The student's daily lunch was a nominal type because the datum was grouped by whether it was either purchased from school, made by the student at home, made by a guardian at home, or the student did not eat lunch. The number of siblings was ratio in nature because of the importance of having 0 siblings. The highest education level of the male and female parent or guardian of the students was ordinal because it was assumed the degrees must progress from one to the next giving them a rank. The grade level of

the student was nominal because the student was grouped by grade level. Finally the poverty status of the student was obtained by whether or not the student qualified for free or reduced lunch. Since these students were grouped, the datum was nominal. Independent, dependent, and extraneous variables are shown in Appendix A.

Many of the extraneous variables could not be used for various reasons. Teacher quality was not used due to the sensitive nature of teacher scores. School attendance could not be gathered in a consistent and comprehensive manner, so it was not used in this research. Prerequisite course knowledge was also not used because of the difficulty in obtaining these course grades. The special education status, classroom size of the students, teacher experience, time of class, and how the student's lunch was obtained were also not used due to difficulty obtaining consistent data. The start time of the school was not used due to a lack of differentiation among the data. Finally, the number of siblings was not used because there was a lack of differentiation among the answers to produce discernable results.

The students' level of need satisfaction was determined by using the standardization of each domain: Safety and Relationship Needs, Selflessness Needs, and Esteem and Physiological Needs. Each of these domains' cumulative scores was divided by the number of items in the NSAS, which made up the specific domain in order to standardize the scores.

Each standardized domain was analyzed using descriptive statistics. The means of the domains were used as a cutoff score to define whether or not the particular need of the student was met or unmet. A score below the mean showed the particular need domain was not met, while a score at or above the mean showed the need domain was met in the student.

The student's academic achievement was defined by the student's GPA. This GPA was then ranked by academic letter grade:

- 3.51-4.0 was deemed an "A" and was labeled as 1;
- 3.0-3.5 was deemed a "B" and was labeled as 2;
- 2.0-2.99 was deemed a "C" and was labeled as 3;
- 1-1.99 was deemed a "D" and was labeled as 4;
- 0 – .99 was deemed an "F" and was labeled as 5.

For the discriminant analysis, the GPA was used to determine whether or not the student obtained academic achievement. Academic achievement was met if the student had a GPA of 3.0 or above. This cutoff value was chosen because a 3.0 or higher represents an "A" or "B" average. An "A" has historically represented excellence and a "B" represents above average. The students' academic achievement was evaluated against their level of need satisfaction.

Primary Research Questions

1. What is the relationship between high school students' academic achievement level and the level of need satisfaction?
2. Are there specific needs present at specific achievement levels of high school students?
3. What is the relationship between the following variables and the students' level of need satisfaction?
 - a. Ethnicity
 - b. Gender
 - c. Grade Level
 - d. Socioeconomic Status

Secondary Research Questions

1. What is the relationship between academic achievement and the following extraneous variables?
 - a. Number of Siblings
 - b. Parent/Guardian Education Level
2. What is the relationship between the students' NSAS scores and the following extraneous variables?
 - a. Number of Siblings
 - b. Parent/Guardian Education Level
3. Is there a difference in the NSAS scores of students based on participation in a school athletic program?

Hypotheses/Null Hypotheses

A composite hypothesis is defined as a hypothesis which will test more than one variable or domain against multiple domains or variables (Feder & Merhav, 2002). The composite hypotheses of this research were as follows:

1. There will be a significant relationship in each of the NSAS domains (i.e., Safety and Relationship Needs, Selflessness Needs, and Esteem and Physiological Needs) and the measure of academic achievement used in this research (i.e., grade point average).
2. There will be a significant difference in each of the NSAS domains based on the following demographic variables:
 - a. Ethnicity
 - b. Gender

- c. Grade Level
- d. Socioeconomic Status

Composite null hypotheses were used because more than one variable domain were tested against multiple variables. The composite null hypotheses were as follows:

1. There will be no significant relationship in each of the NSAS domains (i.e., Safety and Relationship Needs, Selflessness Needs, and Esteem and Physiological Needs) and the measure of academic achievement used in this research (i.e., grade point average).
2. There will be no difference in each of the NSAS domains based on the following demographic variables:
 - a. Ethnicity
 - b. Gender
 - c. Grade Level
 - d. Socioeconomic Status

Composite null hypothesis one was analyzed using Pearson's correlation coefficient. Composite null hypothesis two was analyzed using two different statistical tests, depending on the level of the independent variable. Grade level and ethnicity were analyzed using the Analysis of Variance (ANOVA) test because there are more than two categories in these independent variables. Meanwhile, socioeconomic status and gender were analyzed using an independent samples *t*-test because there were only two categories in these independent variables. The *t*-test is used to compare the means of two populations.

Instrumentation

The NSAS (Appendix B) is an instrument designed to measure need satisfaction for high school students, and its creation was based on the theory of humanistic motivation, which is primarily the work of Abraham Maslow (1943). There was also an element of theory development used in the creation of the NSAS. The items were created based on the key concepts within each tier of Maslow's Hierarchy, as described in Maslow's (1943) Seminal work, *A Theory of Human Motivation*. Each level of the hierarchy was reviewed, and statements which described particular aspects of the specific level were written. Each item describes only one aspect of the level; in other words, there are no questions that describe multiple traits within a tier or multiple tiers within the hierarchy.

Content Validation of the NSAS

The content of the NSAS was validated by the use of experts in the field of Humanistic Psychology. These experts consisted of two doctoral candidates, one wellness coach, one school psychologist, two practicing psychologists, and one school counselor. The process of content validation involved frequent communication between the investigator and the experts.

Communication with the experts occurred individually. There was no collaborative meeting between the investigator and the experts (Caraccio, 2013).

The assessment was developed and delivered to the experts. The experts then considered each of the 59 Likert scale items, and responded with a yes or no. A comments section was available. A "yes" was marked if the assessment item fit the tier in which it was written. A "no" was marked if the assessment item did not fit the tier. Experts responded with comments to refine the statements to ensure they correlated appropriately with the specific tier. After the first

critique by the experts, the NSAS was restructured with few dropped or reworded items. The updated NSAS was then resent to the experts for analysis of content and face validity. Several comments were made regarding the wording of the items. After these wording alterations were complete, the experts gave a collective approval of the content of the NSAS. The content validation resulted in deletion of 11 assessment items and rewording 34 of the remaining items (Caraccio, 2013).

The pilot study results revealed five distinct domains from the data findings. When initially analyzed, these results were promising because there are also five domains in the Hierarchy of Needs. Not only were the number of domains similar, but they were also similar in content and were as follows: Social Needs, Selfless Needs, Familial Needs, Self-Esteem Needs, and Community Needs (Caraccio, 2013).

The Social Needs domain was made up of the first three tiers of the Hierarchy of Needs. They include basic physiological needs, safety needs, and love and belonging needs. Each of these needs could be deemed important by an individual as necessary to belong to a social group (Caraccio, 2013; Maslow, 1943).

The Selfless Needs were a combination of the fourth and fifth tiers of the Hierarchy of Needs. Each of the items in this domain involves seeking or giving respect to others. This could be the respect of a teacher or coach, or the self-actualizing desire to create a better world for others (Caraccio, 2013; Maslow, 1943). The only item which did not fit this set was, “The air I breathe makes me feel healthy.” In retrospect, the quality of air does not only concern the individual but also the universal population.

Similar to the Social Needs, the Familial Needs were a combination of the first three tiers of the Hierarchy of Needs. The physiological, safety, and love and belongingness needs in this

tier were represented by needs that were not specific to a single person. Each of the items represented could be satisfied by the student's family or community such as food, money, and a safe place to live (Caraccio, 2013).

The Self-Esteem Needs were a combination of the first and fourth tiers of the Hierarchy of Needs. These needs, when satisfied, help the individual's self-esteem increase. Items in this group reflected how the individual views oneself, what one eats, and personal successes (Caraccio, 2013).

The Community Needs were a combination of the second, third, fourth, and fifth tiers. Rather than discussing prior successes, the items in this section express a desire for awards and how the individual was affected by or affects the environment around him/her. In other words, the person is looking beyond their past experiences and attempting to satisfy needs that will affect his/her future (Caraccio, 2013).

There was no direct one-to-one correspondence between the five domain groups found in the pilot study and the five tiers of Maslow's hierarchy. However, each of the tiers was represented in the five established domains. Also, while there was no direct one-to-one correspondence, each of the five domains has a relationship with each of the five tiers of Maslow's hierarchy. For example, the Social Needs are centered on nutrition, waste elimination, financial security, respect, and relationship issues. This combines the main ideas from tier one and three with a concept of tier two. The lack of direct correspondence does not change the validity of the results; rather, it confirms the evolution of motivation in the study's participants (Caraccio, 2013).

Pilot Study Procedure

The NSAS pilot study was conducted among high school students. The sample of 105 adolescents was comprised of students from one rural high school in north Hamilton County, ages 14 to 19 years. The students' ethnicity and gender varied. Students under the age of 18 were required to have signed parental and informed consent (Appendix C) in order to participate in the pilot study. Students 18 and over were required to sign a participant's consent form (Appendix D) in order to participate.

During school registration in Fall 2013, the investigator verbally recruited students who were present for school registration. The NSAS was distributed with a consent form for minors, or a participation form for those over the age of 18. Any high school student who wished to participate in the research was permitted. The data were analyzed using factor analysis, which resulted in the following five dimensions: Social Needs, Selfless Needs, Familial Needs, Self-Esteem Needs, and Community Needs.

Research Design

The study was a combination of correlational and causal-comparative research. The domain scores were calculated based on the results of the NSAS factor analysis. The factor analysis yielded factor loadings, which show correlation between multiple variables. The factor loadings provided domains within the assessment, and the number of domains was found once the factor analysis was conducted. Academic achievement measures consisted of the students' grade point averages and state required EOC test scores in English, history, science, and math.

This research took place at six selected high schools in Hamilton County, Tennessee. The high schools were chosen based on socioeconomic status, geographic location, and ethnic

background of the student population. The validation and reliability testing of the NSAS were performed by repeating the procedure from the pilot study.

Procedure

First, permission from the Hamilton County Department of Education in Tennessee was obtained to conduct research in specific schools. The data used in this research consisted of the students' demographic information, academic information, socioeconomic information, and NSAS scores. Once approval had been granted, high school principals were contacted to identify schools willing to participate in the study.

After the Central Office and high school principals agreed to allow the NSAS to be administered to its students, Institutional Review Board (IRB) approval was obtained. Following IRB approval, the researcher met with a school representative at the participating high schools in order to show them how to properly administer the NSAS to the students. A checklist (Appendix E) was provided to the school representatives in an attempt to maintain consistency with the administration of the NSAS. The instructions consisted of the following: how to obtain and send consent forms, how to troubleshoot students' questions concerning Qualtrics and the NSAS, how to proctor the NSAS, and contact information for questions. Qualtrics was the survey software used to administer the NSAS to the participants electronically.

Following the meeting of all participating high schools' counselors, there was an initial one-week period allowed to obtain parental consent for the participants who were minors. After the initial enrollment period, four weeks were given to all participating schools to administer the NSAS to those students who received consent to participate. Students were also allowed to obtain parental consent during the testing window and participate in the research.

Once a list of students was compiled, the Central Office of the Department of Education was contacted. Then academic achievement, socioeconomic, and demographic information were obtained for all participants. The names of the participants were coded to ensure anonymity during their participation in the study. The students' data were matched using the Department of Education's Student Identification (ID) number. This ID number allowed only the researcher and school representative the ability to link the students' names with their demographic, academic, and socioeconomic data. Once the data were input from the Department of Education and linked to the students' NSAS all physical copies containing any identifying data were shredded and destroyed. Also, all files containing sensitive data were saved in a protected folder and required a password to gain entry. The researcher was the only person with access to this password. All digital files containing sensitive information were destroyed following the study.

After the district data were received, the data and NSAS scores were imported into Statistical Package for the Social Sciences (SPSS). The researcher then performed data screening, which ensured the data recovered from the NSAS, GPA, demographics, and EOC scores were complete and valid. Next, the alignment of the data were conducted and used to ensure the data being used were appropriate to answer the research questions. Once the screening and alignment were completed, factor analysis and reliability tests were conducted to finalize content of the NSAS. The factor analysis also yielded the need domains used to test the hypotheses.

The hypotheses were tested using various methods. First, the NSAS domains were established from the factor analysis. Second, the students' grade level and ethnicity were analyzed with the students' NSAS domains and GPA using the ANOVA test. Third, the students' socioeconomic status and gender were analyzed with the students' NSAS domains and GPA

using the *t*-test method. Finally, regression analysis was used to find correlation between the individual student's NSAS domains and their GPA. In other words, each individual student had the NSAS results compared with their GPA in an attempt to find correlates.

Projected Timeline

Week 0 – Obtained Permission from the Hamilton County Department of Education to conduct research at identified schools.

Week 0 – Contacted Hamilton County high school principals to identify participating schools.

Week 1 – Sought IRB approval from the University of Tennessee at Chattanooga.

Week 3 – Following IRB approval the researcher met with the six participating schools' counselors to distribute NSAS administration checklists and answer questions.

Week 4 – Contacted the Hamilton County Department of Education to obtain participant grade point average, EOC scores, socioeconomic data, and demographics.

Weeks 4-7 – Need Satisfaction Assessment administration window.

Week 8 – Imported data into SPSS.

Week 8 – Performed data screening and alignment.

Week 9 – Performed factor analysis and reliability tests.

Week 9 – Finalized NSAS domains.

Week 10 and 11 – Tested Hypotheses.

CHAPTER IV

NEED SATISFACTION ASSESSMENT FOR STUDENTS (NSAS) CREATION

Purpose of the Development of the NSAS

The premise of this dissertation was to find out, from a needs standpoint, what motivates high school students. In order to find these needs, there must be an instrument to measure the students' needs. Through exhaustive research there was no instrument to satisfy the requirements of this study, so an instrument was created called, The Need Satisfaction Assessment for Students (NSAS).

Rationale for and Significance of the NSAS

The significance of the development of the NSAS is that it is the first scale of its kind that is based on Maslow's Hierarchy of Needs. It was designed to measure the satisfaction of needs of high school students. The results are based on the students' self-reporting, which allows for an understanding of the students' perceived satisfaction of needs. There are instruments created to measure the intrinsic, extrinsic, and amotivation levels of students (Vallerand et al., 1992), but again, none have attempted to measure the motivational needs from a viewpoint of Maslow's Hierarchy of Needs.

Development of the Items for the NSAS

The NSAS is based on the theory of humanistic motivation, primarily the works of Abraham Maslow (Maslow, 1943). Maslow's (1943) *A Theory of Human Motivation* (Schunk, 2011) has been termed as one of the major publications of humanistic motivation (Schunk, 2011). Humanistic motivation is based on the study of the whole person and their self-awareness, along with the person's choices, which are based on the individual's basic needs (Maslow, 1943; Schunk, 2011; Weiner, 1992). Maslow's (1943) work in this field began over 70 years ago and is exemplified by his Hierarchy of Needs (Schunk, 2011). The Hierarchy of Needs is separated into five levels, listed in order of priority to the individual, if left unsatisfied: physiological, safety, love and belongingness, esteem, and self-actualizing needs (Maslow, 1943).

The items were created based on the key concepts within each tier of Maslow's Hierarchy as described in Maslow's (1943) work, *A Theory of Human Motivation*. Each level of the hierarchy was reviewed and statements describing a particular aspect of the same hierarchy were written. Every item describes only one aspect of the hierarchy; in other words, there are no questions on the instrument describing multiple traits within a tier or multiple tiers within the hierarchy.

Content Validation of the NSAS

The content of the NSAS was validated during the pilot study validation process by the use of experts in the field of Humanistic Psychology. These experts were comprised of two doctoral candidates, one wellness coach, one school psychologist, two practicing psychologists, and one school counselor. The process of content validation involved frequent communication

with the experts and the creator of the NSAS. This communication took place on an individual basis. There was no collaborative group meeting between the investigator and the experts.

The NSAS was created and delivered to the experts. The experts then critiqued the 59 item scale and responded with either a yes or no and had the option to leave comments or suggestions. After the first round of suggestions from the experts, the NSAS was rewritten with some items dropped and others reworded. The second version of the NSAS was redelivered to the experts to ensure the content was appropriate and had face validity. The second round of critiques yielded few suggestions and were only word choices. After the second round of changes, all seven experts gave their approval, in regards to the content of the NSAS. The content validation process with the experts resulted in the rewording of over half of the items and the deletion of 11 items from the scale.

Procedure

The pilot study of the NSAS was conducted among high school students at one school. The sample population consisted of students from a rural high school ages 14 to 19 years. The students varied ethnically and in gender; however the majority of participants were of Caucasian descent. Participants under the age of 18 were required to have signed parental consent in order to participate in the pilot study. Participants 18 and over were required to sign a participant's consent form in order to take part in the research.

The NSAS was given to the participants along with their consent form or participation form, depending on their age. Participant recruitment took place face-to-face by the lead researcher during school registration and the first week of school in 2013. All high school

students were invited to participate; in other words, no one was discriminated against for any reason.

Data Analysis and Results for the Pilot Study

There were a total of 252 scales passed out to the high school students at one local high school. There were 105 scales returned for a response rate of 41.7%. In the initial analysis of those 105 returned surveys, only 100 were usable because five were incomplete upon return. In order to analyze the NSAS data for reliability and validity, a factor analysis was conducted using SPSS software, version 21.

The factor analysis was conducted using a rotated, Varimax method. The number of factors was determined by an examination of eigenvalues and a scree plot. Both results yielded five factors, which resulted in the creation of five groups or domains. The Chronbach's Alpha reliability for the NSAS was .891.

Factor 1, "Social Needs," comprised of 20 items had a Cronbach's alpha reliability of .834. The factor loadings ranged from .715 to .335. The lower factor loadings reflect physiological needs, which are not social needs. However, if certain physiological needs may be perceived by the student as a key to their social life. For example, a student's bedtime or bathroom schedule may be perceived by their social group as acceptable or it may not fit with that particular group. This may leave the student with a feeling of being left out of the social group. Table 4.1 reflects the factor loadings for the Social Needs Domain.

Table 4.1 Social Needs

Item Number	Question	Factor Loading
10	I am comfortable with the amount of friends I have.	.715
11	I behave in a way that makes people proud to know me.	.603
9	I feel cared for by the people I date.	.597
23	I am happy with how I act.	.578
7	I am happy with the way people from the same sex treat me.	.534
2	I am well liked by a lot of people.	.525
30	I feel that I get the right amount of vitamins and mineral to keep me healthy.	.523
13	I feel that I am a part of a group (friends or teammates).	.521
26	I use the bathroom enough times during the day to feel healthy.	.517
17	I feel safe in my school.	.516
22	I am comfortable with the amount I date.	.498
45	I am happy with the way my teachers treat me.	.498
42	When I wake up in the morning I feel rested.	.489
32	I am happy with the way people from the opposite sex treat me.	.431
29R	I do not worry about people taking my things.	-.423
18	When I do use the bathroom, it is not because I feel sick.	.410
21	I feel that I go to bed at a reasonable time each night.	.396
15	People want my opinion on things frequently.	.364
38	I feel like I drink enough water and other drinks to stay healthy.	.358
27	I have enough money to feel safe.	.335
<i>Note:</i> Item numbers with an R following the number are reversed questions.		

Factor 2, “Selfless Needs,” comprised of 12 items had a Cronbach’s alpha reliability of .848. The factor loadings ranged from .824 to .247. While .247 is a low factor loading, the content of the item accurately reflects Selfless needs. It is also important to note that while the loading is low, it was the highest domain loading with which the item was associated. In other words, while this item had a relatively low factor loading, all other loading factors were lower,

which showed the strongest correlation with the second domain. Table 4.2 reflects the factor loadings for the Selfless Needs Domain.

Table 4.2 Selfless Needs

Item Number	Question	Factor Loading
12	I use most of my time trying to find ways to help others.	.824
48	I strive to make the world better for others.	.694
44	I value the ideas of other people.	.683
39	I often think of ways to benefit mankind.	.635
6	I respect the opinion of others.	.601
41	I put the needs of others before my own.	.591
8	I treat others with respect.	.537
37	I feel that I live a balanced life between fun and serious things.	.502
5	People look up to me.	.491
3	The air I breathe makes me feel healthy.	.439
24	I can do many things well as long as I try.	.391
20	Everyone should be treated equal, all the time.	.247

Factor 3, “Familial Needs,” comprised of 6 items had a Cronbach’s alpha reliability of .764. The factor loadings ranged from .749 to .347. At first look, the item “I do not eat enough food to stay healthy.” does not describe familial needs, but if their family does not eat meals together or their siblings are complaining frequently of hunger, the student may feel this is a familial need. Table 4.3 reflects the factor loadings for the Familial Needs Domain.

Table 4.3 Familial Needs

Item Number	Question	Factor Loading
40	I am happy with the way my parents treat me.	.749
28	I feel that my family cares for me.	.740
4	I feel safe in my home.	.624
25	I feel loved by my group (friends or teammates) I am normally around.	.624
19	I feel cared for by my friends.	.608
31R	I do not eat enough food to stay healthy.	.347
<i>Note:</i> Item numbers with an R following the number are reversed question.		

Factor 4, “Self-Esteem Needs,” comprised of 5 items had a Cronbach’s alpha reliability of .278. The factor loadings ranged from .672 to .402. “The food I eat is, for the most part, unhealthy.” does not seem like it would qualify as a self-esteem need, but the television and newspapers are saturated with stories related to food and well-being. The student may view food and health or popularity as related. Table 4.4 reflects the factor loadings for the Self-Esteem Needs Domain.

Table 4.4 Self-Esteem Needs

Item Number	Question	Factor Loading
36	I am happy with myself.	.672
1	I feel like the amount of sleep I get each night is appropriate.	.617
46	The food I eat is, for the most part, unhealthy.	-.614
14	I am happy with how I look.	.543
33	I am comfortable with the amount of success that I have had.	.402

Factor 5, “Community Needs,” comprised of 5 items had a Cronbach’s alpha reliability of .586. The factor loadings ranged from .677 to .306. Table 4.5 reflects the factor loadings for the Community Needs Domain.

Table 4.5 Community Needs

Item Number	Question	Factor Loading
35	I feel safe in my neighborhood.	.677
34	I would like to win awards.	.558
16R	My group (friends or teammates) that I am normally around does not love me.	.511
43R	I don't care about how my actions affect other people.	.504
47R	I do not have any responsibility to care for my family.	.306
<i>Note: Item numbers with an R following the number are reversed question.</i>		

Conclusion

Reliability and validity tests of the NSAS pilot study showed positive results. The factor analysis yielded five domains or groups, which were similar to the five tiers of Maslow's Hierarchy. The five domains from the NSAS do not contain the exact same content as Maslow's Hierarchy, but they are similar. All five domains had satisfactory face validity; however, domain four is the only group with a Chronbach's alpha reliability coefficient less than .500. These results, while positive, must be kept in perspective, because they represent only a pilot study of 100 participants from one high school in Hamilton County, Tennessee. The single location could yield geographical bias, but the overall results of the pilot remain positive. The positive results revolve around the five domains found by the factor loadings. These five domains reflected the same quantity as the Hierarchy of Needs, which was the basis for the creation of the NSAS. Also, as one searches through the factor loadings of each domain, they share common characteristics and can be defined as common groups. The number of factors or domains is determined by examining the scree plot and eigenvalues. Once the number of factors has been determined, each item has a correlation factor loading toward each domain. The higher the loading value, the stronger the affinity the item has toward the other items in the domain.

CHAPTER V

FINDINGS

Introduction

As stated in Chapter I, the research examined the concept of student needs in relation to their academic achievement. The students' needs were measured using the NSAS, while their academic achievement was measured using their GPA and EOC scores. This chapter is organized in terms of the null hypotheses mentioned in Chapter III. The primary null hypotheses are

1. There will be no significant relationship in each of the NSAS domains (i.e., Safety and Relationship Needs, Selflessness Needs, and Esteem and Physiological Needs) and each of the measures of academic achievement used in this research (i.e., grade point average).
2. There are no relationships between specific needs and academic achievement.
3. There will be no difference in each of the NSAS domains based on the following demographic variables:
 - a. Ethnicity
 - b. Gender
 - c. Grade Level
 - d. Socioeconomic Status

The secondary null hypotheses are

1. There will be no difference in the measure of academic achievement based on the following variables:
 - a. Student's Number of Siblings
 - b. Parent/Guardian Education Level
2. There will be no difference in each of the NSAS domain measures based on the following variables:
 - a. Student's Number of Siblings
 - b. Parent/Guardian Education Level
3. There is no difference in each of the NSAS domain measures based on whether or not the student is a member of a school athletic program.

Reliability Testing and Domain Classification

The NSAS was found to be valid and reliable in the pilot study mentioned previously in Chapter IV. The Cronbach's alpha increased from the pilot study (.891) to .953 in the NSAS's actual study. Since the assessment was valid and reliable, factor groupings or domains could be found. In order to attempt to find correlations for the primary and secondary research questions, the need domains must be denoted. To find these domains, factor analysis was used. Factor analysis is a statistical test used to find any groups of items with common responses (J.-O. Kim & Mueller, 1978; Walkey & Welch, 2010).

Reliability testing of the factor analysis showed the analysis to be reliable and valid. The Kaiser-Meyer-Olkin Measure of Sampling Adequacy measured .811; any score greater than .6 is satisfactory. Also the Bartlett's Test of Sphericity was significant at .000. The positive results

from these two tests allowed the results gathered from the factor analysis to be used with confidence.

The approximate number of factors extracted was determined by an examination of eigenvalues and a scree plot. The Scree Plot in Figure 5.1 begins to level off in the vicinity of component number 3, 4, or 5. This means the items of the NSAS will fit into 3, 4, or 5 factors or domains. Factor analysis was run assuming each of these three possibilities, and the only resultant analysis with approximately equal number of items was when 3 factors were used.

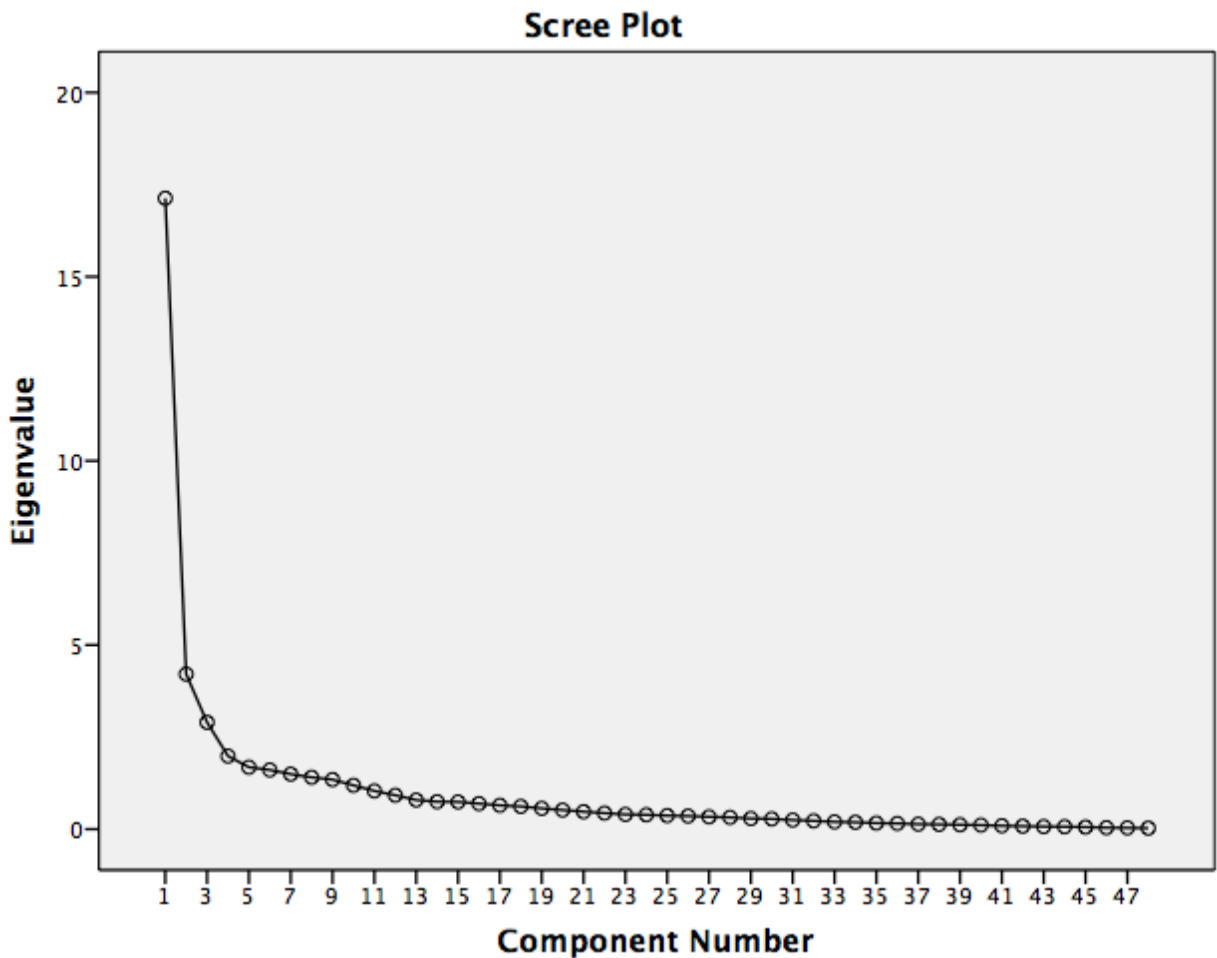


Figure 5.1 NSAS Item Scree Plot

The factor analysis was conducted using a rotated, Varimax method. Factor 1 consisted of 20 items and had a Cronbach's alpha reliability of .917. The factor loadings ranged from .783 to .525. The items in this domain consist primarily of safety and relational needs, which is the reason it is known as "Safety and Relationship Needs". The contents of this factor or domain are shown in Table 5.1.

Table 5.1 Safety and Relationship Needs

Item Number	Statement	Factor Loading
4	I feel safe in my home.	.783
21	I feel cared for by my friends.	.680
30	I feel that my family cares for me.	.671
27	I feel loved by my group (friends or teammates) I am normally around.	.665
29	I have enough money to feel safe.	.645
12	I am comfortable with the amount of friends I have.	.644
42	I am happy with the way my parents treat me.	.508
15	I feel that I am a part of a group (friends or teammates).	.587
37	I feel safe in my neighborhood.	.586
11	I am well liked by a lot of people.	.569
7	I am happy with the way people of the same sex treat me.	.561
17	People want my opinion on things frequently.	.525
19	I feel safe in my school.	.506
34	I am happy with the way people of the opposite sex treat me.	.493
24	I am comfortable with the amount I date (or involvement in romantic relationships).	.478
9	I feel cared for (valued) by the people I date.	.463
39	I feel that I live a balanced life between fun and serious things.	.419
18R	My group (friends or teammates) that I am normally around does not love me.	.414
33R	I do not eat enough food to stay healthy.	.374
20	When I use the bathroom, it is not because I feel sick.	.370

Note: Item with an R following the number are reversed scored questions.

Factor 2 consisted of 13 items and had a Cronbach’s alpha reliability of .909. The factor loadings ranged from .817 to .284. This domain contains items which revolve around the needs of respect, awards, and self-actualization, and explains the tentative title of this domain, “Selflessness Needs”. The contents of this factor or domain are shown in Table 5.2.

Table 5.2 Selflessness Needs

Item Number	Statement	Factor Loading
13	I use most of my time trying to find ways to help others.	.817
50	I strive to make the world better for others.	.812
43	I put the needs of others before my own.	.789
46	I value the ideas of other people.	.749
8	I treat others with respect.	.725
6	I respect the opinion of others.	.722
41	I often think of ways to benefit mankind.	.680
67	I behave in a way that makes people proud to know me.	.637
22	Everyone should be treated equally, all the time.	.623
36	I would like to win awards.	.494
26	I can do many things well as long as I try.	.479
5	People look up to me.	.442
45R	I do not care how my actions affect other people.	.284
<i>Note: Item with an R following the number are reversed scored questions.</i>		

Factor 3, tentatively called “Physiological and Esteem Needs,” consisted of 14 items and had a Cronbach’s alpha reliability of .911. The factor loadings ranged from .778 to .404. This domain contains items associated with physiological and esteem needs, which explains the tentative title of this domain, “Physiological and Esteem Needs”. The contents of this factor or domain are shown in Table 5.3.

Table 5.3 Physiological and Esteem Needs

Item Number	Statement	Factor Loading
10	I feel like the amount of sleep I get each night is appropriate.	.778
23	I feel that I go to bed at a reasonable time each night.	.768
44	When I wake up in the morning I feel rested.	.762
32	I feel that I get the right amount of vitamins and minerals to keep me healthy.	.666
40	I feel like I drink enough water and other fluids to stay healthy.	.617
31	I do not worry about people taking my things.	.572
3	The air I breathe makes me feel healthy.	.557
35	I am satisfied with the amount of success that I have experienced in my life.	.508
38	I am happy with myself.	.506
48R	The food I eat is, for the most part, unhealthy.	.502
16	I am happy with how I look.	.491
47	I am happy with the way my teachers treat me.	.454
25	I am happy with the way my parents treat me.	.431
28	I use the bathroom enough times during the day to feel healthy.	.404
<i>Note:</i> Items with an R following the number are reversed scored questions.		

The three factors, or domains, have a combined item total of 47. The item, “I do not have any responsibility to care for any of the needs of my family.” was removed from the NSAS because it had little to no correlation (-.203, -.310, .186) with any one factor group. Therefore, it was left out of the domain grouping and calculations.

Results Introduction

The students’ level of need satisfaction was determined by using the standardization of each domain: Safety and Relationship Needs, Selflessness Needs, and Esteem and Physiological Needs. Each of these domains’ cumulative scores was divided by the number of items in the NSAS, which made up the specific domain in order to standardize the scores. The Safety and

Relationship Needs domain contained 20 items; therefore, the total score was divided by 20. The Selflessness Needs domain contained 13 items; so, its total score was divided by 13. Finally the Esteem and Physiologic Needs domain contained 14 items; so, the total score was divided by 14.

Each standardized domain was analyzed using its descriptive statistics. The means of the domains were used as a cutoff score to define whether or not the particular need of the student was met or unmet. The mean for the Safety and Relation Needs domain was 5.51. The mean for the Selflessness Needs domain was 3.442. The mean for the Esteem and Physiological Needs domain was 3.452. A score below the mean showed the particular need domain was not met, while a score at or above the mean showed the need domain was met in the student.

The student's academic achievement was defined by the student's GPA. This GPA was then ranked by academic letter grade:

- 3.51-4.0 was deemed an "A" and was labeled as 1;
- 3.0-3.5 was deemed a "B" and was labeled as 2;
- 2.0-2.99 was deemed a "C" and was labeled as 3;
- 1-1.99 was deemed a "D" and was labeled as 4;
- 0 – .99 was deemed an "F" and was labeled as 5.

For the discriminant analysis, the GPA was used to determine whether or not the student obtained academic achievement. Academic achievement was met if the student had a GPA of 3.0 or above. This cutoff value was chosen because a 3.0 or higher represents an "A" or "B" average. An "A" has a reputation of meaning excellence in a given content area, while a "B" represents above average. The students' academic achievement was evaluated against their level of need satisfaction.

Limitations

To begin, the sample size was not large enough to differentiate certain variables. The small sample size led to ethnicity data being skewed. Similarly, the location of participating schools was also skewed toward the rural setting. The small sample size also made the student's number of siblings variable unusable.

From the methodology to the actual performance of the research, many of the extraneous variables listed could not be used for various reasons. Teacher quality was not used due to the sensitive nature of teacher scores. School attendance could not be gathered in a consistent and comprehensive manner, so it was not used in this research. Public high schools within Hamilton County operate on different class schedules. Some schools have their classes meet every other day for one and a half hours, other schools' classes are one and a half hour classes for a full year, while other schools operate for a semester with a length of one and a half hour classes, and finally other schools meet for 50 minutes daily. With all of these differences in course structure it would be too difficult to determine how much class time the student missed in regards to their academic achievement. Prerequisite course knowledge was also not used because of the difficulty in obtaining these course grades. The special education status, classroom size of the students, teacher experience, time of class, and how the student's lunch was obtained were also not used due to difficulty obtaining consistent data. The start time of the school was not used due to a lack of differentiation among the data. Finally, the number of siblings was not used because there was a lack of differentiation among the answers to produce discernable results.

Another limitation of this research was the use of GPA rather than EOC scores, which was the initial choice measurement for academic achievement, because the data obtained from the department of education concerning EOC scores were sporadic and incomplete. Some

students had not taken an EOC during the calendar year. While other students may have taken an EOC, the data were not consistent, meaning some were math, history, or English. Still those students with an EOC score did not necessarily take the same test. For example, the math EOC scores could have been Algebra I, Algebra II, or Geometry. This made any analyses difficult, so the decision was made to use GPA rather than EOC scores.

Research Question 1

The first primary research question, “What is the relationship between high school students’ academic achievement level and the level of need satisfaction?” was analyzed using a chi-square test. The academic achievement measure was converted to a “met or unmet” nominal variable. This was accomplished by reassigning the GPA values of the students. Any GPA less than 3.0 was deemed “Academic achievement not met,” while a GPA of greater than or equal to 3.0 was deemed “Academic achievement met”. Similar to the academic achievement measure, the standardized need domains were also converted to nominal data. This conversion was performed by setting the met/unmet line as the mean for the standardized need domain. Any score above the mean was labeled “met” while any score below the mean was labeled “unmet”.

Values shown in Table 5.4 are the Pearson Chi-Square Coefficient and the p-value. Any p-value less than .05 was considered statistically significant. In this test, no significant results were found.

Table 5.4 Comparison of Need Domains and Academic Achievement

Relationship	Pearson Chi Square Value	Significance (p-value)
Academic Achievement Measure versus SRN Met or Unmet	.981	.322
Academic Achievement Measure versus SLN Met or Unmet	2.577	.108
Academic Achievement Measure versus EPN Met or Unmet	.170	.680

There were no significant results for the first research question. Therefore, the null hypothesis, “There will be no significant relationship in each of the NSAS domains (i.e., Safety and Relationship Needs, Selflessness Needs, and Esteem and Physiological Needs) and measures of academic achievement used in this research (i.e., grade point average),” would fail to be rejected. In other words, there was no statistically significant relationship between the satisfaction of needs of students and their academic achievement.

Research Question 2

The second primary research question, “Are there specific needs present at specific achievement levels of high school students?” was analyzed using discriminant analysis. This method of analysis is used to isolate singular variables, which have an effect on the dependent variable. In other words, each item of the NSAS was analyzed versus the academic achievement data to determine if a singular item had an independent effect on the students’ academic achievement.

To answer this research question, each item from the NSAS was tested against the level of academic achievement. In order to validate the discriminant analysis, the Wilks’ Lambda was

calculated in order to ensure any differences noted in the sample would accurately reflect differences in the population. The Wilks' Lambda significance measure was .036, which denotes a 3.6% chance of error and is acceptable. Furthermore the canonical correlation was calculated. This correlation refers to the relationship between the group and the discriminant function, and is measured on a scale from 0 to 1 with 1 denoting a perfect relationship and 0 denoting no relationship at all (J.-O. Kim & Mueller, 1978; Walkey & Welch, 2010). The canonical correlation coefficient measures a degree of relatedness, and the measure of .817 signifies a strong relationship between the discriminant variables and the group.

Table 5.5 reveals all results from the discriminant analysis. A score of less than the alpha value of .05 means these items have a significant role in the student's academic achievement.

Table 5.5 Comparison of NSAS Items and Academic Achievement

Item from NSAS	Significance Level
When I use the bathroom it is not because I feel sick.	.003
I do not eat enough to stay healthy.	.008
I am well liked by a lot of people.	.078
I am comfortable with the amount I date (or involvement in romantic relationships).	.087
I do not care how my actions affect other people.	.122
The food I eat is, for the most part, unhealthy.	.191
The air I breathe makes me feel healthy.	.205
When I wake up in the morning I feel rested.	.214
I am satisfied with the amount of success that I have experienced in my life.	.218
Everyone should be treated equally, all the time.	.226
I use most of my time trying to find ways to help others.	.228
I feel that I live a balanced life between fun and serious things.	.238
I feel like I drink enough water and other fluids to stay healthy.	.263
People want my opinion on things frequently.	.264
I put the needs of others before my own.	.265
I am happy with the way people of the same sex treat me.	.279
My group (friends or teammates) that I am normally around does not love me.	.282
I would like to win awards.	.284
I feel that I get the right amount of vitamins and minerals to keep me healthy.	.309

I feel cared for (valued) by the people I date.	.313
I am happy with the way my teachers treat me.	.314
I use the bathroom enough times during the day to feel healthy.	.353
I am happy with how I act.	.397
I am happy with the way my parents treat me.	.441
I do not worry about people taking my things.	.533
I strive to make the world better for others.	.559
I treat others with respect.	.586
I strive to make the world better for others.	.559
I often think of ways to benefit mankind.	.594
I feel safe in my home.	.599
I feel safe in my neighborhood.	.612
I feel like the amount of sleep I get each night is appropriate.	.615
I feel that my family cares for me.	.621
I value the ideas of other people.	.624
I do not have any responsibility to care for any of the needs of my family.	.676
I feel loved by my group (friends or teammates) I am normally around.	.742
I have enough money to feel safe.	.742
I can do many things well as long as I try.	.753
I am comfortable with the amount of friends I have.	.772
I feel that I go to bed at a reasonable time each night.	.804
I behave in a way that makes people proud to know me.	.839
I feel safe in my school.	.867
I feel cared for by my friends.	.871
I am happy with how I look.	.882
I respect the opinion of others.	.883
I am happy with myself.	.901
People look up to me.	.940
I am happy with the way people of the opposite sex treat me.	.992

There were two significant results for the second primary research question, which rejects the following null hypothesis: There are no relationships between specific needs and academic achievement. These significant results indicate that the higher the student rated him/herself on the NSAS for those two items, the higher the probability the student has of succeeding academically. The item, “When I use the bathroom it is not because I feel sick.” had a mean of 5.81 out of 7 in those where academic achievement was met, while a mean of 4.73 out of 7 was recorded in those who did not meet academic achievement standards. The item, “I do not eat

enough food to stay healthy.” was a reverse scored question, meaning a low score reflects a negative belief in regards to their diet, while a high score reflects a positive feeling. The item had a mean of 6.00 out of 7 in those who met academic achievement standards, while a mean of 5.00 was recorded in those who failed to meet the standard for academic achievement.

“When I use the bathroom, it is not because I feel sick.” and “I do not eat enough food to stay healthy.” are the only two items that have a significant relationship with the academic achievement of the participants. The remaining items still exhibited a relationship with the academic achievement; however, it was not at a significant level. While those two items revealed a significant relationship, the high significance level of “I am happy with myself.”, “People look up to me.”, and “I am happy with the way the people of the opposite sex treat me.” showed that these items have very little, if any, relationship with the academic achievement of the participants.

Research Question 3

The third primary research question, “What is the relationship between the following variables and the students’ level of need satisfaction: ethnicity, gender, and socioeconomic status?” was analyzed with a chi-square test. This method was used to compare whether each of the three domains was met or unmet versus the demographic variables: ethnicity, gender, and socioeconomic status.

All data were not nominal. The level of need satisfaction score for each domain was interval. In order to quantify whether or not the need domain was met, each standardized domain was first analyzed using its descriptive statistics. The means of the domains were used as a cutoff

score to define whether or not the particular need of the student was met or unmet. The means for each domain were as follows:

- Safety and Relationship Needs (SRN) domain was 5.500,
- Selflessness Needs (SLN) domain was 3.4423,
- Esteem and Physiological Needs (EPN) domain was 3.452.

A score below the mean showed the particular need domain was not met, while a score at or above the mean showed the need domain was met in the student. Other data were already nominal and needed no adjustments.

Some adjustments also had to be made because some of the data were skewed. Ethnicity was converted into nominal data by creating two groups: Caucasian and non-Caucasian. This grouping was necessary because the data were heavily skewed toward a Caucasian majority. Similarly, the economic status of the student, as measured by their receipt of free or reduced lunch, was converted into nominal data by creating two groups: full price lunch or not full price lunch. This was also performed because, like ethnicity, the datum was skewed toward students that did not need financial assistance for their school meal. Finally, gender is nominal data because the student is either male or female. Table 5.6 shows the relationship between the demographic categories and met or unmet need domains.

Table 5.6 Comparison of Demographic Categories and Met or Unmet Need Domains

Comparison	Pearson Chi Square Value	Significance Level (p-value)
Gender versus SRN	.138	.710
Gender versus SLN	.204	.651
Gender versus EPN	3.776	.052
Ethnicity versus SRN	.361	.548
Ethnicity versus SLN	1.136	.286
Ethnicity versus EPN	.283	.595
Economic Status versus SRN	1.323	.250
Economic Status versus SLN	2.309	.129
Economic Status versus EPN	.185	.667

There were no significant relationships found in research question 3. The null hypothesis of, “What is the relationship between the following variables and the students’ level of need satisfaction: ethnicity, gender, and socioeconomic status?” failed to be rejected. One observation, Gender versus Esteem and Physiological Needs, was very close to the alpha value of .05, but the value of .052 leaves the test for independence not statistically significant. In other words, there was no statistically significant relationship found between the satisfaction of needs and the students’ demographic background. This means that the level of need satisfaction seemed to be evenly distributed across the various demographic variables.

Secondary Research Questions

Secondary Research Question 1

The first secondary research question, “What is the relationship between academic achievement and the number of siblings of the student and the student’s parent or guardian’s highest education level?” was analyzed using a Kruskal-Wallis test in attempt to compare the student’s mean GPA rank within each degree level. The student’s number of siblings could not

be used because there was not enough differentiation in the data to perform any statistical analysis.

The question was analyzed in an attempt to compare the self-reported scores from the NSAS, in regards to mother’s education level, with whether or not the student achieved academically. As mentioned previously, the academic achievement was met if the student had a GPA of 3.0 or higher. Academic achievement was not met if the student had a GPA of less than a 3.0. The student’s GPA was ranked with the lowest GPA being number 1. This means the higher the rank the higher the mean GPA for the degree level. Table 5.7 presents the mean rank of each level of education for the student’s mother.

Table 5.7 Ranking of Academic Achievement and Mother’s Education Level

Correlation with Academic Achievement	Mean Rank
Less than High School	46.81
High School Diploma or GED	43.87
Associate’s Degree	60.94
Bachelor’s Degree	63.15
Master’s Degree	40.10
Education Specialist	47.00
Doctorate Degree	24.00
Do not know	37.75

The Kruskal-Wallis Test revealed a significance level of .173 with a chi-square value of 10.282. Since the significance level exceeded the alpha value of .05, the part of the null hypothesis that concerns the relationship between the mother’s education level and academic achievement failed to be rejected. In other words, there is no relationship between the mother’s education level and the student’s academic achievement.

One major difference between the data obtained for the father’s education level and the mother’s education level was there were no students who reported their fathers had a degree higher than a master’s degree. Table 5.8 presents the mean rank of each level of education for the students’ fathers.

Table 5.8 Ranking of Academic Achievement and Father’s Education Level

Correlation with Academic Achievement	Mean Rank
Less than High School	35.46
High School Diploma or GED	44.86
Associate’s Degree	57.75
Bachelor’s Degree	67.60
Master’s Degree	51.78
Education Specialist	*
Doctorate Degree	*
Do not know	36.92

* denotes no data available from research

The Kruskal-Wallis Test revealed a significance level of .016 with a chi-square value of 13.908. The mean rank of a student’s GPA increased with each level of education attained by the father, peaking at a bachelor’s degree. Since the significance level did not exceed the alpha value of .05, the part of the null hypothesis that concerns the relationship between the father’s education level and academic achievement was rejected. In other words, there was a significant relationship between the father’s education level and the student’s academic achievement.

Secondary Research Question 2

The second secondary research question, “What is the relationship between the students’ NSAS scores and the number of siblings of the student and the student’s parent’s or guardian’s highest education level?” was tested using a Kruskal-Wallis test. Each of the family dynamic

questions was obtained from the NSAS (i.e., number of siblings and highest education level of mother and father). As in secondary research question 1, the student’s number of siblings was not used because there was not enough differentiation in the data to perform any statistical analysis.

The self-reported education level of the student’s parents was analyzed with the mean ranking of each of the need domains obtained from the NSAS using a Kruskal-Wallis test. A lower mean rank signified a lower need domain score. Statistical findings for the mother’s education level and specific need domains are shown in Tables 5.9, 5.10, and 5.11.

Table 5.9 Comparison of Mother’s Education Level and SRN Domain

Correlation with Academic Achievement	Mean Rank
Less than High School	50.54
High School Diploma or GED	43.72
Associate’s Degree	56.47
Bachelor’s Degree	53.81
Master’s Degree	60.50
Education Specialist	35.50
Doctorate Degree	79.50
Do not know	40.25

Table 5.10 Comparison of Mother’s Education Level and SLN Need Domain

Correlation with Academic Achievement	Mean Rank
Less than High School	48.65
High School Diploma or GED	44.91
Associate’s Degree	56.03
Bachelor’s Degree	55.19
Master’s Degree	58.60
Education Specialist	41.25
Doctorate Degree	87.50
Do not know	35.13

Table 5.11 Comparison of Mother’s Education Level and EPN Domain

Correlation with Academic Achievement	Mean Rank
Less than High School	47.73
High School Diploma or GED	41.70
Associate’s Degree	54.24
Bachelor’s Degree	60.62
Master’s Degree	54.70
Education Specialist	39.25
Doctorate Degree	91.50
Do not know	49.31

There were no significant results to report in regards to the mother’s education level and level of need satisfaction. The chi-square value for the Safety and Relationship need domain was 6.199, the Selflessness need domain was 7.051, and the Esteem and Physiological need domain was 8.120. The significance level for the Safety and Relationship need domain was .517, the Selflessness need domain was .424, and the Esteem and Physiological need domain was .322. The significance level for each need domain was greater than .05. Therefore, the part of the combined null hypothesis, “There will be no relationship between mother’s education level and the Safety and Relationship needs, Selflessness needs, and Esteem and Physiological needs.” failed to be rejected. This means there is no statistically significant relationship between the mother’s education level and the need domains of the student.

Similar to secondary research question one, there was no data reported from the students to reveal if any of the fathers in the research obtained a degree higher than a master’s degree. A lower mean rank signifies a lower need domain score. The mean rank for each education level of the father is shown in Tables 5.12, 5.13, and 5.14.

Table 5.12 Comparison of Father's Education Level and SRN Domain

Correlation with Academic Achievement	Mean Rank
Less than High School	44.08
High School Diploma or GED	51.52
Associate's Degree	57.47
Bachelor's Degree	51.00
Master's Degree	42.83
Education Specialist	*
Doctorate Degree	*
Do not know	37.83

* denotes no data available from research

Table 5.13 Comparison of Father's Education Level and SLN Domain

Correlation with Academic Achievement	Mean Rank
Less than High School	42.33
High School Diploma or GED	48.09
Associate's Degree	55.66
Bachelor's Degree	51.90
Master's Degree	46.89
Education Specialist	*
Doctorate Degree	*
Do not know	47.25

* denotes no data available from research

Table 5.14 Comparison of Father's Education Level and EPN Domain

Correlation with Academic Achievement	Mean Rank
Less than High School	42.79
High School Diploma or GED	48.44
Associate's Degree	50.00
Bachelor's Degree	60.43
Master's Degree	53.89
Education Specialist	*
Doctorate Degree	*
Do not know	37.46

* denotes no data available from research

There were no significant results to report in regards to the father’s education level and level of need satisfaction. The chi-square value for the Safety and Relationship need domain was 4.479, the Selflessness need domain was 1.861, and the Esteem and Physiological need domain was 5.386. The significance level for the Safety and Relationship need domain was .483, the Selflessness need domain was .868, and the Esteem and Physiological need domain was .371. Therefore, the part of the combined null hypotheses, “There will be no relationship between the father’s education level and the Safety and Relationship needs, Selflessness needs, and Esteem and Physiological needs.” failed to be rejected. This means there was no statistically significant relationship between the father’s education level and the need domains of the student.

Secondary Research Question 3

The third secondary research question, “Is there a difference in the NSAS scores of the students based on participation in a school athletic program?” was analyzed using a Kruskal-Wallis Test. The athletic participation of the student was determined by the student’s response on the NSAS. The total need domain scores were ranked with one being the lowest total score. Tables 5.15, 5.16, and 5.17 show the mean rankings of each need domain with the students’ athletic participation.

Table 5.15 Comparison of Athletic Participation and SRN Domain

Member of Sports Team	Mean Rank
Yes	61.21
No	42.08

Table 5.16 Comparison of Athletic Participation and SLN Domain

Member of Sports Team	Mean Rank
Yes	55.88
No	45.46

Table 5.17 Comparison of Athletic Participation and EPN Domain

Member of Sports Team	Mean Rank
Yes	59.08
No	43.43

There were significant findings from the Kruskal-Wallis Test. The chi-square value for the Safety and Relationship need domain was 10.537, the Selflessness need domain was 3.130, and the Esteem and Physiological need domain was 7.050. The significance level for the Safety and Relationship need domain was .001, the Selflessness need domain was .077, and the Esteem and Physiological need domain was .008. The significance level for the Selflessness need domain was greater than .05; however, the Safety and Relationship need domain and the Esteem and Physiological need domain was less than .05. This reveals two statistically significant relationships, which allows the rejection of the following null hypotheses: “There is no difference in the measure of Safety and Relationship needs based on whether or not the student is a member of a school athletic program.” and “There is no difference in the measure of Esteem and Physiological needs based on whether or not the student is a member of a school athletic program.” The null hypothesis, “There is no difference in the measure of Esteem and Physiological needs based on whether or not the student is a member of a school athletic program.” failed to be rejected.

Students who participated in school athletic programs had a higher mean ranking for Safety and Relationship needs and Esteem and Physiological needs than those that did not participate on a sports team. This means students who participated on a school sports team had higher Safety and Relationship needs as well as Esteem and Physiological needs scores on the NSAS. However, there was no significant statistical relationship found between athletic participation and the students' Selflessness need domain score.

CHAPTER VI

CONCLUSIONS, DISCUSSION, AND RECOMMENDATIONS

Introduction

A purposeful sample of public high school students attending six Hamilton County Schools provided data to investigate the relationship between academic achievement and need satisfaction. The following chapter contains the conclusion of the study, meaning of the conclusions, limitations of the current research, and recommendations for future research.

Conclusions

Conclusions from this research are based on the primary and secondary research questions.

Primary Research Questions

1. What is the relationship between high school students' academic achievement level and the level of need satisfaction?
2. Are there specific needs that are present at specific achievement levels of high school students?
3. What are the relationships between the following variables and the students' levels of need satisfaction?
 - a. Ethnicity

- b. Gender
- c. Grade Level
- d. Socioeconomic Status

Secondary Research Questions

1. What is the relationship between academic achievement and the following extraneous variables?
 - a. Student's Number of Siblings
 - b. Parent/Guardian Education Level
2. What is the relationship between the students' level of need satisfaction and the following extraneous variables?
 - a. Student's Number of Siblings
 - b. Parent/Guardian Education Level
3. Is there a difference in the need satisfaction of students based on whether or not they are involved in a school athletic program?

The conclusions of this study could be interpreted by the individual research questions or by observing the research questions as intertwined pieces of one another. For the sake of this conclusion both viewpoints will be used.

Discussion

The first and third primary research questions yielded results that were not statistically significant. However, the second primary research question revealed statistically significant

results. These findings do not mean the research is meaningless. In fact, in regards to the sample, the findings suggest important revelations.

Despite the first primary research question not revealing any statistically significant relationships, this information is still quite useful. This lack of relationship means no correlation was found between high school student's academic achievement and their level of need satisfaction. This result implies that the level of satisfaction of any of the three groups of needs (safety and relationship, selflessness, esteem and physiological) has no bearing on the academic achievement of the sample.

This lack of relationship between the level of need satisfaction and academic achievement could be due to a number of factors. It could be due to chance. Another interpretation could be that the sample was not diverse enough to group the items properly in the factor analysis. Yet another interpretation of these results could be that academic achievement is evenly distributed across all levels of need satisfaction, which means that students with little needs satisfied could perform as well as students with many of their needs met.

The results of the analysis of the second primary research question show that specific needs had a correlation with academic achievement. Two items, "When I use the bathroom it is not because I feel sick." and "I do not eat enough to stay healthy." were both found to have a relationship with sample academic achievement. The item, "When I use the bathroom it is not because I feel sick." describes the student's perception of his or her physical well-being. While the item, "I do not eat enough to stay healthy." describes the diet of the student and could also provide insight to the student's health. These findings are crucial in the attempt to understand what motivates a student to achieve academically. These two items address physiological needs related to nutrition and health.

Since there was a correlation between these physiological needs and academic achievement, a conclusion can be made that with these needs met a student has a better chance of achieving academically. A student's physiological needs were defined in chapter one as basic needs necessary for survival (i.e., food, water, sleep, etc.). These basic needs are sought to be satisfied by the government's Head Start Program and reduced lunch program created through legislation in 1966. Gunderson (2013) discussed the Child Nutrition Act of 1966 was enacted because of the, "recognition of the demonstrated relationship between food and good nutrition and the capacity of children to develop and learn" (para. 1). The Head Start Program was developed in order to provide a means for preschool children to be assisted with, "emotional, social, health, nutritional, and psychological needs" (Families, 2014, p. para. 2). Both of these programs have a lengthy history of providing low-income families' children with nutrition and health services during the school year, and this research supports that service. The significant relationship between health and diet of the student and their academic achievement, from the second research question, further supports these government programs.

The third primary research question concerned student demographics (gender, ethnicity, and economic status) as they relate to each of the three need domains (safety and relationship needs, selflessness needs, and esteem and physiological needs). None of these relationships were statistically significant; however, the relationship between esteem and physiological needs was 0.52, which was 0.02 above of the acceptable level of significance. This aligns with multiple perspectives of adolescent students. First, research indicates that adolescents are not only concerned with their appearance, but a dissatisfaction with one's appearance is deemed normal (Holmqvist & Frisé, 2012), which is consistent with esteem needs. Second, the diet of these adolescents is not healthy and has led to a nearly epidemic obesity problem (Fitzgerald, Heary,

Kelly, Nixon, & Shevlin, 2013). These findings regarding issues with the students' diets was confirmed by the results of the second primary research question, where the results revealed that the students did not feel their diet was healthy.

The third finding from this research question is that economic status and ethnicity did not play a role in any of the sample's satisfaction of needs. In other words, affluent students and students who live in poverty had the same perception of their needs. This is interesting because areas of poverty typically have higher crime statistics (Males & Brown, 2013), and this sample revealed that the perception of the students' needs were no different in any category.

The data analysis of the first secondary research question showed no significant relationship between the mother's education and the student's academic achievement, however it did reveal a statistically significant relationship between the father's level of education and the student's academic achievement. The academic achievement peaked when the father had a bachelor's degree. The lowest academic achievement occurred when the father had less than a high school diploma or when education level of the father was unknown. This lack of knowledge concerning the father's education level may address an underlying issue. The researcher poses the following two potential scenarios to explain this issue. First, the father may not express any interest in the education process and simply does not discuss it with his child. The second theory is that the student does not know about the father's education level because the child does not know his or her father. In other words, the true reason the student does not achieve academically is not because of the father's education level, but rather because there is no relationship between the student and the father. This lack of relationship could be the true reason for the student's academic struggles.

The investigation of the second secondary research question revealed no statistically significant relationships between the mother or father's education level and the students' need satisfaction. This does not mean that the results are not important. Since there was a relationship between the father's education level and academic achievement, but there was no relationship between the father's education level and need domains, one could infer that there was no relationship between the sample's met needs and academic achievement. This lack of correlation was shown in the data analyses of the first primary research question.

The analysis of the third secondary research question yielded two statistically significant relationships. The significant correlations were between the athletic participation status of the students and their satisfaction of safety and relationship needs as well as esteem and physiological needs. The relationship between athletic participation and selflessness needs was slightly above the statistically significant threshold that would have shown a correlation.

These findings are interesting when taken into context with the other primary and secondary research questions. One could infer that since academic achievement had a positive relationship with two physiological items and the father's education level that there are certain needs that do play a role in the academic achievement of adolescents. Furthermore, it is impossible to assume that the relationship between the father's education level is due to the actual educational career of the father or simply that the individual had a relationship with their father that was strong enough for the student to know this fact about him.

Furthermore, being a member of a sports team, which by any account is a relationship, had statistically significant higher means in the Esteem and Physiological need domain and Safety and Relationship need domain. Since the two physiological items are correlated with academic achievement and members of sports teams have a significant relationship with esteem

and physiological needs, one could infer that being a member of a sports team has a relationship with the student's academic achievement. However, because of the scope of this research, there can be no way to describe whether or not that relationship is positive or negative.

The factor analysis of the sample's responses yielded three distinct domains, which were mentioned in Chapter 5 and shown in Tables 5.1, 5.2, and 5.3. While not shown significant in the analysis of the second primary research question, the items "I feel that I live a balanced life between fun and serious things." and "My group (friends or teammates) that I am normally around does not love me." had similar factor loadings in the factor analysis. It is worth noting that these two items are centered on the premise of athletic competition and relationships, which were the main ideas of the secondary research questions. It would appear that these relationships, no matter how subtle, show the importance adolescents place on relationships and basic psychological well-being.

Creation of the NSAS

The creation of the NSAS was another important result of this research. The factor analysis from the pilot study and this research were not identical. However, they were similar and did both provide domains that were related to Maslow's hierarchy, which was the theoretical basis for this research. Further research needs to be conducted before this assessment can be generalizable to the public, since the domains were not the same in each study.

The future application of the NSAS could be useful in the attempt to understand what needs students deem the most important. This could support school staff in meeting the adolescent's basic needs so that they will hopefully be motivated to achieve academically. Another perspective would be that the school staff could be viewed as helping the student to

meet his/her basic needs; therefore the student may be more inclined to try to succeed academically.

Limitations

There were numerous limitations in this research that need to be addressed for future studies in order to make the research generalizable to the high school population. First, the sample will need to be larger. The sample size was not desirable due to absences and lack of consent. To obtain a desired 95% confidence level, with a population size of 14,000 high school students in Hamilton County, Tennessee, the sample size needs to be approximately 374 students. This research only had a sample size of 100. Second, the sample needs to be more heterogeneous; this research's sample demographics were predominately Caucasian. Due to the open nature of the sampling, the gender, ethnicity, and the location of the sample schools were not equally distributed.

The small sample size and limited number of participating schools made the use of variable class scheduling and class start time not possible. The schools that participated in this research all had that same class schedule, so this was not an accurate depiction of Hamilton County high schools' varying schedules and start times. All schools in this research had the same start time, and while they had different schedules, there was not a large enough sample size in those schools to differentiate the data. The small sample size also led to a lack of differentiation of the number of siblings of the participants, so this variable was not used.

A number of extraneous variables were not used in this research due to several reasons. Special education status, classroom size of student, and teacher experience were not used

because of the difficulty in obtaining the data. Prerequisite course knowledge, school attendance, and teacher quality were not used because of the sensitive nature of the data.

Finally, EOC scores were to be used to measure academic achievement. However, due to sporadic EOC testing of the sample, this could not be used. Students that had taken an EOC that calendar year took different tests so they could not be used for the data analysis. Since the data were incomplete and incompatible, the student's GPA was used to measure academic achievement.

Recommendations for Future Research

Future research in the relationship between student motivation and academic achievement is broad and provides multiple opportunities for study. To begin, the pilot study used for the creation of the NSAS had a sample size of 100 from one school. This research had a sample size of 100 from six schools. Ideally, future research could be replicated with a much larger sample from multiple school districts in different locations in an attempt to make any knowledge obtained from the data analyses generalizable. The larger sample could also assist in finalizing need domains that could be generalizable to the majority of the adolescent population.

The larger, more diverse sample could bring clarity to the promise of this research. With the larger sample, a hierarchy of adolescent needs could be constructed. Furthermore, this hierarchy could then be used to find out whether or not specific needs or items from the NSAS correlate with academic achievement in a more generalizable manner. More importantly, this hierarchy for youth could be used to identify what needs adolescents prioritize. Then, theoretically, once the basic hierarchal needs are met, the student will be more likely to achieve

academically. With this knowledge, school programs can be built in order to satisfy those basic hierarchal needs and, ideally, lead to more students who strive to achieve academically.

Future research could also use different types of academic achievement that could measure a more direct, present-time perception of student needs. GPA was used for this research, but the GPA can be a measure of up to four years. In four years a student's perception of needs can change, but the GPA change may not be as drastic. Ideally, a formative assessment could be given immediately before or after the NSAS was given. This could ensure the results from the NSAS would accurately reflect the student's perceived needs, met or unmet.

Another avenue of future research could be to delve further into the impact of the father's educational level on the student's academic achievement. Does the education level alone play the significant role in the academic achievement? Rather, is the knowledgable relationship between the father and student what drives the student's academic achievement? The clarification of this data point could be critical in the attempt to help understand what separates students who achieve academically from those who do not achieve academically.

The "father factor" could be studied, as it was in this research, by simply asking the student what his or her father's education level was and then attempting to find a relationship between this level and the student's academic achievement. However, in order to truly understand this factor, additional questions should be added for clarity. For instance, items could be worded to ask the students if they know whether the father's degree came from a two-year school or four-year school. If they are certain of the father's degree level or if they are just guessing or stating what was told to them would be another piece of information worth knowing. Also, it would be informative to know how often the student interacted with his or her father and through what medium. Are they communicating face-to-face, via cell phone, or by texting? Each

of these questions could help to further establish whether or not the father-student relationship is as important as this study appears to have revealed.

During the future research to assess the father factor, it would also be feasible to simultaneously perform the same research concerning the student's mother. Other similar research questions, "Does the student live with one parent, two parents, or some other type of guardian?" could help clarify this parental relationship and its possible correlation with academic achievement. This would be justified since in this research's small sample size was near but not quite statistically significant. This type of study could help understand the importance of the parental/guardian unit(s) and their correlation to student academic achievement.

Another avenue of research conceived from this study pertains to the relationship between academic achievement and whether or not the student participates in school athletics. Statistically significant findings were identified in the relationship of need domains and athletic participation; however, no statistical tests were conducted between academic achievement and school athletics participation. A theoretical correlation could be assumed, given there was a correlation between two of the three need domains and school athletics participation, but a separate study revealing the relationship would be better.

To further the understanding of the relationship between academic achievement and school athletics, there are a number of future studies that could show promise. One particular study would be an analysis of the specific sport the student-athlete plays. In other words, does the sport the student plays have a more substantial relationship with the student's academic achievement? Is the sport a team sport (i.e., football, soccer, or basketball) or an individual sport (i.e., tennis or golf)? What role does the coach have with the student? What about the participation in more than one sport at the school? All of these questions could be addressed

through additional research and could provide important information to parents, educators, and community leaders about the importance, or unimportance, of school athletic programs.

Finally, since this research centered on the students' perceived needs, perhaps future studies could be centered on whether or not the students' expectations contributed to their academic achievement. For instance, if the student felt as if s/he would perform well on the formative assessment, did s/he perform well? Similarly, if the student perceived a poor performance, did they perform poorly? This concept could coincide with current research about growth and fixed mindset. A growth mindset student views assignments and assessments as a challenge worth attempting and see failure as part of the path to success, while a fixed mindset student fears these tasks that may be challenging, require risk, or may lead in failure (Dweck, 2010). Understanding students' perceptions of themselves may allow educators to not only help satisfy the students' basic needs, but also allow them to foster a healthy perception of their abilities in a growth mindset.

Conclusion

This research revealed many promising theories. The first is that it appears that the NSAS could be an effective tool to identify which perceived needs are being met within each student. The second revelation is that, within the sample of the research, specific items on the NSAS correlated with the sample's academic achievement. Also, this study revealed a relationship between the father's education level and the student's academic achievement, however it is important to note there was no relationship found between the mother's education level and the same student's academic achievement.

While these findings are promising, it is important to state that more research needs to be performed. This research was the second study of its kind using this NSAS. A third study with a larger and more diverse sample would help to finalize the hierarchy of students' needs and help to provide stronger support for the relationships found between academic achievement and specific NSAS items and parent education level.

The promise of this exploration in motivation rests in the future studies that were conceived from this research. As mentioned throughout chapter six, there are numerous avenues of promising future investigation. This future research will be crucial in further exploring or examining initial statistically significant results from chapter five and the potential research leads from chapter six this study found promising.

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APPENDIX A

INDEPENDENT, DEPENDENT, AND EXTRANEIOUS VARIABLES

Table A Independent, Dependent, and Extraneous Variables

Variable Label	Levels of the Variable	Variable Type	Scale of Measurement
NSAS Scores	1-7	Independent	Interval
Standardized Safety and Relationship Needs Domain	1-7	Independent	Interval
Standardized Esteem and Physiological Needs Domain	1-7	Independent	Interval
Standardized Selflessness Needs Domain	1-7	Independent	Interval
Academic Achievement (GPA)	0-4.0	Dependent	Ratio
EOC test scores (English, history, science, math)	0-100	Dependent	Ratio
Teacher Quality	TVAAS/COACH Score (1 to 5)	Extraneous	Ordinal
School Attendance	Number of Absence while Enrolled in Course	Extraneous	Ratio
Prerequisite Course Knowledge	Grade in Previous Course (0 to 100)	Extraneous	Ratio
Special Education Accommodations (Read Aloud Directions)	1 = Yes 2 = No	Extraneous	Nominal
Size of Classroom	1 = 6-15 2 = 16-25 3 = 26-35 4 = 35+	Extraneous	Nominal
Teacher Experience	In Years (0-50)	Extraneous	Ratio
Time of Class	1 = Morning 2 = Afternoon	Extraneous	Nominal

Start Time of School	1 = 7:00 to 7:59 AM 2 = 8:00 to 8:59 AM 3 = 9:00 to 9:59 AM	Extraneous	Nominal
Lunch	1 = Purchased from School 2 = Made at Home 3 = Guardian Made at Home 4 = Does Not Eat lunch	Extraneous	Nominal
Number of Siblings	0 to 20	Extraneous	Ratio
Education of Highest Achieving Parent/Guardian	1 = High School 2 = Started 2 Year College 3 = Started 4 Year College 4 = Graduated 2 Year College 5 = Graduated 4 Year College 6 = Graduated Master's Program 7 = Graduated Doctorate Program 8 = Do Not Know	Extraneous	Ordinal
Grade Level	Grade Level in High School (9-12)	Extraneous	Nominal
Poverty Level	1 = Free Lunch 2 = Reduced Lunch 3 = Full Price Lunch	Extraneous	Nominal

APPENDIX B
NEED SATISFACTION ASSESSMENT

Please read each of the following items carefully, thinking about how it relates to your life, and then indicate how true it is for you. Use the following scale to respond by placing the appropriate number in the space provided.

1	2	3	4	5	6	7
not at all			somewhat			very
true			true			true

Gender: Male _____ Female _____ Grade Level: 9 ___ 10 ___ 11 ___ 12 ___

1. _____ I feel like the amount of sleep I get each night is appropriate.
2. _____ I am well liked by a lot of people.
3. _____ The air I breathe makes me feel healthy.
4. _____ I feel safe in my home.
5. _____ People look up to me.
6. _____ I respect the opinion of others.
7. _____ I am happy with the way people from the same sex treat me.
8. _____ I treat others with respect.
9. _____ I feel cared for by the people I date.
10. _____ I am comfortable with the amount of friends I have.
11. _____ I behave in a way that makes people proud to know me.
12. _____ I use most of my time trying to find ways to help others.
13. _____ I feel that I am a part of a group (friends or teammates).
14. _____ I am happy with how I look.
15. _____ People want my opinion on things frequently.
16. _____ My group (friends or teammates) who I am normally around does not love me.
17. _____ I feel safe in my school.
18. _____ When I do use the bathroom, it is not because I feel sick.
19. _____ I feel cared for by my friends.
20. _____ Everyone should be treated equal, all the time.
21. _____ I feel that I go to bed at a reasonable time each night.
22. _____ I am comfortable with the amount I date.
23. _____ I am happy with how I act.
24. _____ I can do many things well as long as I try.
25. _____ I feel loved by my group (friends or teammates) I am normally around.
26. _____ I use the bathroom enough times during the day to feel healthy.
27. _____ I have enough money to feel safe.
28. _____ I feel that my family cares for me.
29. _____ I do not worry about people taking my things.
30. _____ I feel that I get the right amount of vitamins and minerals to keep me healthy.

31. _____ I do not eat enough food to stay healthy.
32. _____ I am happy with the way people from the opposite sex treat me.
33. _____ I am comfortable with the amount of success that I have had.
34. _____ I would like to win awards.
35. _____ I feel safe in my neighborhood.
36. _____ I am happy with myself.
37. _____ I feel that I live a balanced life between fun and serious things.
38. _____ I feel like I drink enough water and other drinks to stay healthy.
39. _____ I often think of ways to benefit mankind.
40. _____ I am happy with the way my parents treat me.
41. _____ I put the needs of others before my own.
42. _____ When I wake up in the morning I feel rested.
43. _____ I don't care about how my actions affect other people.
44. _____ I value the ideas of other people.
45. _____ I am happy with the way my teachers treat me.
46. _____ The food I eat is, for the most part, unhealthy.
47. _____ I do not have any responsibility to care for my family.
48. _____ I strive to make the world better for others.

APPENDIX C

NSAS CONSENT FORM FOR PARENTS AND MINORS

Introduction:

You are invited to participate in a pilot study to investigate the validity and reliability of an instrument for measuring a student's standing within Maslow's Hierarchy of Needs. The name of the instrument is Need Satisfaction Assessment. This instrument is being developed by Dr. Michael Caraccio, a doctoral student at the University of Tennessee at Chattanooga under the supervision of Dr. David Rausch, Program Director and Associate Professor in the Department of Learning and Leadership. Your participation will aid the researcher with the data collection portion of his dissertation.

Procedures:

If you decide to participate, you will be asked to:

1. Sign this consent form.
2. Complete the Need Satisfaction Assessment, which will take approximately 10 to 20 minutes.
3. Drop off the consent form in the School Counselor's Office.
4. Complete the survey online on the date decided by the School Counselor.

Risks of being in the study:

There are no risks involved in participating in this study.

Anonymity and Confidentiality:

Your name will be coded so only Dr. Caraccio will be able to determine your responses. Furthermore, the results of the research will be kept in a password-protected file on Dr. Caraccio's personal computer and only he will have access to the records while the results are being analyzed. Upon completion of the research all files associated with the study will be deleted.

Voluntary nature of the study:

Participation in this research study is voluntary. Your decision whether or not to participate will not affect your future relations with anyone at the University of Tennessee at Chattanooga. If you decide to participate, you are free to stop at any time without affecting this relationship.

Contacts and questions:

If you have any questions, please feel free to contact me, Dr. Michael Caraccio, at 423-332-8819 and hb882@mocs.utc.edu.

If you have any questions about your rights as a subject/participant in this research, or if you feel you have been placed at risk, you can contact Dr. Bart Weathington, Chair of the Human Subjects Committee, Institutional Review Board at 423-425-4289. Additional contact information is available at www.utc.edu/irb.

You may keep a copy of this form for your records.

Parental Consent Form:

You are making a decision whether or not to allow your child to participate in the pilot testing of an instrument-the Need Satisfaction Assessment. Your signature indicates you have read this information and your questions have been answered. Even after signing this form, please know your child has the right to make one's own decision to participate and may withdraw from the study at any time. If your child decides to complete the instrument, have him/her sign the Assent

Form before allowing him/her to complete it. Your child will be asked to drop off the completed form in a specified box, so no one will know which form belongs to your child.

I _____ give consent for _____ to participate in the study.
(PRINT NAME OF PARENT) (PRINT NAME OF CHILD)

Signature of Parent or Legal Guardian

Date

Student Assent:

I have been told by my parent(s) or guardian(s) it is okay for me to participate in the testing of the Need Satisfaction Assessment instrument. I also understand I can stop at any time I want to, and it will be perfectly acceptable if I want to do so.

Signature and Date: _____

If you have any questions about your rights as a subject/participant in this research, or if you feel you have been placed at risk, you can contact Dr. Bart Weathington, Chair of the Institutional Review Board, at 423-425-4289. Additional contact information is available at www.utc/irb.

Take your parent's signed Consent form with your signed Assent form to your School Counselor's Office, before you complete the online Needs Satisfaction Assessment. Thank you.

APPENDIX D

NSAS CONSENT FORM FOR PARTICIPANTS

Introduction:

You are invited to participate in a pilot study to investigate the validity and reliability of an instrument for measuring a student's standing within Maslow's Hierarchy of Needs. The name of the instrument is Need Satisfaction Assessment. This instrument is being developed by Dr. Michael Caraccio, a graduate student at the University of Tennessee at Chattanooga under the supervision of Dr. Hinsdale Bernard, a faculty member in the Department of Learning and Leadership. Your participation will aid the researcher in refining the instrument.

Procedures:

If you decide to participate, you will be asked to:

1. Sign this consent form.
2. Complete the Need Satisfaction Assessment, which will take approximately 10 to 20 minutes.
3. Drop off the consent form in the School Counselor's Office.
4. Complete the Need Satisfaction Assessment and return it to the School Counselor's Office.

Risks of being in the study:

There are no risks involved in participating in this study.

Anonymity and Confidentiality:

You will not be asked to provide your name or any other personal information on the instrument. Your response will not be identifiable from the other participant responses. Furthermore, the results of the research will be kept in a locked file cabinet in the researcher's home office and only he will have access to the records while the results are being analyzed.

Voluntary nature of the study:

Participation in this research study is voluntary. Your decision whether or not to participate will not affect your future relations with anyone at the University of Tennessee at Chattanooga. If you decide to participate, you are free to stop at any time without affecting this relationship.

Contacts and questions:

Attached is the Need Satisfaction Assessment which will be given to you, the participant.

If you have any questions, please feel free to contact me, Dr. Michael Caraccio, at 423-332-8819 and hbg882@mocs.utc.edu.

If you have any questions about your rights as a subject/participant in this research, or if you feel you have been placed at risk, you can contact Dr. Bart Weathington, Chair of the Human Subjects Committee, Institutional Review Board at 423-425-4289. Additional contact information is available at www.utc.edu/irb.

You may keep a copy of this form for your records.

Statement of Consent:

You are making a decision whether or not to participate. Your signature indicates you have read this information and your questions have been answered. Even after signing this form, please know you may withdraw from the study at any time. Keep a copy of this form for your records.

Signature of Participant

Printed Name

Date

After you have signed this form, please proceed to fill out the Need Satisfaction Assessment form as soon as possible and drop it off in the box in the School Counselor's Office. No one will know which form belongs to you. Take this signed Consent form to another box in the Principal's Office before you return the Basic Human Needs Assessment. Thank you.

APPENDIX E

SCHOOL COUNSELOR CHECKLIST FOR NSAS ADMINISTRATION

SCHOOL COUNSELOR CHECKLIST
FOR NSAS ADMINISTRATION

1. Distribute Need Satisfaction Assessment Parental Consent Form to eligible participants.
2. Return completed consent forms to Dr. Caraccio via inter-county mail.
3. Email Dr. Caraccio (Caraccio_m@hcde.org) the participants' school ID numbers.
4. Administer the Need Satisfaction Assessment during the specified testing window, available at the following web address:
https://utceducation.az1.qualtrics.com/WRQualtricsSurveyEngine/?SID=SV_77pJIWucgQquSKp&Preview=Survey&_id=1
5. Following the administration window submit a list of students who provided consent to participate in the research, but did not take the Need Satisfaction Assessment to Dr. Caraccio via email (Caraccio_m@hcde.org).

Vita

Michael Caraccio is a high school math teacher and coach at Sale Creek Middle High School. He began his academic career with a Doctor of Pharmacy degree from Samford University in Birmingham, Alabama. Upon receipt of this degree, Michael began working at Walgreen's Pharmacy as a community pharmacist. Following his job at Walgreen's, Michael was employed as a nuclear pharmacist by Triad Isotopes. This occupation ended Michael's career as a pharmacist.

Michael then became employed by Hamilton County as high school math teacher and coach. During his tenure, he has served as department chair, numeracy coach and led professional development on multiple occasions. To become a licensed educator in Tennessee, Michael completed coursework for alternative certification at the University of Tennessee at Chattanooga and passed several Praxis Content Tests. Passing these tests gave Michael the distinction of being "highly qualified" to teach Mathematics in the high school setting. Amidst his career in education, Michael completed his second doctorate program, a Ph. D. in Learning and Leadership at the University of Tennessee in Chattanooga.