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EXAMINATION OF THE MOTIVATION FOR LEARNING OF GIFTED AND NON-
GIFTED STUDENTS AS IT RELATES TO ACADEMIC PERFORMANCE

By

BENETTA H. WHOLUBA

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Benetta H. Wholuba defended this dissertation on February 3, 2014.

The members of the supervisory committee were:

Steven I. Pfeiffer
Professor Directing Dissertation

Maxine Jones
University Representative

Jeannine E. Turner
Committee Member

Angela Canto
Committee Member

The Graduate School has verified and approved the above-named committee members, and certifies that the dissertation has been approved in accordance with university requirements.

To God who redeemed me, called me, and declared I belong to Him.

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TABLE OF CONTENTS

List of Tables	vii
Abstract	viii
CHAPTER ONE: INTRODUCTION.....	1
Statement of the Problem.....	1
Social Significance.....	3
Research Questions and Hypotheses	6
Operational Definitions of Terms	8
Gifted Students.....	8
Non-Gifted Students	8
Intrinsic Goal Orientation	8
Extrinsic Goal Orientation	8
Control of Learning Beliefs	8
Self-Efficacy for Learning and Performance	9
Test Anxiety.....	9
Academic Performance.....	9
Delimitations.....	9
CHAPTER TWO: REVIEW OF THE LITERATURE	13
Conceptions of Giftedness	13
Five Points of Agreement	14
Tripartite Model of Giftedness.....	19
Motivation.....	20
Expectancy-Value Theory	21
Attribution Theory	23
Implicit Theories of Intelligence.....	25
Grit	27
Test Anxiety.....	28
Synthesis of the Literature Related to Gifted Students and Motivation	30
Goal Orientation.....	31
Self-Efficacy	34
Control of Learning Beliefs	35
Test Anxiety.....	43
Research Questions.....	44
CHAPTER THREE: RESEARCH DESIGN AND METHODOLOGY	46
Initial Power Analysis	46
Participants.....	46
Measures	48
Demographic Survey	48
Brief Motivation Scale.....	48
Student GPA	50

Procedures.....	50
CHAPTER FOUR: RESULTS	52
Preliminary Analysis.....	52
Data Analysis	53
Research Question One.....	53
Research Question Two	55
Research Question Three	56
Research Question Four.....	58
Research Question Five	60
CHAPTER FIVE: DISCUSSION.....	65
Findings.....	65
Research Question One.....	66
Research Question Two	68
Research Question Three	70
Research Question Four.....	71
Research Question Five	71
Limitations of the Study.....	72
Sampling	72
Instrumentation	73
Implications.....	75
Implications for Theory	75
Implications for Future Research.....	78
Implications for Education.....	81
Conclusion	82
APPENDICIES	83
A. IRB APPROVAL	83
B. IRB RE-APPROVAL.....	84
C. COPY OF ORIGINAL STUDY IRB APPROVAL.....	85
D. COPY OF ORIGINAL STUDY IRB RE-APPROVAL.....	86
E. E-PARENT INFORMED CONSENT & COVER LETTER.....	87
F. E-YOUTH ASSENT AND COVER LETTER	90
G. PARENT INFORMED CONSENT AND COVER LETTER.....	93
H. YOUTH ASSENT AND COVER LETTER	96
I. DEMOGRAPHIC SURVEY.....	98
J. BRIEF MOTIVATION SCALE	99
REFERENCES	100
BIOGRAPHICAL SKETCH	116

LIST OF TABLES

Table 1. Demographics of Participants by Student Group	47
Table 2. Correlation Matrix for Non-Gifted and Gifted Students	54
Table 3. One-Way Analysis of Variance of Non-Gifted and Gifted Students.....	56
Table 4. One-Way Analysis of Variance of Female and Male Students	58
Table 5. One-Way Analysis of Variance of Non-Gifted Female and Male Students.....	59
Table 6. One-Way Analysis of Variance of Gifted Female and Male Students	59
Table 7. Means and <i>p</i> Values for the 4 Cluster of Motivation Variables	60
Table 8. Cross Tabulation Table by Student Group	61
Table 9. One-Way Analysis of Variance of 4 Clusters	63
Table 10. One-Way Analysis of Variance of 4 Clusters by Test-Anxiety and Student GPA	63

ABSTRACT

This study sought to fill the gap in the literature concerning gifted students and academic motivation by examining the academic motivation in 126 non-gifted ($n = 66$) and intellectually gifted ($n = 60$) middle and high school students. The study used archival data to answer the following questions: What is the relationship between motivational variables, test anxiety, and student GPA for both non-gifted and gifted students? Are there differences in motivation across student group and across gender? And does a unique profile of motivation exist for intellectually gifted students? Study results revealed positive relationships between certain aspects of motivation and academic performance within the non-gifted students and the gifted students. Findings indicated that intellectually gifted middle and high school students tend to be more motivated than their non-gifted peers and experience significantly less test anxiety than their non-gifted peers. Gender differences in motivation were found only within the gifted group on intrinsic goal orientation, with gifted female students reporting more intrinsic goal orientation than their male counterparts. While a unique profile of motivation did not arise for intellectually gifted students, the gifted students were more likely to fall within cluster groups with high motivation, high sense of control over academic outcomes and high perception of their ability to successfully complete academic tasks. These students tended to have a higher GPA and experience very little test anxiety when compared to students with low motivation.

CHAPTER ONE

INTRODUCTION

Statement of the Problem

Despite the amount of research that has been conducted in the area of self-efficacy, control of learning beliefs, goal orientation, learning strategies, and gifted students, there still appears to be gaps in the literature addressing these topics independently and even more so together. Two studies examining the assumption that high ability students are better able to regulate their learning process and use learning strategies (Chatman & Wellford, 1982; Hannifin & Carey, 1981) have been questioned regarding the way in which data were collected (e.g., Neumunster, 2004). The findings for both studies have been challenged because the method of data collection favored gifted students (Neumunster, 2004; Shore & Dover, 1987). Indeed, Shore and Dover (1987) suggested that the findings were inaccurate and that either gifted students' reported use of learning strategies was inflated or non-gifted students' reported use of learning strategies was underrepresented. Using a reliable and valid measure to assess the motivational factors and learning strategies would address previous criticisms and add to the body of knowledge concerning gifted students and their achievement.

Neumunster (2004) noted that "Research on achievement goal orientations and gifted individuals is limited, and findings are mixed" (p. 220). This paucity of research exists largely because studies examining the relationships between motivational, cognitive, and self-regulated learning components have excluded gifted students (Yoon, 2009), or studies that have included gifted students have yielded conflicting results (Garn, Matthews, & Jolly, 2010; Neumunster, 2004). For example, while a study completed by Butler (1992) found higher ratings of extrinsic goal orientation in gifted students when compared with their non-gifted peers, another study

found gifted students were more intrinsically motivated than their non-gifted peers (Gottfried & Gottfried, 1996). A third study found no differences in goal orientation between gifted and non-gifted students (Siegler, Heller, & Broome, 1996). Studies that include the highly gifted are extremely rare, and to this point, no research has been cited on this special group of students regarding their motivation. In addition, research that have focused on goal orientation, often did not study unique profiles or patterns in motivation of students (Meece & Holt, 1999). Including both gifted and non-gifted participants in a study, ensuring adequate sample size, and utilizing cluster analysis would not only aid in clarifying differences in the motivation of these students but also allow a more in-depth examination of different motivational profiles.

Evidence of the relationship between motivation and both cognitive and self-regulatory strategies has been cited throughout the literature. According to previous research, student engagement in cognitive and self-regulatory strategies is an important part of student performance and achievement in the classroom (Pintrich & De Grout, 1990; Pintrich, Rouser, & De Grout, 1994; Zimmerman & Martinez-Pons, 1986). Studies have shown that students who use cognitive strategies (both shallow and deep) tend to process information at a deeper level and are able to recall and use information at a later time. Students who engage more deeply with academic content score higher on other motivation factors such as mastery goal orientation and self-efficacy than students who engage superficially and students who do not perform well on memory tasks or tasks that require a transfer of knowledge (Pintrich, Rouser, & De Grout, 1994). Measuring the motivational beliefs of gifted students can provide the information regarding their likely use of cognitive strategies. The motivational characteristics of highly gifted students is an area where research is still needed.

A clear first step to begin to close the gap in the literature is to address these concerns through improved and expanded research design. Further examination of aspects of motivation and unique profiles of motivation in gifted and non-gifted students may provide insight into their academic success. More information is needed regarding motivation in gifted students (Dai, Moon, & Feldhusen, 1998; Subotnik, Olszewski-Kubilius, & Worrell, 2011). Addressing some methodological issues (i.e., exclusion of gifted participants and methods of questioning that possibly favored gifted students) in some previous studies is a first step in gaining more insight into this area. By answering the research questions, this study has added to the body of knowledge regarding the motivational characteristics of gifted and non-gifted students and the relationship between these characteristics and academic success.

Social Significance

Gifted students have been recognized by most educators, citizens, and policy makers as potential future leaders in areas such as business, art, education, science, technology, engineering, government, medicine, and law (Bloom, 1985; Gallagher 1994; Pfeiffer & Jarosewich, 2003). Researchers in the field acknowledge gifted students as one of the United States' most precious human resources (Pfeiffer, 2003; McClain & Pfeiffer, 2012). While many conceptualizations of giftedness exist, a lack of consensus also exists, and thus the definition of the construct remains at the center of focus in the field (Pfeiffer, 2003). Most identification practices within the United States emphasize the recognition of students who demonstrate exceptional intellectual and academic ability. Identification practices reflect state and federal definitions of giftedness. States have increasingly included the use of intelligence tests, achievement tests as a part of their identification method (McClain & Pfeiffer, 2012). Gifted and talented students are "statistically uncommon" (McClain & Pfeiffer, 2012, p. 59). These

exceptional students often outperform their non-gifted peers, and professionals such as teachers, policy makers, and researchers have made assumptions regarding how these gifted students learn. Such assumptions have been largely based on beliefs that high ability students are better able to regulate and direct their own learning processes (Neber & Schommer-Aikins, 2002; Yoon, 2009). As a result, many instructional programs for gifted students rely on their ability for self-regulated learning and an expectation that these students will benefit more from student-directed rather than teacher-directed classrooms (Neber & Schommer-Aikins, 2002; Yoon, 2009).

When researchers examine student learning, it is important for them to take into consideration both the motivational and the cognitive components involved in academic performance (Garcia & Pintrich 1995; Garcia & Pintrich, 1994; Pintrich & De Groot, 1990). Students who are high in motivation tend to be more aware of their learning processes and to demonstrate initiative and persistence in tasks (Bouffard-Bouchard, Parent, & Larivee, 1991; Schunk, 1984; Zimmerman & Kisantas, 1999; Zimmerman & Schunk, 2008). Components of motivation have been linked to academic achievement and performance in numerous domains such as music, science, mathematics, and sports (Hazari, Potvin, Tai, & Almarode, 2010; Schmidt, 2005; McLean & Mallett, 2012).

The role of gender has been of interest when examining achievement motivation. The educational and occupational gap between men and women has decreased over the past 30 years (Meece, Glienke, & Burg, 2006). For example, high school girls are now just as likely as high school boys to enroll in challenging mathematics and science courses (National Center of Educational Statistics [NCES], 2004). While great strides have been made, the gap has not been entirely closed (NCES, 2004). Research has examined achievement patterns by race and

socioeconomic status. Examining achievement motivation across gender, in addition to intellectual ability, is important as strides continue to be made to close the gender gap in academics and occupation (Meece, Glienke, Burg, 2006).

Some studies examining the paradoxical phenomenon of students who have been identified as gifted, yet perform below their capabilities, have found a significant relationship between underachievement and poor study skills, lack of motivation for academic achievement, and low self-regulation (Siegle & McCoach, 2002). The underachievement of gifted students represents not only wasted potential, but also a substantial loss to society as gifted students often grow to become significant contributors and pioneers in important fields that help to advance society (Davis & Rimm, 1998; Kesner, O'Rourke, Walker, & Ginn, 2003; Robinson, 2003). There needs to be an understanding of the role of motivation associated with gifted students. Improved understanding in this area includes the identification of profiles of motivation in both non-gifted students and gifted students. By examining the identified unique profiles of motivation that are positively correlated with academic success, instructors may then tailor instruction that will enhance aspects of student motivation most closely related to positive academic performance.

Little research has been cited regarding the relationship between gifted adolescents' ability to regulate their learning (through the use of both learning strategies as well as motivation-related strategies) and their academic success. The purpose of this study was to help bridge the gap in literature by examining and comparing the motivational strategies of both gifted and non-gifted students. In particular, I explored how motivational components were related to students' academic success (e.g., students' grade point averages), and determined if there was one or more unique profiles of motivational orientation (i.e., intrinsic and extrinsic

motivation), other motivational components (i.e., control of learning beliefs and self-efficacy for learning and behavior), and test anxiety in high-achieving, intellectually gifted students.

Research Questions and Hypotheses

1. What is the relationship between intrinsic goal orientation, extrinsic goal orientation, control of learning beliefs, self-efficacy, test anxiety, and academic performance of non-gifted students?

Hypothesis 1: It is hypothesized that control of learning beliefs will be positively correlated to self-efficacy. It is also expected that self-efficacy will be positively correlated with intrinsic goal orientation and negatively correlated with test anxiety. It is also hypothesized that extrinsic goal orientation will be positively correlated with test anxiety. It is expected that control of learning beliefs, self-efficacy, and intrinsic goal orientation will be positively correlated with student GPA while test anxiety will be negatively correlated with student GPA.

2. What is the relationship between intrinsic goal orientation, extrinsic goal orientation, control beliefs, self-efficacy, test anxiety, and academic performance of gifted students?

Hypothesis 2: It is hypothesized that control of learning beliefs will be positively correlated to self-efficacy. It is also hypothesized that self-efficacy will be positively correlated with intrinsic goal orientation and negatively correlated with test anxiety. It is expected that extrinsic goal orientation will be positively correlated with test anxiety. Finally, it is hypothesized that control of learning beliefs, self-efficacy, and intrinsic goal orientation will be positively correlated

with student GPA while test anxiety will be negatively correlated with student GPA.

3. Is there a difference between gifted and non-gifted students' intrinsic goal orientation, extrinsic goal orientation, control beliefs, self-efficacy for learning and performance, and test anxiety?

Hypothesis 3: It is expected that gifted students will report higher levels of intrinsic motivation, control of learning beliefs, and self-efficacy than non-gifted students and lower levels of extrinsic goal orientation and test anxiety.

4. Is there a difference between male and female students' intrinsic goal orientation, extrinsic goal orientation, control of learning beliefs, self-efficacy for learning and performance, and test anxiety?

Hypothesis 4: It is expected that there will be no difference between male and female students on reported level of intrinsic goal orientation, extrinsic goal orientation control of learning beliefs, self-efficacy for learning and performance and test anxiety.

5. Is there a unique profile of motivational constructs associated with individuals who are intellectually gifted, perform well academically, and report interest in science, engineering, and mathematics?

The final research question does not include hypothesis due to the type of cluster analysis and the exploratory nature of this analysis.

Operational Definitions of Terms

Gifted Students

In this study, gifted students were middle or high school students who were identified as being intellectually/academically gifted within the education system.

Non-Gifted Students

For the purposes of this research, non-gifted students were middle or high school students who were not identified as being intellectually/academically gifted within the education system.

Intrinsic Goal Orientation

For the purposes of this investigation, intrinsic goal orientation was defined as the degree to which students perceived themselves to be participating in an academic task for the reason of challenge, curiosity, and/or mastery without attempting to utilize the engagement in or accomplishment of the task to gain an additional reward (Pintrich, Smith, Garcia, & McKeachie, 1991).

Extrinsic Goal Orientation

For the purpose of this study, extrinsic goal orientation was defined as the degree to which students perceived themselves to be participating in an academic task for the purpose of grades, rewards, evaluation by others, performance, or competition (Pintrich, Smith, Garcia, & McKeachie, 1991).

Control of Learning Beliefs

For the purpose of this investigation, control of learning beliefs referred to students' beliefs that academic outcomes are a response to their own effort and not a result of external factors (Garcia & Pintrich 1995).

Self-Efficacy for Learning and Performance

For the purpose of this study, self-efficacy for learning and performance encompassed students' expectation for success and perception of their ability to master a task (Garcia & Pintrich, 1995; Duncan & McKeachie, 2005). Self-efficacy guides choice, effort, endurance and perseverance (1995; Pintrich, et al., 1991).

Test Anxiety

For the purpose of this study, test anxiety was defined as students' negative thoughts that disrupt their ability to perform, and encompasses emotionality referring to affect and physiological arousal aspects of anxiety (Pintrich, et. al., 1991).

Academic Performance

For the purpose of this study, academic success was defined as the students' calculated Grade Point Average based upon their reported grade in core curriculum classes (science, mathematics, social studies, and English/language arts).

Delimitations

Delimitations, or the boundaries of the study, clearly define what the study will include and exclude (Punch, 2006). This study used archival data that included middle school non-gifted students and high school non-gifted and gifted adolescents. The generalizability of the study is therefore limited to other middle and high school non-gifted and high school gifted students. Students in the non-gifted group attended FSUS, a developmental research lab school whose student body's demographics are representative of the public school population in the state of Florida; however, because all of the non-gifted participants attended the same school, characteristics particular to attending that school may affect the results of the study. None of the non-gifted participants were identified as gifted by the school system or received any special

education instruction. Gifted student participants consisted of applicants to a summer gifted camp and therefore may or may not be representative of the gifted population in the state of Florida. The data provided by the U.S. Department of Education's National Center for Education Statistics on the number of gifted and talented students in public elementary and secondary schools by sex, race/ethnicity, and state in 2006 is somewhat reflected in the participant demographics with a few exceptions (2008). No participants selected American Indian/Alaska Native as their ethnicity but American Indian/Alaska Natives make up approximately 23.8% of gifted and talented students in elementary and secondary school in the state of Florida. Additionally, there was a higher representation of African-American participants and a lower representation of Hispanic participants than were reported by the state statistics provided by the National Center for Educational Statistics. Differences between study demographics and state of Florida statistics may be due to the inclusion of elementary students in the state's statistics. Differences in ethnicity representation may also be a result of possible demographic changes in Florida since 2006. Despite observed differences in ethnic representation between state statistics and study participants, the gifted participants were from a variety of counties in Florida which supports the generalizability of findings.

Research utilizing gifted participants is challenging due in part to the difficulty of obtaining a sample size large enough to allow for generalization of results. Asher (1986) stated that, "...in gifted education the number of subjects is usually small" (p. 7). This difficulty is partially a result of states varying in their definitions of giftedness. Florida in particular defines gifted students as those identified as having superior intellectual development and who are capable of high performance. Superior intellectual development is defined as two standard deviations above the mean on a standardized individually administered intelligence test (Fla.

Admin. Code. R. 6A- 6.03019). An IQ score of two standard deviations above the mean places these exceptional students in the 95th to 98th percentile. Based on this definition, gifted students are in the minority; therefore, research focusing on gifted students within a specific region will likely obtain a small number of participants when compared with studies that focus solely on non-gifted students. The sample size of this study is adequate for research purposes.

The threats to internal and external validity surrounded issues of self-report and generalizability. While the *MSLQ* has been reported as a reliable and valid measure of student self-perceptions of motivation and use of learning strategies (Pintrich, Smith, Garcia, & McKeachie, 1991), it is a self-report measure and therefore assumes respondents will answer items honestly. The gifted students who participated in the study may have been less forthcoming and may have engaged in some level of impression management due to simultaneously applying for entrance into the gifted summer camp. Applicants may have been less inclined to answer truthfully if they perceived their answers would be viewed negatively and would adversely affect their chances of being selected to attend the summer camp. To guard against this, the Youth Assent Letter (see Appendix C) provided to each participant clearly outlined that participation or failure to participate in the study would not affect acceptance into the camp, and that all provided information would be coded and only viewed by the research team. Self-report measures are widely used in many fields and are often still considered reliable and valid measures. These types of measures are considered practical and easy to use within classroom settings (Garcia & Pintrich, 1995). Additionally, information concerning student academic performance was requested from students rather than retrieved from the school records; therefore, academic performance was based on self-report.

The authors of the *MSLQ* cite that the use of motivational strategies and learning strategies are contextually based (Garcia & Pintrich, 1995). This study examined students' perceptions regarding how they see themselves and their abilities in general. Another measure may have been more effective in assessing the construct generally. While yielded results did not provide information specific to a particular class or subject, it did provide some initial insights into the differences between gifted and non-gifted students that may affect their academic success. In addition, using a general context allowed participants across a larger age range to be included in this study.

CHAPTER TWO

REVIEW OF THE LITERATURE

This chapter will review the definitions and conceptions of giftedness, motivation, and test anxiety within educational psychology, providing an overview, a history, and a critical analysis of the literature.

Conceptions of Giftedness

The study of human intelligence has a long history that has helped to shape the conceptions of giftedness. Biblical texts, as well as philosophers such as Plato (Tennenbaum, 1985), have recognized individuals' exceptional ability. Many conceptions of giftedness exist, and definitions for the term gifted date back as early as 1869 when Sir Francis Galton published his study, *Hereditary Genius* (1985). As Kaufman and Sternberg (2008) explain, each conception explains giftedness from perspectives that have been classified as Domain-General, Domain-Specific, Systems, or Developmental Models. How giftedness is defined is important because it influences the manner whereby gifted students are identified, the services that will be provided to those students, and expectations regarding their performance. While having a variety of conceptions allows educators, parents, and other professionals to view students in very different ways and provide relevant services to students, it is important to identify the common ground among the differing conceptions. While the gifted field lacks consensus regarding the definition of giftedness, there are a number of key points of agreement among many of the theories. At this point, I would like to examine five points of agreement among popular conceptions of giftedness and more narrowly define gifted students in terms of this research study.

Five Points of Agreement

Upon examination of many different conceptions of gifted, a number of key points of agreement among the theories are apparent. One of the most important points is the acknowledgment that “gifted” is in fact a label and is not something real that can be measured such as a person’s height or weight (Borland, 2009; Kaufman & Sternberg, 2008; Pfeiffer, 2012). The use of “gifted” as a label has been cited as one reason for lack of agreement among professionals in the field (2012). Borland (1997) makes clear the importance of recognizing gifted as a social construct and notes that without schools, legal policies, and programs, the category of gifted would likely not exist. The label of gifted is a categorization that has been useful in identifying students with similar characteristics who may benefit from additional educational services. While no clear universal guideline or criteria for classifying these individuals exists (Kaufman and Sternberg, 2008), to be useful, classifications should enlighten educators regarding the abilities and needs of these students and provide guidance as to how to best serve these individuals. For example, the benefit of identifying artistically gifted students would be to enhance their artistic skills to support achievement of their full potential.

A second important point is that giftedness is a concept that is culturally bound by what is valued in the individual’s society. This statement implies that conceptions are fluid and tend to change with time and location (Kaufman & Sternberg, 2008). A highly valued ability in an information and technologically driven society is likely not the same ability valued in the remote village of Bonike, Liberia. For example, as a child, my father who, was born and raised on a farm in a remote village in Liberia, West Africa, was able to make shoes from the bark of a tree using a machete. He learned and excelled in important skills such as making shoes and balancing large loads on his head for an extended period of time. My dad did not purchase his

first pair of shoes until age 16. In order to transport goods from the farm, he and his family would carry the goods on their heads. These abilities were highly valued within his culture. While the ability to make shoes, balance heavy loads, and travel long distances was considered important within his culture, these skills would not be seen as exceptional in more populated advanced villages or in the United States during the same time period. In light of giftedness as a culturally bound construct, a reasonable conclusion is that students can be gifted in one or many areas (Mayer, 2005; Pfeiffer, 2012).

A third point of agreement among different conceptions is that gifted students demonstrate the ability or potential ability to perform extraordinarily (McClain & Pfeiffer, 2012). Theorists such as Lewis Terman (1925), a generalist, viewed giftedness as excelling beyond one's peers as measured by traditional IQ Tests (cutoff score above 135; Kaufman & Sternberg, 2008). Other theories, classified as developmental theories, make allowance to include students who demonstrate the potential to excel. François Gagné (2005), for example, viewed giftedness as potential and the actual performance or outcome as talent (2008). In most cases, gifted students possess exceptional ability that can be observed. Whether focusing solely on intellectual ability or including areas such as artistic ability, their performance is often superior to their non-gifted peers. This concept of gifted students testing in the top percentiles continues to be used by many states in the U.S. (McClain & Pfeiffer, 2012) in identification practices (Karnes & Stephens, 2000).

The most widely used definition of gifted was originally presented in the Marland report (1972):

Gifted and talented children are those identified by professionally qualified persons who, by virtue of outstanding abilities, are capable of high performance. These are children

who require differentiated educational programs and/or services beyond those normally provided by the regular school program in order to realize their contribution to self and society (p. 9).

Those considered capable of high performance include children who demonstrate current or potential ability in general intellectual ability, specific academic aptitude, creative/productive thinking, leadership, visual/performing arts, and psychomotor ability (Passow, 1981). Today the federal government defines talented and gifted students as youth

...who give evidence of high achievement capability in areas such as intellectual, creative, artistic, or leadership capacity, or in specific academic fields, and who need services or activities not ordinarily provided by the school in order to fully develop those capabilities. No Child Left Behind Act, P.L. 107-110 (Title IX, Part A, Definitions (22) (2002); 20 U.S.C. Sec. 7802 (22) (2004)).

The need for services to aid in the full development of capabilities is now included within the new definition. The National Association for Gifted Children (NAGC) is an organization comprised of parents, educators, and professionals who work together to help nurture gifted and potentially gifted youth. The NAGC defines gifted persons as

Those who demonstrate outstanding levels of aptitude (defined as an exceptional ability to reason and learn) or competence (documented performance or achievement in top 10% or rarer) in one or more domains. Domains include any structured area of activity with its own symbol system (e.g., mathematics, music, language) and/or set of sensorimotor skills (e.g., painting, dance, sports). NAGC ("Current Definitions," para. 4).

Likewise, the NAGC's definition of giftedness reflects the changes that have taken place in the conceptualization of giftedness. Despite these changes, the identification of gifted students in

most states continues to focus on identifying students who score high on traditional measures of intelligence tests and demonstrate superior academic abilities (McClain & Pfeiffer, 2012).

Many theories agree upon the fourth point concerning factors that influence the development of giftedness. Inherent in this point is the idea that giftedness is developed and not conferred upon individuals at birth, despite the connotation of the word gifted. While individuals may be born with certain genetically inherited abilities, to achieve outstanding performance requires development and refining of abilities and skills. Kaufman and Sternberg (2008) refer to these theories as developmental models, as they focus on internal and external interactions that produce gifted behavior. The internal interactions of these theories are characteristics thought typically to be inborn, such as aptitude, creativity, and motivation while external factors refer to an individual's context, such as luck or opportunity (2008; Gagné, 2005). This acknowledgment of the development of abilities and outstanding performance is also important as it makes allowances to include students who may not demonstrate outstanding performance, but exhibit the potential for superior performance when given the necessary tools. Pfeiffer (2012) refers to these students as the "uncut and unpolished diamonds-in-the-rough" (p. 17).

A fifth point of agreement among some conceptions of gifted is similar personal characteristics of gifted students. In Susan Johnsen's (2004) practical guide to identifying gifted children, she outlines a number of characteristics found in intellectually and academically gifted students. She cautions that while there are many common characteristics of gifted students, each attribute is not found in every gifted student. Johnsen writes that intellectually gifted students tend to perform or demonstrate the potential to perform in multiple fields of study (2004). This definition is based upon domain general conceptions of giftedness. Domain general models are based on the concept of "g," or general ability, which is then incorporated into all tasks that

require mental effort (Jensen, 1998). Based on this view, it would be expected that intellectually gifted students would perform well in multiple areas. Specific characteristics associated with general intellectual ability include curiosity and initiative to learn in addition to such other observed behaviors as rapid learning pace, extensive memory, and well-developed vocabulary. Academically gifted students are often described as persistent, self-motivated, and able to sustain interest. These students enjoy engaging the material whether through problem solving or communication.

Motivation is mentioned quite frequently as a characteristic of gifted students. Consequently, some researchers in the field have moved towards an examination of motivation as a type of giftedness rather than just a common trait. Adele and Allen Gottfried (2004) cite that while motivation has been regarded as “a prerequisite for, component of, catalyst of, and even an outcome of giftedness” (p. 121), they contemplate whether motivation itself is a domain of giftedness. Academic intrinsic motivation can be defined as “enjoyment of school learning characterized by an orientation toward mastery; curiosity; persistence; task-endogeny; and the learning of challenging, difficult, and novel tasks” (Gottfried & Gottfried, 2004, p. 122; Gottfried, 1985). In order for academic intrinsic motivation to be considered a construct of giftedness, Gottfried and Gottfried cite four criteria: 1) intellectually gifted students demonstrate significantly higher motivation when compared with their peers; 2) motivation uniquely, significantly, and positively relate to academic achievement beyond IQ; 3) motivation is observable and fairly constant throughout childhood to adolescence; and 4) motivation is significantly related to environment (2004). While review of their studies and previous research supports the inclusion of academic intrinsic motivation as a domain of giftedness, more research is needed regarding how this proposed new domain is related to other types of motivation,

ability, and area of talent, and how it generalizes to populations of varying demographic backgrounds (socioeconomic status and ethnicity). Although consideration of academic intrinsic motivation as an area of giftedness would serve to continue to expand the conceptions of gifted beyond talent and ability, more information is need as inclusion would impact identification practices and educational programs. In this study, the researcher examined the motivation of intellectually gifted students and the similarities and differences between the motivation of gifted and non-gifted students.

Tripartite Model of Giftedness

For this study, the “gifted” students were those who had been identified as being intellectually gifted. This definition is in part based on the tripartite model of giftedness, developed by Steven Pfeiffer (2012), a leading researcher and recognized “authority on the psychology of giftedness” (p. xv). Pfeiffer defined a gifted child as one who “demonstrates a greater likelihood, when compared to other students of the same age, experience, and opportunity, to achieve extraordinary accomplishments in one or more culturally valued domains.” (2012, p. 14). In his model, Pfeiffer identifies three ways through which we can view academically gifted students: outstanding accomplishment, high intelligence, and potential to excel. High intelligence, the second lens and the one through which we viewed the gifted participants of this study, is based upon a general intelligence and multiple intelligence view (Pfeifer, 2012).

The first category describes *academically* gifted learners. These students are often noticed due to their above-average performance on academic tasks coupled with their enjoyment of learning. While these students often do not test above the “cut-off” for gifted on traditional

intelligence tests, their love for learning, and persistence through difficult and challenging tasks in addition to their good academic performance, set them apart from their peers.

The second category is the learner with exceptionally high intelligence. This student is likely most often thought of when discussing the gifted. These students usually test in the top percentiles early on in their schooling (Pfeiffer, 2012). In fact, these students are often recognized due to their early development of speech and reading (Gross, 1993). Johnsen (2004) cites 17 common characteristics of these precocious youth. She identifies advanced vocabulary, memory, and communication skills as three of the characteristics. While not exhaustive, Johnsen's list of common attributes seems to surround advanced development – the ability to interact with others and information in a way that surpasses that of non-gifted peers.

Finally, the third category consists of students with high potential to excel. These students are noted for their curiosity and hard work within the classroom setting. While these students may not test in the top percentiles, they demonstrate the potential to perform well if given the necessary tools. While there is a lack of consensus in the field surrounding how to define gifted students, the tripartite model provides a distinct framework through which one can view the gifted participants for this study, specifically intellectually gifted students.

Motivation

Motivation research has provided helpful information across many different fields and in many settings ranging from the classroom to the professional performance of businessmen, athletes, scientists, and artists. This broad construct applies to all humans regardless of age, socio-economic status, and settings (Tauer, 2005). Motivation is involved in just about every aspect of one's life and can be defined as “the study of what pushes or pulls an individual to start, direct and finally end activity” (Graham, 2002). Educators have considered motivation an

important factor for successful student learning (Faddeelmula, 2010). Researchers in education are generally concerned with motivation having to do with academic achievement, that is, what drives the student to select, engage in, and persist through academic-related tasks and activities. In achievement, examining a person's motives may answer such questions as to why one student persists on challenging tasks while others do not (Graham, 2002). Research on motivation is typically viewed in two ways: as either a personality characteristic or an environmental characteristic (Clickenbeard, 1996). Social-cognitive models of motivation combine both perspectives, thereby providing a better picture of student motivation (Callahan & Plucker, 2008). These models give attention to self-beliefs, academic self-concepts, and achievement goals. One social-cognitive approach, expectancy-value theory, provides a framework for understanding the academic behavior of students (Wigfield, 2000). Attribution theory also provides a framework for understanding control of learning beliefs. Dweck's work on implicit theories shed light on the impact of beliefs about intelligence on academic performance and its relationship with goal orientation while Angela Duckworth's research on self-discipline and grit provided another view into why differences occur in student performance regardless of talent and ability.

Expectancy-Value Theory

The basic premise of expectancy-value theory is that the expectation and value individuals hold for successfully completing a task determines their motivation to complete the task. Expectancy refers to beliefs students hold about how well they expect to perform on a task (Wigfield, 1994). In particular, this aspect of the theory focuses on "students' beliefs that they can accomplish a task" (Duncan & McKeachie, 2005, p. 119; Garcia & Pintrich, 1995, p. 9) or the belief that their behavior will lead to the desired outcome (Wigfield, 1994). Self-efficacy and

control of learning beliefs are considered expectancy components. Self-efficacy is one determinant of students' behavior and guides their choice, effort, endurance, and perseverance (Garcia & Pintrich, 1995). Bandura (1977) defines efficacy expectation as "the conviction that one can successfully execute the behavior required to produce the outcomes" (p. 193). Self-efficacy encompasses students' expectations for success and perceptions of their ability to accomplish tasks (Garcia & Pintrich, 1995; Duncan & McKeachie, 2005). Control of learning beliefs "refer[s] to a student's beliefs that outcomes are contingent upon one's own effort, rather than external factors such as the teacher or luck" (Garcia & Pintrich, 1995, p. 9). Students who believe their effort makes a difference in a successful outcome should be more likely to engage in studying and learning strategy use (Pintrich, Smith, Garcia, & McKeachie, 1991). Both the students' self-efficacy and control of learning beliefs are a reflection of their beliefs about perceptions of their ability and control. These beliefs are formed through comparison of self to peers, feedback from significant others, and interpretations of previous experiences. Control of learning beliefs is also encompassed within attribution theory.

The second component of expectancy-value theory sets it apart from other popular theories of motivation. While similar to Bandura's work in placing focus on the impact of self-beliefs, expectancy-value theory differs in that it also gives attention to the importance of value (Wigfield, 1994). Value components address reasons a student might engage in a task, and include goal orientation and task value beliefs (Duncan & McKeachie, 2005; Rokeach, 1973; 1979; Wigfield, 1994). Goal orientation is usually qualified as mastery (intrinsic) or performance (extrinsic); these goals are believed to guide an individual's behavior and cognition when engaged in academic tasks (Ames, 1992; Anderman, Austin, & Johnson, 2002; Covington, 2000; Elliot, 2005; Kaplan & Maehr, 2007; Lee, McInerney, Liem, & Ortiga, 2010). Mastery

goal orientation has to do with learning for the sake of learning (Ryan & Deci, 2000; Lee, McInerney, Liem, & Ortiga, 2010). Pintrich and Schrauben (1992) define extrinsic goal orientation as a focus on learning and mastery. McWhaw and Abrami (2001) include challenge, or curiosity as a part of extrinsic goal orientation. In other words, the student gains enjoyment from engaging in the tasks of learning for its own value. Performance goal orientation means performing for some type of external reward such as a high grade or praise (Garcia & Pintrich, 1995; Pintrich, Smith, Garcia, McKeachie, 1991). In this case, the student gains enjoyment or reward from something or someone outside of the task itself. It is important to note that while these orientations may appear to be polar opposites, they are not on one continuum. A student may be both mastery and performance-oriented regarding the same task. For example, Nakeisha is a student of dance who works very hard to perfect her technique. She has been taking more demanding ballet classes in order to improve her technique and expand her skills. She enjoys allowing her body to move to the music and the challenge of learning new choreography. However, it is also very important to her to do well in comparison with her peers, and she aspires to reach prima ballerina status in recognition of her dance skill. In this example, Nakeisha is both intrinsically and extrinsically goal oriented. Her enjoyment of dancing for the sake of dancing is intrinsically oriented while her desire to compete with her peers and receive recognition for her skills is extrinsically oriented.

Attribution Theory

Developed by Bernard Weiner (1985), attribution theory focuses on an individual's perception of the cause of their success or failure that eventually affects achievement by determining whether or not the individual will approach or engage in a task. There are three dimensions of attribution within this theory: stability, locus of control, and controllability

(Pintrich & Schunk, 1996). Weiner's (1974) original two dimensions, stability and locus of control, were expanded by Pintrich and Schunk (1996) to include controllability (Assouline, Colangelo, Ihrig, & Forstadt, 2006). The combination of these dimensions is what helps determine how people will perceive their future success or failure and how they will go about completing future tasks. For example, if students perceive their academic success is due to their aptitude, studying, and preparation for learning, they are more likely to engage in academic tasks, whereas if students attribute their academic failure to low aptitude and bad luck, then they are less likely to engage in academic tasks. This study focuses on two dimensions of Attribution Theory through the examination of control of learning beliefs: controllability and locus of control. The most commonly reported reasons students have given for their academic successes and failures include ability, effort, interest, task difficulty, and luck (Chan, 1996). Students who attribute their academic outcomes to causes over which they have control (controllability and locus of control) are more likely to both accept challenges and persist through difficulties (1996). When high confidence in ability is coupled with possessing a sense of control of outcome (i.e., control of learning beliefs), students tend to experience fewer negative effects on their academic performance (Zeidner & Schleyer, 1999). Few research studies have been conducted examining the locus of control for gifted achieving students (Castor, 1996). Although aspects of control of learning beliefs have been explored in previous research, they have not been explored within the intellectually gifted population. As a result, findings regarding students' perceptions of locus of control will be examined and reported in the synthesis of the literature section. More information is still needed concerning the control of learning beliefs of both gifted and non-gifted students.

Implicit Theories of Intelligence

The implicit theories *incremental theory* and *entity theory* refer to self-beliefs individuals hold regarding the fixed or the malleable state of specific characteristics or personality traits.

Implicit theories of intelligence then refers to individuals' beliefs or mindsets that intelligence is either incremental (growth mindset) or entity (fixed mindset) (Dweck & Leggett, 1988).

Mindset is a predictor of goal orientation in children (Dweck & Molden, 2005; Elliot & Dweck, 1988) and comprehending more about both learning and performance goals may prove useful in improving understanding about student achievement patterns (Elliott & Dweck, 1988).

According to Dweck (2012), the mindset people adopt, fixed or growth, affects the way in which they live their lives by driving them either towards or away from challenges. Mindset along with the ensuing behavior patterns explain in part why some individuals with similar ability levels demonstrate differences in response and performance when faced with challenge (Dweck, 2012; Dweck & Leggett, 1988).

Differences between students who have adopted an incremental versus entity theory can be observed behaviorally (Dweck, 2012; Elliott & Dweck, 1988), cognitively (Dweck, 2012; Elliott & Dweck 1988;), and even neurologically (Mangels, Butterfield, Lamb, Good, & Dweck, 2012). In a study that assessed students' mindsets when faced with difficulty, (Dweck, 2012) students with a fixed mindset exhibited a helplessness response when confronted with the idea of negative feedback in the classroom (e.g., a C+ grade on a midterm) and challenges outside the classroom (e.g., a car ticketed and somewhat dismissed by a friend). These students also tended to identify their negative experiences as proof of their lack of competence and self-worth. In contrast, students who adopted a growth mindset exhibited persistence, risk taking, and continued effort by developing a plan to confront each challenge directly (e.g., study harder, talk

to the professor, pay the ticket, contest the ticket, talk with friend another day and discuss feeling dismissed). Each mindset is clearly associated with very different behavior patterns and goal orientations (Elliott & Dweck, 1988; Faria, L., 1996).

People with a growth mindset believe that while they have certain traits and abilities at birth, they are able to enhance their abilities through application and experience, sustained effort, risk taking (Blackwell, Trzesniewski, Dweck, 2007; Dweck, 2012; Dweck & Leggett, 1988), and engaging in mastery-oriented behaviors. “An incremental theory of intelligence is ... consistently associated with adaptive motivational patterns” (Blackwell, Trzesniewski, & Dweck, 2007; Dweck & Leggett, 1988, p. 263). For example, incremental beliefs have been positively related to academic delay of gratification (Abd-El-Fattah, & AL-Nabhani, 2012). Students who display mastery-oriented behavior tend to be mastery goal oriented (Burnette, O’Boyle, VanEpps & Pollack, 2013; Elliott and Dweck, 1988) and report less engagement in helpless-oriented strategies (Blackwell, Trzesniewski, & Dweck, 2007; Burnette, O’Boyle, VanEpps & Pollack, 2013). In addition, there appears to be a positive relationship between incremental theory and academic performance (Blackwell, Trzesniewski, and Dweck, 2007). People with a fixed mindset believe that their intelligence is set and cannot be improved upon or diminished. This mindset is predictive of performance goal orientation and is also related to more maladaptive motivational patterns (Dweck & Leggett, 1988; Burnette, O’Boyle, Van Epps & Pollack, 2013). Children who are primarily performance oriented (concerned with obtaining a positive judgment of their ability while avoiding negative judgments of their ability) demonstrate helplessness response patterns, especially when they perceive their own ability as low (Elliott & Dweck, 1988). Students with performance orientation tend to attribute failures to uncontrollable causes and see their previous experiences of failure as insurmountable, leading to lowered

expectations for future success and eventually avoidance of previously failed tasks altogether (Faria, 1996). Logically, these students also tend to experience negative emotions (Burnette, O'Boyle, VanEpps, and Pollack, 2013). Self-efficacy appears to mediate high performance orientation so that other students who also highlighted performance orientation but perceived their ability level as high demonstrated mastery oriented behaviors rather than performance oriented behaviors (Elliott & Dweck, 1988). Otherwise, a fixed intelligence mindset is associated with performance goal orientation that is ultimately related to helplessness behaviors that often result in diminished performance (Dweck, 2012; Dweck & Leggett, 1988). To date, no study has empirically examined mindset with gifted children in the United States.

Grit

Though well-known figures in psychology such as Wechsler and Cattell encouraged the inclusion of both non-cognitive and cognitive factors when studying individual differences, many researchers did not take heed (Duckworth, Peterson, Matthews, & Kelly, 2007). However, the developmental theorists in the gifted field appear to have embraced the message of studying that 'something else' that seems to explain performance. According to Renzulli (1978, 2005), giftedness is the interaction of well-above average ability, creativity and task commitment. Gubbins (1982) acknowledged that above-average ability is necessary but not sufficient within itself to produce high levels of creative productivity (Kaufman & Sternberg, 2008). Gagné (1993) emphasized the impact of interpersonal factors such as motivation and personality in the manifestation of giftedness, and Tannenbaum (1983) identified five factors (including non-cognitive factors) that linked childhood potential with adult achievements. Angela Duckworth and colleagues (2007) suggest that grit is the personal quality that is common among the most successful and recognized people across all fields and may explain why some students

accomplish more than their peers of equal talent and ability. While grit was highly correlated to conscientiousness ($r = .77, p < .001$), it still seems to describe more than just attention to detail. Grit is defined as the "...perseverance and passion for long-term goals. Grit entails working strenuously toward challenges, maintaining effort and interest over years despite failure, adversity, and plateaus in progress" (Duckworth, et.al, 2007, pp. 1087-1088). It includes self-discipline over long periods of time. Grit has been found to increase with age and education and has successfully predicted completion of difficult tasks such as first semester at West Point and fewer career changes. Students who were grittier than their peers also tended to earn a higher GPA than their peers. Duckworth and colleagues (2007) question if grit may be more important than IQ when determining what leads to a successful life. These findings are similar to those of Duckworth and Seligman (2005) regarding self-discipline. In their study, Duckworth and Seligman (2005) found that self-discipline predicted grades, achievement-test scores, attendance, and admission to competitive high schools. Based on Duckworth's research, grit and self-discipline play an important role in proving plausible explanations regarding variation in student performance. To date no research studies have examined grit among students with high IQs. It is important to note that while grit and motivation appear similar, they are distinctly different in that grit includes aspects of resiliency in the face of adversity.

Test Anxiety

Anxiety is a universal human experience that can be caused by a variety of situations. In ancient times, stress and anxiety were associated with issues of survival. This holds true with today's culture; however, concerns with basic survival have changed to include concerns regarding evaluation of performance. The increased focus on evaluation has occurred largely because of an increase in emphasis on achievement within today's culture (Zeidner & Matthews,

2005). This focus on achievement has created evaluation anxiety or “an anticipatory anxiety cycle beginning with primarily fear of negative evaluation of the social self-by others and the secondary fear of the consequences of fear symptoms interfering with self-presentation performances” (Trower, Gilbert, & Sherling, 1990, p.12). In other words, a cycle of fear of failure and of the feelings and thoughts that go along with that inhibiting fear detracts from a person’s performance. For example, Andy is a third grade student who, prior to the current academic year, excelled in math. He begins to feel the pressure to perform well in math. As the school year progresses, the subject matter increases in complexity and Andy starts to question his ability to perform math problems within the time constraints of his tests. As a result, Andy experiences invasive thoughts concerning his ability to perform well and the consequences of what will happen if he does not perform well. He is also aware that his heart beats faster, his hands shake, and they are sweaty. Andy now has difficulty working out simple math problems because of invasive thoughts and physiological symptoms of fear. He becomes overly distracted by his own emotional and biological experience, and he does not perform well on his exams. His sense of failure and disappointment reinforce his fear of not performing well, and the cycle continues. The 20th century society has been termed “the age of stress or age of anxiety” (Zeidner & Matthews, 2005, p. 141). Many types of anxiety fall beneath the auspice of evaluation anxiety, including test anxiety (Leitenberg, 1990).

Test anxiety refers to “the tendency to view with alarm the consequences of inadequate performance in an evaluative situation” (Sarason & Sarason, 1990, p. 485). It is believed that test-anxiety may not be a unitary response, and that distinctions can be drawn between components of test anxiety. Two recognized components are worry and emotionality. Worry refers to the cognitive aspect of test anxiety or the “cognitive reactions to evaluations situations”

(Cassady & Johnson, 2002, p. 271) while emotionality refers to “the individual’s subjective awareness of the heightened autonomic arousal rather than the arousal itself” (Cassady & Johnson, 2002, p. 271; Schwarzer, 1985). Physiological responses are often an indication of intense emotional responses (2002). Little research on test anxiety and students with high IQ exist.

Evaluation anxiety has been associated with a decrease in performance in situations such as test-taking (Zeidner & Matthews, 2005). In a study completed by Pintrich and DeGroot, (1990), high levels of anxiety were correlated with low levels of performance. Students who reported higher levels of anxiety were less likely to engage in self-regulatory practices effectively, leading to lower grades (Wolters & Pintrich, 1998). With the emphasis that is placed upon evaluation in today’s society, education professionals need to understand how test anxiety may be related to not only student performance but also student motivation.

Synthesis of the Literature Related to Gifted Students and Motivation

Individuals’ beliefs regarding their abilities (e.g., self-efficacy), control over the outcome of tasks (e.g., control of learning beliefs), and value of successfully completing a task (e.g., intrinsic and extrinsic goal orientations) affect their choice to engage in a task, their performance, and their persistence through challenges (Wigfield & Eccles, 2000). These components are important as they have been linked to both positive and negative outcomes in student performance. The following will provide a synopsis of previous research regarding goal orientation, self-efficacy, control of learning beliefs, and test anxiety for gifted and non-gifted students. Each section will provide a summary of findings regarding how the variables are related to relevant academic outcomes, followed by an analysis of important studies related to the variable.

Goal Orientation

Based upon the research, intrinsic goal orientation (enjoyment of learning for the sake of learning) is positively related to a number of favorable constructs (positive affect, interest, and persistence), most notably academic performance (Pintrich 2000). Students who report higher levels of intrinsic goal orientation tend to perform better in school (Schunk, et al., 2008), likely because these students engage in effective use of self-regulatory skills, metacognitive skills, and cognitive skills (Braten & Olaussen, 2005; Covington, 2000; Elliot 2005; Elliot, McGregor, & Gable, 1999; Fuchs, Fuchs, Karns, Hamlett, Kataroff, & Dutka, 1997; Gabriele, 2007; Harackiewicz, Barron, Tauer, & Elliot 2002; Harackiewicz, Barron, Pintrich, Elliot & Thrash (2002); Liem, Lau, & Nie, 2008; Nolen, 1988; Obach, 2003; Pugh & Bergin, 2006; Wolter, 2004; Lee, McInerney, Liem, & Ortiga, 2012). In addition, these students also tend to effectively use these skills more than their peers (Ames & Archer, 1988; McWhaw & Abrami, 2001; Meece, Blumenfeld, & Hoyle, 1998; Pintrich & Garcia, 1991; Wolters, Yu, & Pintrich, 1996).

In contrast to findings regarding intrinsic goal orientation, extrinsic goal orientation (engaging in a task for some outside reward) has been negatively correlated with constructs such as interest, positive affect, adaptive strategy use, and academic performance (Pintrich & Garcia 1991; Ames, 1992; Dweck & Legget, 1998; Pintrich, 2000; Pintrich & Schunk, 1996; Urdan, 1997). More specifically, extrinsic goal orientation has been shown to be positively associated with anxiety, disruptive behavior, and low retention of knowledge (Harackiewicz, Manderlink, & Sansone, 1984; Lee, McInerney, & Ortiga, 2012; Rawsthorne & Elliot, 1999; Midgley, Kapland, & Middleton, 2001; Ryan & Stiller, 1991). These constructs may explain, in part, a decrease in academic performance.

In a study conducted by Vallerand and his colleagues (1994) of 135 French-Canadian elementary students (grades 4-6), gifted students ($n = 69$) were found to have higher levels of intrinsic goal orientation than their non-gifted peers ($n = 66$). Gifted participants were students from classrooms with enriched programs and who were selected based on IQ and two standardized math achievement tests. Information regarding scores was not provided. No operational definition was provided for non-gifted students. The findings of the study support the expectation that gifted middle school and high school students will likely report higher levels of intrinsic goal orientation compared to non-gifted middle and high school students. However, Vallerand and colleagues (1994) reported the difference between the gifted and non-gifted students on the intrinsic motivation measure, although significant, had a small effect size ($r = .24$). Still, the findings of this study were supported by Gottfried and Gottfried (1996), who also reported significantly higher levels of intrinsic motivation in gifted students when compared to their non-gifted peers. Gottfried and Gottfried (1996) used the Fullerton Longitudinal study to assess motivation of both gifted and non-gifted children at ages 9, 10, and again at 13. This study included data from 20 gifted and 79 non-gifted students. The gifted participants were students who scored 130 or greater on the Wechsler Intelligence Scale for Children (WISC-R) at the age of 8. The students in the comparison group were students with scores between 84 and 128 on the WISC-R. Gifted students reported significantly higher academic intrinsic motivation than those in the comparison group. There was no significant main effect found regarding gender between or within groups.

The findings of Vallerand and colleagues (1994) as well as Gottfried and Gottfried (1996) support the hypothesis that gifted students have higher levels of intrinsic goal orientation than their non-gifted peer; however, questions arise surrounding the generalizability of the

findings to high school students in the U.S. While Gottfried and Gottfried's (1996) study provided information concerning U.S. elementary and middle school students' goal orientation, questions arise regarding generalizability of their findings to intellectually and academically gifted high school students. The participants in their study were identified as gifted at age 8, but clarification regarding type of giftedness was not provided. Neither was there indication of recent assessment for giftedness. Furthermore, there was no information regarding the participants' academic performance at the time of the study. Thus replicability of this study may be unlikely.

Concerning gender differences in goal orientations, Ablard and Lipschultz (1998) cite a study completed by Carol Dweck (1986) that found female students tended to have lower preference for challenge, and were more likely to experience greater debilitation after encountering failure. Based upon this reported finding, Ablard and Lipschultz (1998) concluded that females are more likely than males to possess performance goals; however, in their own study they found there were no differences in performance goals between males and females. Their study examined the goal orientations and use of learning strategies of 222 high achieving 7th grade students. High achieving students were those who scored in the top 3% on grade-level achievement tests and who were a part of the Institute for the Academic Advancement of Youth's talent search. The researchers found that females ($n = 105$) reported higher levels of mastery goal orientation than males ($n = 117$) in their peer group. These results conflict with the findings of Gottfried and Gottfried (1996) that indicated there were no significant differences in intrinsic goal orientation in female ($n = 43$) and male ($n = 56$) students. The studies completed by Carol Dweck (1986), Ablard and Lipschultz (1998), and Gottfried and Gottfried (1996) are examples of research that yielded conflicting results.

Many previous studies have examined the relationship between goal orientations and a criterion measure. Using this approach assumes that learners adopt to only one type of goal orientation when in fact, extrinsic goal orientation and internal goal orientation are not inversely related but are rather independent (Meece & Holt, 1999). Using a cluster analysis acknowledges that students may adopt both an intrinsic and extrinsic goal orientation concerning an academic task and allows for a more dynamic assessment of motivation styles.

Self-Efficacy

Self-efficacy is the predominant variable used in expectancy-value research. Overall, self-efficacy (i.e., the belief that one can successfully perform a task to produce the desired outcome (Bandura, 1977)) has been cited as related to general achievement as indicated by grades (Pintrich 2000, Pintrich 2002; Pintrich & De Groot 1990; Wolters, Yu, & Pintrich, 1996). It has also been cited as influencing the amount of effort put forth, persistence, and resilience in students (Chowdhury & Shahabuddin, 2007). Research studies have shown that self-efficacy is positively related to higher levels of achievement and persistence on difficult tasks across different age groups (Bandura, 1997; Pintrich 2002; Pintrich & Schunk 2002). This aspect of motivation is positively correlated to students' cognitive engagement and use of self-regulatory strategies (Pintrich 2000; Pintrich 2002; Pintrich & De Groot, 1990; Wolters, Yu & Pintrich, 1996). More broadly, expectancy-value components are positively related to self-regulation components (Pintrich & De Groot, 1990). Use of cognitive strategies has been cited as fostering active cognitive engagement in learning, often resulting in higher levels of achievement (Weinstein & Mayer, 1986). Self-efficacy also plays a crucial role in an individual determining his or her own learning goal (Dweck, Chiu, & Hung, 1995).

In a study conducted by Zimmerman and Martinez-Pons (1990), gifted students reported significantly higher levels of self-efficacy when compared with their non-gifted peers. The study included 180 fifth, eighth, and eleventh grade students (90 gifted and 90 non-gifted). In this study, gifted participants were students who attended a school for intellectually gifted students in New York City. Gifted participants either scored above the 99th percentile on tests of mental ability or were selected for admission to the school based on their scores on the selection test. No further information was given regarding cut-off scores on selection tests for admission. Non-gifted participants were students enrolled in regular, nonselective schools. Participants were asked to report their level of academic self-efficacy, specifically regarding their mathematical and verbal abilities. The researchers reported a large main effect for their significant finding, $F_{\text{mult}}(2, 167) = 43.48, p < .02, R = .59$. The findings regarding gender differences in self-efficacy conflict with previous studies. The researchers found that boys reported higher verbal self-efficacy and lower mathematical self-efficacy when compared with females. These differences held true for both the gifted group and non-gifted group. These findings support the hypothesis that gifted students will report higher levels of self-efficacy.

Control of Learning Beliefs

Both control of learning beliefs and locus of control focus on how individuals attribute their success and failures. Does an individual perceive he/she has control over the outcome based upon his/her own actions? Julian Rotter (1966) described locus of control as reinforcement of behavior that is perceived as under an individual's control (internal) or outside of a people's control (external). Based on the perceived causation of the reinforcement, individuals are either more or less likely to engage in a specific behavior. For example, people who see reinforcement of behavior as due to chance (external) may be less likely to engage in the

behavior in the future. In contrast, people who see reinforcement of behavior as due to something within their control, such as skill or effort, are more likely to engage in the behavior in the future. Control of learning beliefs refers to students' beliefs that outcomes are based on their own effort rather than external factors (Duncan & McKeachie, 2005). Findings concerning control of learning beliefs should be reflective of findings for locus of control. Students who possess a more internal locus of control should also identify with beliefs that their academic outcomes are due to their own effort. While research regarding control of learning beliefs for gifted students is lacking, studies regarding locus of control for gifted and non-gifted students are present in the literature. Differences exist in attributional choice across gender, grade level, ability, and even subject area. Assouline and colleagues (2006) suggest that these differences or inconsistencies are cause for further research within the gifted population.

When intellectually gifted students in elementary and high school are asked to make an attributional choice for success or failure, they tend to select "ability" and "effort" (internal attributions) over external attributions such as "luck" or "task difficulty" (Assouline, Colangelo, Ihrig, & Forstadt, 2006). Locus of control has been positively correlated with positive coping behaviors (Milgram & Milgram, 1976), intrinsic motivation (Tzuriel & Haywood, 1985), academic achievement (Carns, & Carns, 1991; Landine & Steward, 1998), metacognition, and self-efficacy (1998). Landine and Steward (1998) reported that external locus of control was negatively correlated with academic average, motivation, and metacognition. Locus of control has been found to be related to the academic achievement of males (Lefcourt, 1976) and Landine and Steward (1998) later found no gender differences on locus of control.

The reported findings of two studies (Douglas & Powers, 1982; Assouline, Colangelo, Ihrig, & Forstads, 2006) indicate that both academically and intellectually gifted students tend to

identify with an internal locus of control. Douglas and Powers (1982) examined locus of control of 66 academically gifted high school students (22 males and 44 females). Participants were students between the ages of 14 and 18 who were identified as gifted and were participating in a summer precollege program at the University of Arizona. Researchers did not provide information concerning the criteria used to classify students as gifted. In this study, participants indicated effort as “the most important determinant of academic success and failure” (p. 1260). Students rated internal attributions higher than external attributions, indicating the following rank order of causal ascription: effort, ability, context, and finally, luck. Participants’ grade expectancy was significantly positively correlated with internality ($r = .46, p < .05$). Grade expectancy was also significantly positively correlated with confidence ($r = .45, p < .05$). Information regarding gender differences was not provided. These findings suggest that students who identify with having a high sense of internal locus of control and controllability also identify with expecting to perform well academically and possessing a greater sense of confidence in their ability.

Assouline, Colangelo, Ihrig, and Forstadt (2006) examined the attributional choices for academic success and failure of 3,279 intellectually gifted elementary, middle, and high school students. Participants (1,655 males and 1,624 females) were asked to complete a questionnaire regarding their attributional choice for success and failure in their general academic performance and then by specific subjects. Students in middle and high school (grades 7-11) represented 38.2% of the sample size ($n = 1,252$). These students were participants in a university’s summer program for gifted students. No additional information was provided concerning how students were classified as gifted. Elementary students represented 61.8% of the sample size ($n = 2,028$) and were participants in a university- based academic talent search program. The elementary

gifted participants were students who tested at or above the high 95th percentile on a subtest of a grade-level achievement test. The researchers did not provide information as to how the elementary students were identified as gifted. Data was collected across a three-year span. Assouline, et al. reported “working hard” (long-term effort) as the most selected attributional choice for academic success in general (46.6%), followed by “smart” (ability) for academic success in general (35.1%). Girls tended to identify long-term effort, and boys tended to identify ability as the reason for their academic success. When examining student attributional choice for science and mathematics, researchers found similar results to student choice for general school success. Participants overall did not indicate “luck” ($\leq 0.3\%$) or “instructor favoritism” as reasons for success ($\leq 0.1\%$). Students indicated “not working hard enough,” “not doing work the right way,” and “task difficulty” as their attributional choices for general school failure and not “lack of ability” or “instructor favoritism” ($\leq 2.1\%$). Based upon the theoretical framework of attribution theory, the participants identified with a stable causality and internal locus of control for their success and both internal and external locus of control for academic failure.

While consensus regarding the gifted being more internal with regard to locus of control has been reported, some limitations are present in each study. In two studies (Douglass & Powers, 1982; Assouline, et al., 2006), the gifted students were enrolled participants of a program recognizing their academic ability. Students’ involvement with this type of program may have affected their confidence ratings, with students feeling more confident as participants in the program than other gifted students who were not in the program. Additionally, students may have engaged in some impression management and may have been unwilling to acknowledge their performance as luck or favor (external attributions). Douglas and Powers

(1982) did not provide information concerning gender differences. Findings for both studies are also limited to the age group represented in their sample.

Six studies examined locus of control in both gifted and non-gifted students. Milgram and Milgram (1976) examined group differences on self-concept, locus of control, and test anxiety. The study included 492 Israeli students (182 gifted and 310 non-gifted) ranging from fourth grade to eighth grade. Students in the gifted group all tested in the superior IQ range (e.g. 120-129). When participants were questioned about willingness to take responsibility for past events and competence to affect future events positively, the gifted students were significantly more internal than their non-gifted peers, indicating a greater sense of their own behavior obtaining the desired outcome. When both groups were questioned regarding their ability to affect undesirable outcomes, no significant differences occurred between the two groups of students.

Similar to the Milgram and Milgram (1976) study, Fincham and Barling (1978) found that gifted students' scores on internal locus of control differed significantly from their non-gifted peers with gifted students scoring higher. The researchers studied locus of control of thirty four 9 and 10 year olds across three groups: gifted ($n = 10$), learning disabled ($n = 12$) and normal achieving ($n = 12$). Students whose academic performance led to a referral to the Association for the Education of Gifted Children of South Africa were classified as gifted in this study. The reported average IQ of gifted participants was 128. Students who were diagnosed as learning disabled by a multidisciplinary team and who received full-time remedial education were assigned to the learning disabled group. Participants in the normal achieving group were students who attended private school and who achieved at the average level for the age and grade. No further information was given concerning classification of students within the normal

achieving group. All participants were middle to upper class Caucasian males in South Africa. Powers and Douglas (1983) also studied the attributional process of gifted students. Participants included one group of 74 highly motivated academically gifted students (26 males and 48 females) and a comparison group of 77 high school students (39 males and 38 females). No information was provided regarding students' identification as gifted beyond enrollment in the University of Arizona's Precollege Program for the Gifted and Talented. In addition, the researchers did not provide an operationalized definition of high motivation. All participants were non-Hispanic Caucasian. The only significant finding of this study was that gifted students tended to attribute their academic success to ability while the comparison group did not.

Chan (1996) also examined the causal attributions of 143 identified intellectually gifted high school students and 133 high school students from the same region (New South Wales, Australia) who were neither classified as intellectually gifted nor participants in special education services. Students in the intellectually gifted group were students who were enrolled in a selective high school for students with superior intellectual ability. Students enrolled in the selective school scored in the top 3% to 5% range on standardized tests of achievement and a general test of ability. Participants in the gifted group reported they were more likely to believe that academic successes and failures were due to effort or lack of effort. The comparison group participants tended to attribute their success to luck and their failure to lack of ability. The results indicated that gifted students tend to possess greater confidence in their control of learning outcomes than participants in the non-gifted group.

The results reported by these three studies (Milgram & Milgram, 1976; Fincham & Barlking, 1978; Chan, 1996) are similar in that gifted students tended to have a more internal locus of control and possess a greater sense of control of learning. Limitations existed regarding

the generalizability of the studies' findings. Each study was conducted in another country, and it is questionable that the findings would be the same within gifted and non-gifted students within the United States. Findings are generalizable by, perhaps, country and to middle and high school students. Additionally, the composition of participants in the Fincham and Barling (1978) study appear homogenous, including only middle to upper class Caucasian males. Replicability is questionable for the Milgram and Milgram (1976) study. The researchers reported use of an unpublished scale they created to assess locus of control. No information regarding the reliability or validity of their new measure was reported, and this instrument was the only measure for locus of control in their study.

Studies completed by Davis and Connell (1985) and Loeb and Jay (1987) differ in their findings regarding significant differences in locus of control for gifted and non-gifted students. Davis and Connell (1985) completed a study that examined the effects of aptitude and achievement on self-evaluation and motivational processes and control understanding (the degree to which students perceive themselves, teachers, or unknown factors as controlling success and failure) across three groups: gifted, average intelligence, and underachievers. The study was conducted in a northeastern metropolitan area with students from lower to upper middle class families. There were 122 participants ranging from fourth grade to sixth grade. The researchers reported that males and females were approximately equally distributed in the final sample. The criterion for inclusion in the gifted was an IQ score above 125. Students whose IQ score fell within 0.5 standard deviations of sample mean IQ were assigned to the average intelligence group. Underachievers were identified within both gifted and average intelligence groups. Students whose achievement test scores were at least one standard error below the predicted achievement test scores (predictions based on IQ) were classified as underachievers. No

significant differences were found between the gifted group and average group on internal control or powerful others. Both groups tended to identify internal attributes (effort) as the cause for success and failure in school. The groups differed significantly on unknown control. Students in the average intelligence group tended to rate themselves significantly higher on unknown control when compared to students in the gifted group. Similarly, Loeb and Jay (1987) found no significant differences between gifted and non-gifted students on locus of control. The researchers examined the self-concept of 125 gifted (60 males and 65 females) and 102 non-gifted (46 males and 56 females) students between nine and twelve years old. Gifted participants were admitted to gifted programs based on their standardized aptitude and achievement test scores. The researchers did not provide information concerning the test scores needed for admission. Participants in the non-gifted group were students who attended regular classes in the same school. When locus of control was examined by group and gender, girls in the gifted group scored higher on internal locus of control than girls in the non-gifted group. Differences between males in the gifted and non-gifted group were not significant.

However, generalizability and replicability are questionable for the Davis and Connell (1985) and Loeb and Jay (1987) studies. The Davis and Connell (1985) study findings may be generalizable to other fourth through sixth graders living in the Northeast. Results for this study may not be generalizable to students of families outside of the lower to upper middle class. Replicability is also questionable as neither study provided information regarding the race of participants in the study. Loeb and Jay's (1987) findings may or may not be generalizable to other elementary and middle school students as self-concept continues to change as children progress towards and through adolescence. Participants were from predominantly Caucasian

middle class families living in the suburbs; therefore, findings may not generalize to students who are from lower or upper class families or are of other racial or ethnic backgrounds.

Test Anxiety

Very few studies examine test anxiety in gifted or high achieving individuals (Williams, 1996). Many studies on test anxiety have been concerned with average academic ability students. Very little is known regarding the impact of test anxiety and emotionality on the performance of high achieving students and gifted students.

In a study conducted by Williams (1996), 103 high achieving students (49 male and 54 females) were asked to report levels of worry and emotionality of test anxiety. High achieving participants were students nominated to participate in a one year enrichment program with honor courses. These students also obtained an achievement test score within the 85th percentile. The researcher found that females experienced significantly more worry and emotionality of test anxiety than males. Results also indicated a negative relationship between test anxiety and academic performance in science. In a study by Beer (1991), 27 gifted students from Northern Kansas were assessed on depression, anxiety, and test anxiety measures. Participants were children identified as gifted based on the State of Kansas guidelines which include an intelligence test score at the 97th percentile and academic scores at the 95th percentile. No information was provided concerning participant classification. The results indicated the students did not experience “much” test anxiety as they scored in the moderate range of the test anxiety measure. A study by Zeidner and Schleyer (1999) examined the reported test anxiety of 1,488 Israeli students (772 gifted and 716 non-gifted) ranging from elementary school to high school. Participants in the gifted group met criteria for gifted programs. The criteria for inclusion into gifted programs were not provided. Participants in the non-gifted group were

“regular” students who were in mixed ability classes. The researchers found that non-gifted students reported significantly higher levels of test anxiety than the gifted students. This finding was supported by Milgram and Milgram (1976) and Zeidner and Schleyer (1999); test anxiety was modestly negatively correlated with grades for both gifted and non-gifted students.

Generalizability of results from the above studies is limited. While the first study (Williams, 1996) examines high achieving students, it is not clear that these students meet the criteria to be considered academically gifted. The second study’s (Beer, 1991) findings may not generalize to gifted students in the Southeast as the criteria for gifted inclusion may differ from state to state. Clear guidelines regarding how the students were identified as gifted were not provided. The third study (Ziedner & Schleyer, 1999) is based on an Israeli student population, and findings may not translate cross-culturally with U.S. students. Finally, no comparison group was included in the first (Williams, 1996) and second (Beer, 1991) studies.

Questions remain regarding aspects of motivation of gifted and non-gifted students. This study expanded upon previous research and included exploratory analysis to inform the direction of future research. This dissertation study addressed the following research questions.

Research Questions

1. What is the relationship among students’ ratings of intrinsic goal orientation, extrinsic goal orientation, control of learning beliefs, self-efficacy for learning and performance, test anxiety, and academic performance of non-gifted students?
2. What is the relationship among students’ ratings of intrinsic goal orientation, extrinsic goal orientation, control of learning beliefs, self-efficacy for learning and performance, test anxiety and academic performance of gifted students?

3. Is there a difference between gifted and non-gifted students' intrinsic goal orientation, extrinsic goal orientation, control of learning beliefs, self-efficacy for learning and performance, and test anxiety?
4. Is there a difference between male and female students' intrinsic goal orientation, extrinsic goal orientation, control of learning beliefs, self-efficacy for learning and performance, and test anxiety?
5. Are there unique profiles of motivational constructs associated with individuals who are intellectually gifted and those who are not? Are significant differences found across students in different profiles with respect to their reported GPAs and reported interest in science, engineering, and mathematics?

CHAPTER THREE

RESEARCH DESIGN AND METHODOLOGY

Initial Power Analysis

Power refers to the probability of correctly rejecting the null hypothesis when an alternative hypothesis is true. Power ranges from 0 to 1. An a priori power analysis, using G*Power 3.1.3 (Faul, Erdfelder, Buchner, & Lang, 2009) for an ANOVA was conducted to determine the needed sample size, given the following parameters: effect size = .30, alpha = .05 and power set at .80. An alpha of .05 indicates 95% confidence that results are not due to chance (Wilson Van Voorhis & Morgan, 2007) with a corresponding 5% chance of incorrectly rejecting the null hypothesis. Effect size determines the magnitude of differences between groups (in this study, gifted and non-gifted, male and female) and provides information regarding the practical significance of findings. Calculations were based on a moderate effect size of .30, which have been found in educational studies, including detecting gender differences on subscales of intelligence tests, and similar studies. Power was set at .80 indicating an 80% chance of detecting significant findings that are not due to chance in the study. The total recommended sample size was 90 participants. Given the above parameters, the study sample size (126) exceeds the minimum required sample size.

Participants

This study used a pre-existing data set. The archival data consists of data collected from 126 middle and high school students (57 male and 69 female) who attend Florida State University School (FSUS) and students from across Florida's middle and high schools who applied to attend a gifted summer camp. The participants belonged to one of two groups: Gifted or non-gifted. The demographic features for all participants appear in Table 1.

Table 1.
Demographics of Participants by Student Group

	Non-Gifted Students		Gifted Students		Total
	<i>n</i>	%	<i>n</i>	%	<i>n</i> (%)
Gender:					
Female	35	53%	22	36.7%	57 (45.2%)
Male	31	47%	38	63.3%	69 (54.8%)
Ethnicity:					
White	33	50%	35	58.3%	68 (54%)
Black/African-American	14	21.2%	4	6.7%	18 (14.3%)
Hispanic/Latino	7	10.6%	11	18.3%	18 (14.3%)
American Indian/Alaska Native	0	0%	1	1.7%	1 (.8%)
Asian	2	3%	8	13.3%	10 (7.9%)
Other	10	15.2%	1	1.7%	11 (8.7%)
Grade Level:					
7 th Grade	4	6.1%	0	0%	4 (3.2%)
8 th Grade	21	31.8%	0	0%	21 (16.7%)
9 th Grade	18	27.3%	0	0%	18 (14.3%)
10 th Grade	11	16.7%	38	63.3%	49 (38.9%)
11 th Grade	9	13.6%	18	30%	27 (21.4%)
12 th Grade	3	4.5%	3	5%	6 (4.8%)
Unknown	0	0%	1	1.7%	1 (.8%)

Participants in the gifted group were applicants of the 2010 Summer Academy, Engineering the Future, a project co-directed by Dr. Steven Pfeiffer, a professor in the College of Education at Florida State University and Dr. Farrukh Alvi, a professor in the Florida A&M University-Florida State University College of Engineering. The application process for entrance into the summer camp was very competitive. Applicants represented the top performing students from

various counties within the state of Florida. In addition, each of these students expressed interest in one or more of the following areas: science, engineering, and mathematics. The gifted group consisted of 60 students (38 males and 22 females). Sixty-six participants were in the non-gifted group (19 males and 47 females). The participants in this group were invited to participate in the research project through their school, FSUS. Professor Steven Pfeiffer collected the data for both groups through an online survey. Informed consent was obtained from the parents of students who were less than 18 years old.

Measures

Demographic Survey

Students were asked to identify themselves by providing their full name and their parents' full names. Participants were then asked to provide their date of birth and identify their gender, race/ethnicity, current grade level in school, and average overall grade for the following subjects: science, math, social studies, and English/language arts.

Brief Motivation Scale

The researchers reviewed and selected items from the Motivation scale of the *Motivated Strategies for Learning Questionnaire (MSLQ)* (Pintrich, et al., 1991), creating a shortened version of the Motivation scale. The *MSLQ* was originally “designed to assess college students’ motivation orientations and their use of different learning strategies for a college course” (Pintrich, et al., 1991 p. 3; Pintrich et al., 1993); however, this measure has been used in its entirety and in parts to assess students’ motivation in elementary, middle, and high school as well (Andreou, 2004; Bong & Hocevar, 2002; Brookhart, Durkin, 2003; Eom & Reiser, 2000; Eshel & Kohavi, 2003; Hamman, Berthelot, Saia, & Crowley, 2000; Matuga, 2009; McWhaw &

Abrami, 2001; Pintrich, 2000; Pintrich & DeGroot; Ommundsen, 2003; Vansteenkiste, Sierens, Soenens, Luyckx, & Lens, 2009).

The full *MSLQ* contains 81 items, grouped into six motivation scales and nine learning strategy scales. The motivation scales are intrinsic goal orientation, extrinsic goal orientation, task value, control of learning beliefs, self-efficacy for learning, and test anxiety. Intrinsic goal orientation and extrinsic goal orientation measure the student's motives for engaging in a learning task. The intrinsic orientation scale assesses the degree to which the learner engages in learning tasks because doing the task is personally rewarding because it provides challenge, curiosity, or mastery while the extrinsic orientation scale assesses the degree to which the learner engages in learning tasks so that he/she is focus on obtaining a reward that is external to doing the task, such as grades, rewards, competition, or positive recognition by others. The control of learning beliefs scale evaluates the degree to which the student believes outcomes are dependent on his/her own effort. The self-efficacy for learning scale evaluates the learner's judgments and confidence regarding his/her ability to accomplish a task successfully. The test anxiety scale measures the student's negative thoughts as well as emotional and physiological responses that disrupt performance (Pintrich, et al., 1991; Pintrich et al., 1993). The task value scale, one of the motivation scales in the *MSLQ*, was excluded from the brief measure for assessing motivation-related factors. The learning strategy scales were also excluded in from the brief measure.

The procedure for completing the brief motivation measure, scoring, and interpreting scores remained unchanged from the original questionnaire. Students were asked to read each item and respond by endorsing the degree to which the item described them, using a 7-point Likert scale. A response of 1 indicated the statement was "not at all true of me," and 7 indicated the statement was "very true of me" (Pintrich, et al., 1991; Pintrich et al., 1993). Scale scores for

the brief motivation measure were obtained by summing and averaging the scores of each item for each individual. High overall scores indicated more presence of the construct being assessed (Artino, 2005; Duncan & McKeachie, 2005). The authors of the *MSLQ* reported the coefficient alphas for the motivational scales were robust and demonstrated good internal consistency (Pintrich, et al., 1993).¹ The alphas for the brief measure in this study were the following: Intrinsic Goal Orientation ($\alpha = .80$), Extrinsic Goal Orientation ($\alpha = .72$), Control of Learning Beliefs ($\alpha = .67$), Self-Efficacy for Learning and Performance ($\alpha = .86$), and Test Anxiety ($\alpha = .76$). The alphas for the brief motivation measures appear comparable to the alphas reported in the manual for the *MSLQ* and are considered acceptable for research use.

Student GPA

The grade point average (GPA) is an averaging of all the grades of an individual student over the course of an academic school quarter, semester, or year. In this study, the GPA was calculated based on the students' reported overall grades in the following subjects: science, mathematics, social studies, and English/language arts.

Procedures

This study used parts of archival data from research conducted by Dr. Steven I. Pfeiffer at Florida State University. Approval for the collection of the original data was obtained from the Florida State University Institutional Review Board as well as Florida State University School. The original data were collected via an online survey. Parents of the non-gifted participants were contacted through postal mail. A consent letter was sent to parents to provide consent for their child to complete the surveys online. Parents of the gifted participants were contacted through e-

¹ The manual reported the internal consistency estimates for the motivation scales range from .62 to .93: Intrinsic Goal Orientation (.74), Extrinsic Goal Orientation (.62), Control Beliefs for Learning (.68), Self-Efficacy for Learning and Performance (.93), and Test Anxiety (.80) (Pintrich, et. al., 1991).

mail and were provided with the same information as parents of the non-gifted participants. After parental consent was obtained, students were e-mailed a youth assent form and a link to complete the survey online. The survey included the brief motivation measure, self-reported letter grades, and a demographic questionnaire.

The following chapter provides the analysis of the data obtained from gifted and non-gifted students via the on-line surveys.

CHAPTER FOUR

RESULTS

This chapter includes the preliminary analysis and subsequent statistical analyses to answer the research questions and provide information regarding rejecting or accepting the proposed hypotheses.

Preliminary Analysis

Preliminary analyses were conducted to examine the extent to which the assumptions for Pearson's correlation and ANOVA were met. Assumptions for Pearson's correlation included linearity, absence of outliers, and bivariate normality. Linearity was established through a visual examination of scatterplots. Scatterplots appeared to show linear relationships between variables; therefore, the assumption of linearity was met. Outliers or data points that did not fit with the pattern of the rest of the data set were also identified through visual inspection of scatterplots. A number of outliers were detected, particularly within the gifted group. The assumption regarding no outliers was violated. The results of the analyses that included outliers were compared to results that excluded outliers and no statistical distinctions were observed between findings. As a result, the outliers were not excluded from analysis. Bivariate normality was assessed by testing the extent to which the scores of variables formed normal distributions. The assumption of bivariate normality was not confirmed. According to the Shapiro-Wilk's test, not all variables were normally distributed, $p > .05$. However, Havlicek and Peterson (1976) reported that Pearson's correlation "is insensitive to rather extreme violations of the basic assumption of normality..." (p. 1319), and is therefore robust to violations of normality.

Assumptions for the ANOVA include independence (participant is a member of one group and not both groups), normal distribution of the dependent variable, and the absence of

outliers. Based on the study design, participants could only be members of either the non-gifted group or the gifted group; therefore, independence of the observation was established. Based upon the Shapiro-Wilk's test, $p < .05$, the assumption of normal distribution was shown to be violated for some of the variables within one group. Variables without normal distribution included intrinsic goal orientation, extrinsic goal orientation, control of learning beliefs, self-efficacy, test anxiety, and GPA for gifted students. Examination of the dependent variables within the non-gifted group revealed extrinsic goal orientation, test anxiety, and student GPA were not normally distributed. As a result of the violation of normal distribution, caution is advised during interpretation. However, statisticians have examined the robustness of ANOVA to violation of the normal distribution assumption. According to Cochran (1947), the consensus of such examinations has been that "no serious error is introduced by non-normality in the significance levels of the F -test..." (p. 24). ANOVA appears to be robust against violations of normal distribution; however, caution is encouraged with interpretation of subsequent findings (Schmider, Zielger, Danay, Beyer, & Bühner, 2010).

Data Analysis

In this section, each research question is restated and the results from the appropriate analysis is described and in tables when appropriate.

Research Question One

The first research question examined the relationship among non-gifted students' ratings on intrinsic goal orientation, extrinsic goal orientation, control of learning beliefs, self-efficacy, test anxiety, and academic performance. The *a priori* hypotheses were that a statistically significant positive relationship would be found among the following variables: intrinsic goal orientation, control of learning beliefs, self-efficacy, and academic performance. Students'

scores on extrinsic goal orientation were expected to be positively correlated with test-anxiety. Additionally, it was hypothesized that test anxiety would be negatively correlated with both self-efficacy and student GPA.

Table 2 shows the bivariate correlations, for the scores provided by non-gifted and gifted students. The table also shows the means and standard deviations for the variables.

Table 2.
Correlation Matrix for Non-Gifted and Gifted Students

	1 Intrinsic Goal Orientation	2 Extrinsic Goal Orientation	3 Control Learning Beliefs	4 Self- Efficacy	5 Test Anxiety	6 GPA	M	SD
1	1	.24	.41**	.59**	-.28*	.29*	5.91	.86
2	.38**	1	.39**	.18	.30*	.07	5.08	1.38
3	.47**	.13	1	.41**	.06	.32*	5.51	1.03
4	.55**	.11	.51**	1	-.42**	.50**	6.00	.81
5	-.11	.19	-.13	-.48**	1	-.04	2.89	1.33
6	.31*	-.12	.14	.48**	-.19	1	3.79	.37
M	4.89	5.16	4.96	5.12	3.41	3.41		
SD	1.20	1.40	1.12	1.03	1.54	.55		

Note. Correlations and descriptive statistics for the non-gifted participants ($n = 66$) are presented below the diagonal, and correlations and descriptive statistics for the gifted participants ($n = 60$) are presented above the diagonal. * = $p < .05$, ** = $p < .01$, *** = $p < .001$.

Pearson's correlations were run to calculate the relationship among the variables (see Table 2).

Within the non-gifted group, analysis show that intrinsic goal orientation was moderately, positively correlated with the following variables: extrinsic goal orientation, $r(64) = .38, p < .01$, control of learning beliefs, $r(63) = .47, p < .01$ and student GPA, $r(62) = .31, p < .05$. Analysis

showed a strong positive correlation between intrinsic goal orientation and self-efficacy, $r(63) = .55, p < .01$. Additionally, analysis showed a strong positive correlation between students' ratings of control of learning beliefs and their self-efficacy, $r(63) = .51, p < .01$. Self-efficacy was moderately positively correlated with student GPA, $r(62) = .48, p < .01$. Students' ratings for self-efficacy was negatively correlated with test anxiety, $r(64) = -.48, p < .01$. Finally, analysis showed that there was no significant correlation between test anxiety and student GPA, $r(62) = -.19, p > .05$.

Research Question Two

The second research question examined the relationship among motivational variables (intrinsic goal orientation, goal orientation, control beliefs, and self-efficacy), test anxiety, and academic performance (GPA) of gifted students, and positive relationships were predicted. As shown in Table 2, as hypothesized, the relationship among gifted students' ratings of intrinsic goal orientation, control of learning beliefs, self-efficacy, and their GPAs was significantly positively correlated. There was a strong positive correlation between gifted students' ratings of intrinsic goal orientation and their ratings of self-efficacy, $r(58) = .51, p < .01$. Their ratings of intrinsic goal orientation were moderately positively correlated with their ratings for control of learning beliefs, $r(58) = .41, p < .01$ but weakly positively correlated with their GPAs, $r(58) = .29, p < .05$. For gifted students' ratings that indicated high intrinsic goal orientation, their ratings of test anxiety were low, and vice-versa, $r(58) = -.28, p < .05$, revealing a negative linear relationship. There was a moderate positive relationship between gifted students' ratings of extrinsic goal orientation and their ratings for control of learning beliefs, $r(58) = .39, p < .01$ and test anxiety, $r(58) = .30, p < .05$. Additionally, gifted students' ratings of control of learning beliefs were moderately positively correlated with their ratings of self-efficacy, $r(58) = .41, p <$

.01 and their GPAs, $r(58) = .32, p < .05$. Finally, self-efficacy was negatively correlated with test anxiety, $r(58) = -.42, p < .01$ and positively correlated with student GPA, $r(58) = .50, p < .01$.

Research Question Three

The third research question inquired if there was a difference between non-gifted students' and gifted students' ratings of intrinsic goal orientation, extrinsic goal orientation, control of learning beliefs, self-efficacy, and test anxiety. It was hypothesized that, when compared with non-gifted students, gifted students would report higher levels of intrinsic goal orientation, control of learning beliefs, and self-efficacy while reporting lower levels of extrinsic goal orientation and test anxiety.

The data from the ANOVA analysis is shown in Table 3.

Table 3.
One-Way Analysis of Variance of Non-Gifted and Gifted Students

Variables	Non-Gifted			Gifted			<i>F</i>	ω^2
	<i>n</i>	Mean	SD	<i>n</i>	Mean	SD		
Intrinsic Goal Orientation	66	4.89	1.20	60	5.91	.86	29.67**	.185
Extrinsic Goal Orientation	66	5.16	1.40	60	5.08	1.38	.102	.007
Control of Learning Beliefs	65	4.96	1.12	60	5.51	1.02	8.28**	.055
Self-Efficacy	66	5.12	1.03	60	6.00	.806	28.00***	.176
Test-Anxiety	66	3.41	1.54	60	2.89	1.33	3.98**	.023
GPA	64	3.41	.554	60	3.79	.365	19.63***	.131

Note. * = $p < .05$, ** = $p < .01$, *** = $p < .001$.

Statistically significant differences were found between the non-gifted and gifted groups. There were statistically significant differences between the non-gifted and gifted students' ratings for

intrinsic goal orientation, control of learning beliefs, self-efficacy, and test anxiety. Gifted students reported higher levels of intrinsic goal orientation, $F(1, 124) = 29.667, p < .001$, control of learning beliefs, $F(1, 123) = 8.283, p = .005$, and self-efficacy, $F(1, 124) = 28.004, p < .001$, than non-gifted students. Additionally, gifted students reported significantly lower levels of test anxiety than the non-gifted students, $F(1, 124) = 3.983, p = .048$. There were no significant differences found in extrinsic goal orientation when comparing non-gifted and gifted students, $F(1, 124) = .102, p = .751$.

To determine effect size, the following calculation was used: $\hat{\omega}^2 = \frac{SS_b - (df_b)MS_w}{SS_t + MS_w}$. The effect sizes are shown in Table 3, along with means and standard deviations for all variables. One recommended minimum effect size that represents practical significance for squared association indices in social science is .04 (Ferguson, 2009). Ferguson (2009) defined a moderate effect size as ranging from .25 to .63 and a strong effect size as greater than .63. Based on these guidelines (Ferguson, 2009), the magnitude of differences between non-gifted students and gifted students on extrinsic goal orientation and test anxiety appear to be negligible and fall below the recommended minimum effect size. However, difference between groups' scores on intrinsic goal orientation, control of learning beliefs, self-efficacy, and GPA do demonstrate small effect ($\omega^2 < .25$). Membership within the intellectually gifted group accounted for 18.5% of the variance in students' scores on intrinsic goal orientation, 5.5% of the variance on control of learning scores, 17.6% of the variance on self-efficacy scores, and 13.1% of the variance of GPA. While the magnitudes of differences were minimal, these findings still bear implications for practice and future research. Recommendations for educators and researchers will be discussed in the next chapter.

Research Question Four

The fourth research question examined differences between female and male students on their ratings of intrinsic goal orientation, extrinsic goal orientation, control of learning beliefs, self-efficacy, and test anxiety. It was hypothesized that there would be no difference between gender groups on the dependent variables. Additional analyses were conducted to examine gender differences by student group.

A One-way ANOVA was run to test the hypothesis. There were no significant differences found between male and female ratings on any of the variables, $p > .05$. The detailed results are presented in Table 4.

Table 4.
One-Way Analysis of Variance of Female and Male Students

Variable	Female			Male			F	ω^2
	n	Mean	SD	n	Mean	SD		
Intrinsic Goal Orientation	57	5.50	1.08	69	5.28	1.23	1.11	.001
Extrinsic Goal Orientation	57	5.25	1.42	69	5.04	1.36	.869	.001
Control of Learning Beliefs	57	5.07	.160	68	5.35	.994	1.98	.008
Self-Efficacy	57	5.38	1.06	69	5.67	.987	2.60	.013
Test-Anxiety	57	3.38	1.66	69	2.98	1.25	2.41	.011

Note. * = $p < .05$, ** = $p < .01$, *** = $p < .001$.

A One-way ANOVA for the non-gifted students revealed there were no significant differences between male and female students' ratings on any of the dependent variables, $p > .05$. The results are presented in Table 5.

Table 5.
One-Way Analysis of Variance of Non-Gifted Female and Male Students

Variable	Female			Male			<i>F</i>	ω^2
	<i>n</i>	Mean	SD	<i>n</i>	Mean	SD		
Intrinsic Goal Orientation	35	5.00	1.01	31	4.77	1.38	.547	.007
Extrinsic Goal Orientation	35	5.23	1.30	31	5.08	1.53	.194	.012
Control of Learning Beliefs	35	4.79	1.17	30	5.16	1.05	1.81	.012
Self-Efficacy	35	4.95	1.03	31	5.31	1.02	1.97	.014
Test-Anxiety	35	3.61	1.70	31	3.17	1.33	1.38	.006

Note. * = $p < .05$, ** = $p < .01$, *** = $p < .001$.

A One-way ANVOA of the gifted group revealed a significant differences across gender ratings on intrinsic goal orientation, $F(1,58) = 5.170$, $p = .007$, where female gifted students endorsed higher ratings of intrinsic goal orientation than male gifted students. Differences across gender indicate a small effect, $\omega^2 < .25$. No other significant differences were found across gender, $p > .05$. The results are shown in table 6.

Table 6.
One-Way Analysis of Variance of Gifted Female and Male Students

Variable	Female			Male			<i>F</i>	ω^2
	<i>n</i>	Mean	SD	<i>n</i>	Mean	SD		
Intrinsic Goal Orientation	22	6.30	.620	38	5.69	.908	7.768**	.101
Extrinsic Goal Orientation	22	5.27	1.62	38	4.95	1.23	.694	.005
Control of Learning Beliefs	22	5.53	1.16	38	5.50	.935	.009	.017
Self-Efficacy	22	6.05	.715	38	5.97	.863	.147	.014
Test-Anxiety	22	3.01	1.57	38	2.80	1.19	.278	.044

Note. * = $p < .05$, ** = $p < .01$, *** = $p < .001$.

Research Question Five

The fifth research question was primarily exploratory. Cluster analyses and One-way ANOVAs were conducted to address the question whether or not gifted students had a unique motivational profile. Cluster analysis is used primarily to gain understanding or for utility purpose (Tan, Steinbach, & Kumar, 2005). The cluster analyses organized participants into groups, or clusters, based on the similarities of individuals' ratings on motivation variables within clusters and the of the individual's ratings in comparison with the other clusters. The end goal is that participants' ratings within a cluster will be most similar to others' ratings within that same cluster and dissimilar to participants' ratings in other clusters (Norusis, 2011). The analysis suggested that a 4-cluster arrangement allowed for explanation of the greatest amount of variation while maintaining a reasonable number of participants in each cluster. The cluster means are provided in Table 7.

Table 7.
Means and p Values for the 4 Cluster of Motivation Variables

Variable	Low Motivation (<i>n</i> = 22) Mean	Reward (<i>n</i> = 28) Mean	Confident (<i>n</i> = 37) Mean	Determined (<i>n</i> = 39) Mean	<i>p</i> Values
Intrinsic Goal Orientation	3.81	4.76	5.95	6.16	<i>p</i> < .001
Extrinsic Goal Orientation	3.65	6.13	4.05	6.23	<i>p</i> < .001
Control of Learning Beliefs	4.41	4.46	5.32	6.13	<i>p</i> < .001
Self-Efficacy	4.45	4.76	6.04	6.24	<i>p</i> < .001

Note: Low motivation (cluster 1), reward oriented (cluster 2), confident (cluster 3), and determined (cluster 4).

The score means for each variable were identified as being very low, low, moderate, high, or very high. Very low scores included means less than 3. Low scores were means between 3 and

4, while moderate scores were defined as means between 4 and 5. High scores were means that were greater than 5 and less than 6. Very high scores were defined as means greater than or equal to 6.

Students in Cluster 1 were characterized by low goal orientation scores (i.e., intrinsic, extrinsic) and moderate scores of control of learning beliefs and self-efficacy. As a result, this cluster will be referred to as the *low motivation group*. Students in Cluster 2 were characterized by high extrinsic motivation scores and moderate ratings for intrinsic goal orientation, control of learning beliefs, and self-efficacy. Cluster 2 will be referred to as the *reward oriented group*. Students in Cluster 3 were distinguished by very high scores for self-efficacy and high scores for intrinsic goal orientation and control of learning beliefs. Students' ratings for extrinsic goal orientation fell within the moderate range for this cluster. Cluster 3 will thus be referred to as the *confident group*. Finally, with all means falling within the very high range, students in Cluster 4 differed from all other clusters and will be referred to as the *determined group*.

To determine the participant characteristics of giftedness and non-giftedness within each cluster, a cross tabulation was conducted. A chi-square was also conducted to determine if group participants were equally represented in each cluster. The contingency table is shown in Table 8.

Table 8.
Cross Tabulation Table by Student Group

Variable	Low Motivation (n = 22)	Reward (n = 28)	Confident (n = 37)	Determined (n = 39)	Total
Non-Gifted	16	23	14	13	66
Percent	24.2%	34.8%	21.2%	19.7%	100%
Gifted	6	5	23	26	60
Percent	10%	8.3%	38.3%	43.3%	100%

The cross tabulation of the clusters revealed the presence of both non-gifted and gifted students within each of the 4 clusters (low motivation, reward, confident, and determined). Of the 66 non-gifted participants, 16 were in the low motivation group, 23 were in the reward group, 14 were in the confident group, and 13 were in the determine group. Of the 60 gifted participants, 6 were in the low motivation group, 5 were in the reward group, 23 in the confident group, and 26 in the determined group. The chi-square indicated that non-gifted and gifted participants were not equally represented in each cluster ($\chi^2(2) = 22.404, p < .001$). Non-gifted students represented approximately 73% and 82% of the participants in the low motivation and reward oriented groups respectively and 14% and 13% in the confident group and determined group respectively. Gifted students represented 27% of the participants in the low motivation group and 18% of the reward oriented group and 62% and 67% of the participants in the confident group and the determined group respectively. Thus, both non-gifted and gifted students were represented in each cluster, but non-gifted students were more likely to be in the low motivation and reward oriented groups while gifted students were more likely to be in the confident and determined groups.

To determine if a significant difference existed across cluster-groups, an ANOVA was conducted on each of the motivation variables (i.e., intrinsic goal orientation, extrinsic goal orientation, control of learning beliefs, and self-efficacy). The ANOVA was followed by a Tukey HSD post-hoc test to control for Type I errors. A second ANOVA examined differences between cluster-groups on two non-motivation variables, test anxiety and student GPA. Scheffe's post-hoc test was run to control for Type I errors. The means, standard deviations, standard errors and *F* statistics are presented in Table 9.

Table 9.
One-Way Analysis of Variance of 4 Clusters

Variable	Low								F	ω^2
	Motivation (n = 22)		Reward (n = 28)		Confident (n = 37)		Determined (n = 39)			
	Mean	SD	Mean	SD	Mean	SD	Mean	SD		
Intrinsic Goal Orientation	3.81	.976	4.76	.702	5.95	.754	6.16	.169	60.01***	.584
Extrinsic Goal Orientation	3.65	.894	6.13	.631	4.05	.894	6.23	.680	91.52***	.683
Control of Learning Beliefs	4.41	1.03	4.46	.917	5.32	.848	6.13	.673	29.35***	.405
Self-Efficacy	4.45	.924	4.76	.685	6.04	.679	6.24	.597	47.89***	.528

Note: *** $p < .001$

There were main effects between the clusters for their ratings on intrinsic goal orientation ($F(3, 122) = 60.01, p < .001$), extrinsic goal orientation ($F(3, 122) = 91.52, p < .001$), control of learning beliefs ($F(3, 121) = 29.346, p < .001$), and self-efficacy ($F(3, 122) = 47.89, p < .001$). As show in Table 9, the observed large effect sizes indicate likely practical significance of the statistically significant differences found between cluster groups on the dependent variables.

A second One-way ANOVA was conducted to determine differences between cluster groups on students' ratings of test anxiety and if differences existed for GPA. Results are show in Table 10.

Table 10.
One-Way Analysis of Variance of 4 Clusters by Test-Anxiety and Student GPA

Variable	Low								F	ω^2
	Motivation (n = 22)		Reward (n = 28)		Confident (n = 37)		Determined (n = 39)			
	Mean	SD	Mean	SD	Mean	SD	Mean	SD		
Test Anxiety	3.32	1.15	4.27	1.46	2.50	1.27	2.90	1.36	10.24***	.180
GPA	3.23	.588	3.32	.541	3.83	.309	3.76	.373	13.81***	.237

Note: *** = $p < .001$

Results showed a statistically significant difference for both test anxiety ($F(3, 122) = 10.24, p < .001$) and students' GPA ($F(3, 120) = 13.81, p < .001$). The means, standard deviations, F statistics, and effect sizes are presented in Table 8; demonstrating a small effect size for cluster-group differences on test anxiety scores ($\omega^2 = .180$) and a moderate effect size of cluster group differences on students' GPA ($\omega^2 = .237$).

CHAPTER FIVE

DISCUSSION

Findings

Exceptional students, particularly those who outperform their peers, have been recognized as potential future leaders in important areas of our society (Bloom, 1985; Gallagher 1994; Pfeiffer & Jarosewich, 2003). Assumptions regarding gifted students' ability to regulate and direct their own learning have often been part of the basis for instructional programs for these students (Neber & Schommer-Aikins, 2002; Yoon, 2009). When attempting to understand the way in which students learn, it is necessary to also examine motivational components. Researchers and theorists have encouraged the study of not only ability, but also non-cognitive factors (Duckworth, Peterson, Matthews, & Kelly, 2007). Aspects of motivation have been linked to academic achievement across a number of domains (Hazari, Potvin, Tai, & Almarode, 2010; Schmidt, 2005; McLean & Mallett, 2012), such as motivation. While some previous studies have focused on motivation in gifted students, questions surrounding motivation in these students still remain. This study examined the achievement motivation of intellectually gifted students and non-gifted students as it relates to their academic performance. Also this study addressed the question of the existence of a unique motivational profile for intellectually gifted students.

The intellectually gifted participants in this study were applicants to a highly competitive summer camp designed for middle and high school students who expressed interests in mathematics, science, and engineering. The non-gifted participants were junior high and secondary students enrolled in a research school in the Southeast. The purpose of this study was to provide insight into the motivational characteristics of gifted children by addressing some of

the methodological problems of previous studies. Additionally this study explored the possibility of a unique profile of motivation for gifted students through cluster analysis.

Research Question One

Previous research established the connection between use of deep cognitive strategies, motivation, and academic performance. Research question one addressed the relationship among components of motivation (expectancy and value), affective components, and student academic performance for non-gifted students.

As expected, there was a positive relationship between control of learning beliefs and self-efficacy, indicating that non-gifted students who believed their own efforts determined their successful outcomes were also likely to believe they had the skill to successfully accomplish the task. Additionally the non-gifted students who were confident in their skill and ability also reported they tended to engage in academic tasks for mastery purposes. Furthermore, these students tended to experience less cognitive worry and negative physiological symptoms (i.e., anxiety) related to testing. Conversely, non-gifted students who reported engaging in schoolwork for external rewards tended to reported higher levels of worry about failing the exam, and having physiological symptoms of anxiety, and feeling upset during exams. Similar findings have been cited by other researchers (Pintrich & Garcia 1991; Ames, 1992; Dweck & Legget, 1998; Pintrich 2000; Pintrich & Schunk, 1996; Urdan, 1997; Harackiewicz, Manderlink, & Sansone, 1984; Lee, McNerney, & Ortiga, 2012, Rawsthorne & Elliot, 1999; Midgley, Kapland, & Middleton, 2001; Ryan & Stiller, 1991). Students who performed well academically tended to report engagement in academic tasks for intrinsic purposes and a positive assessment of their ability. This finding supports the previous studies that cited an increase in academic performance associated with an increase in motivation (Schunk, et al., 2008).

As noted in the literature review, a number of studies have examined the relationship between locus of control and academic performance. Control of learning beliefs within the non-gifted participants was hypothesized to have a similar relationship to academic achievement as internal locus of control. This hypothesis was confirmed. The results of this study support the findings of previous studies concerning a positive relationship between internal locus of control and academic performance (Carns & Carns, 1991; Garrell, 1996; Landine & Steward, 1998).

For non-gifted students, the motivational variables that seemed most related to academic performance were intrinsic goal orientation and self-efficacy, explaining approximately 9% and 23% of the variance in students' GPA respectively. These two variables also seemed most related to students' sense of control over their learning outcomes, each explaining more than 20% of the variance in control of learning beliefs. Findings suggest that for non-gifted middle and high school students who are engaged in regular education, intrinsic goal orientation, and self-efficacy are important concepts and are related to academic performance. In addition, self-efficacy for these students explained about 23% of the variance in ratings on test anxiety. As previous research has highlighted, self-efficacy may serve as a protective factor even when students are primarily performance goal oriented (Elliott & Dweck, 1988).

Understanding the positive impact of self-efficacy on students and how to increase self-efficacy may provide parents, teachers and others concerned with the healthy development of today's youth an avenue by which to positively influence their academic performance. While ability plays an important role in student performance, other factors such as self-efficacy also appear influential. Additional studies are needed that a) examine the direct relationship between student self-efficacy and academic performance, b) further investigate self-efficacy as a protective factor against negative aspects of extrinsic goal orientation, and c) help develop cost

and time effective interventions that increase the self-efficacy of both gifted and non-gifted middle and high school students.

Research Question Two

Research question two addressed the relationship among motivation variables, test anxiety, and students' GPA in gifted students. The data supported some of the proposed hypotheses. As expected, a higher sense of control over academic outcome (internal vs. external) was related to confidence in ability to successfully accomplish school tasks. Students with higher self-efficacy also reported engaging in academic learning for intrinsic value and reported less test anxiety than students who reported moderate levels of self-efficacy. Based on the data, higher confidence or self-efficacy was related to lower levels of worry and negative physiological symptoms while taking tests. The opposite relationship was observed in students who reported higher levels of extrinsic goal orientation. Those students tended to report greater levels of both cognitive and physiological indications of test anxiety. Additionally, the findings confirmed the expectation of a positive relationship between students' academic performance and both self-efficacy and intrinsic goal orientation. For gifted students who were inclined to enjoy learning for the sake of mastery or challenge and believed they were capable of successfully completing academic tasks, their academic performance appeared higher than those students who did not share the same value or expectancy. These findings support those of Douglas and Powers (1982) who found a positive relationship between internal attribution, confidence, and expectancy. For the gifted students in this study, self-efficacy, control of learning beliefs, and intrinsic goal orientation accounted for 25%, 10%, and approximately 8% of the variance in students' GPA respectively. Students' ratings of self-efficacy, extrinsic goal

orientation, and intrinsic goal orientation accounted for approximately 18%, 9 %, and 8% of the variance in test anxiety scores respectively.

There were a few unexpected findings within the gifted group. The first finding was that gifted students' reported level of test anxiety and extrinsic goal orientation were not significantly related to students' GPA. Gifted students on average reported high levels of extrinsic goal orientation and very low levels of test anxiety. While it is accepted that other factors besides ability influence academic performance, ability still influences performance. The fact that intellectually gifted students had high performance despite high extrinsic goal orientation scores may be due to their high ability levels; however, further research is needed to examine this issue. Use of GPA alone as an indicator of student academic performance may not adequately allow for observation of differences in performance for intellectually gifted students. Additionally, the gifted students tended to report on average high levels of self-efficacy that may have served as a protective factor against having test anxiety (although low) and extrinsic goal orientation.

The second unexpected finding was that gifted students were found to engage in learning tasks for both the internal rewards of learning and the external recognition of achievements; however, the relationship between goal orientations were not as significantly positive as they were for non-gifted students. Taking the finding for both the non-gifted and gifted participants into consideration, the results support conceptualizing goal orientations on multiple spectra rather than polar ends of one spectrum.

When examining aspects of motivation, it appears that for identified intellectually gifted middle and high school students, the reasons why they engage in academic tasks, their beliefs about their ability to control their academic outcomes, and their beliefs about their ability to successfully accomplish an academic task are positively related to their academic performance.

It also appears that the reason they engage in academic tasks is significantly related to their beliefs about their abilities to successfully accomplish tasks and their low levels of test anxiety. These findings, like those for the non-gifted students, highlight a possible important interaction between self-efficacy and other factors previously found to be negatively related to academic performance.

Research Question Three

The third research question examined differences between the motivation of non-gifted and gifted students. The generalizability of some previous studies was questionable, and the present study sought to address some of those concerns. The results indicated that identified intellectually gifted middle and high school students tend to have significantly higher levels of intrinsic goal orientation, control of learning beliefs, and self-efficacy than other middle and high school students not identified as gifted. These findings support those from the Vallerand study (Vallerand, et.al., 1994), the Fullerton Longitudinal study (Gottfried & Gottfried, 1996), Zimmerman and Martinez-Pons (1990), Milgram and Milgram (1876), Finchman and Barling (1978), and Chan (1996). Additionally, intellectually gifted middle and high school students tend to experience significantly lower levels of test anxiety than their non-gifted peers. This finding supported the findings of Zeidner and Schleyer (1999) and Milgram and Milgram (1976). As there were few studies available that examined differences in the test anxiety of non-gifted and gifted students, this study provided support for the previous studies that were conducted outside the United States. Again, further research is needed to better understand how these differences in motivation may impact academic performance.

Research Question Four

Question four examined possible differences in motivation and test anxiety across gender. The hypothesis that there were no gender differences across extrinsic goal orientation, control of learning beliefs, self-efficacy for learning and performance, and test anxiety was confirmed. The null hypothesis for gender differences on intrinsic goal orientation for gifted students was rejected. This study's findings support those of Ablard and Lipshultz (1998) and in part, the findings of Gottfried and Gottfried (1996). This study's results differ from Gottfried and Gottfried's (1996) findings in that the current study revealed that intellectually gifted female students tend to report significantly higher levels of intrinsic goal orientation than intellectually gifted males.

Research Question Five

Exploratory in nature, question five addressed the question of whether a unique motivational profile existed for intellectually gifted students. Additional analyses were conducted to determine if non-gifted and gifted students were equally represented in each cluster and if students in motivational profiles differed across test anxiety and student GPA. Based on the cluster analysis and cross tabulation, there did not appear to be a unique profile of motivation for intellectually gifted students; however, most gifted students tended to fall within either the confident group or the determined group. Further examination of clusters revealed differences in anxiety and academic performance across cluster groups. Students in both the confident group and determined group reported lower levels of anxiety than the reward oriented group. Also, students in both the confident group and determined group had significantly higher GPAs than the low motivation group and reward oriented group. These two groups (confident and determined) differed from the other groups the most having higher scores on intrinsic goal

orientation, control of learning beliefs, and self-efficacy. Results indicated that, for students who were unmotivated (low motivation group), the level of anxiety was the lowest as there was likely little internal or external motivation to perform. While these students may believe that they have the ability to successfully complete academic tasks and they may believe they are able to influence their academic outcome, they seem to have little desire to put in the work for either internal or external reasons. In contrast, the reward oriented group, though highly motivated for external rewards, experienced greater levels of test anxiety. The strong desire to perform well to obtain the “prize” was not adequately supported by their control of learning beliefs and self-efficacy. For students in the reward oriented group, the beliefs that they may not possess the ability to successfully accomplish academic tasks and that their efforts may not have the desired effect on their outcome, coupled with the strong desire to achieve for external reward likely create a cycle of anxiety. This cycle may partly be explained by Dweck’s (2012; Dweck & Legget, 1988) implicit theories of intelligence and related maladaptive behavior patterns.

Limitations of the Study

As with any research study, there were limitations that may have influenced the results and in part may explain unexpected findings.² Limitations of this study included participant sampling and instrumentation.

Sampling

Although gifted students were from various counties and schools within the Southeast, the non-gifted participants were from the same school. It is possible that students in the non-gifted group may have shared some distinct characteristics unique to their learning environment. While the non-gifted students were enrolled in the same school and thus may have shared

² Limitations are unavoidable weaknesses found within the study’s design (Punch, 2006).

distinct characteristics, the type of school they attended may have further influenced their responses. The non-gifted students were enrolled in a research school that often participates in studies concerning education and other important areas for children and adolescents. Continued participation in studies that require students to self-assess or be evaluated by others may have somehow affected the way students viewed themselves or how they chose to respond to items that may be perceived as negative (e.g. test anxiety). Students may have engaged in impression management. This limitation may explain in part students' lower than moderate ratings of test anxiety. Gifted students also may have engaged in some impression management, and test anxiety scores may have actually been higher than reported. Gifted participants were simultaneously applying for entrance into a competitive summer camp. Previous research has cited moderate levels of test anxiety for high academic achievers, but this was not the case for non-gifted or gifted participants. Both groups of students reported very low to low levels of test anxiety.

Participants in the study were representative of a variety of racial backgrounds. Previous studies often did provide information concerning the racial make-up of their sample, or the sample was not representative of the demographic makeup of many public schools in the United States today. The findings of this study may have differed slightly, due in part to the inclusion of a variety of students from different races.

Instrumentation

The researchers who collected the data created a self-report brief motivation measure based on the *MSLQ* (Pintrich, et al., 1991). While the brief measure allowed researchers to focus solely on motivation, the number of items for each scale was reduced. The scale alphas of the brief measures were comparable to those of the original questionnaire; however, the internal

consistency of the extrinsic goal orientation, control of learning beliefs, self-efficacy for learning and performance, and test anxiety were lower than the preferred .80. Although researchers had the liberty to edit the *MSLQ* to fit their study, the measure was originally designed to be domain specific; however, in the study, the questionnaire was used to assess students' self-perceptions generally. Questioning students regarding their motivational characteristics on specific domains may have yielded different results. Also, use of a self-report measure assumes that participants will honestly and accurately report their own perceptions, which has been questioned.

Another limitation of the study was the way in which student performance was measured. While GPA has often been used in research as an indicator of student performance, sole reliance upon GPA as the measure of performance may have been limiting to both non-gifted and gifted students. The grading ceiling does not allow for much distinction pertaining to high performance. For example, a student who performs well may obtain an A just as a student who performs exceptionally well may also obtain an A. Additionally, grading practices may differ from one instructor to another, and therefore it cannot be assumed that an A for one student in one course (e.g. history) is the equivalent of an A for another student in the same course taught by a different teacher. Some students may have been enrolled in honors or Advanced Placement courses (e.g. AP English), and rating of performance may differ from how students in general education classes (e.g., English) were rated. In addition, an unstandardized GPA can be directly affected by other variables such as students' punctuality, behavior, participation in discussion, and class attendance. Indicators of academic performance should include additional standardized measures such as yearly achievement test scores. Finally, GPA was calculated based on the students' self-reported grades in their core curriculum courses. Again, this reliance

on self-report was based on the assumption that students would honestly and accurately report their grades.

Implications

Implications for Theory

The theoretical underpinnings for this research project were the tripartite model of giftedness and social-cognitive theories of motivation that include expectancy-value theory and attribution theory (Weiner, 1985). The tripartite model of giftedness (Pfeiffer 2012) provided the lens (exceptionally high intelligence) through which gifted students were viewed in this study. Expectancy-value theory and attribution theory provided the foundation for examining motivation constructs related to performance.

Two suggestions of expectancy-value theory are apparent within the research findings. The first suggestion regarding patterns of expectancy and value components is that some students may display consistent patterns of motivation (e.g. high levels across all motivation components) (Bråten & Claussen, 2005). Evidence of this assumption was most apparent within the determined group of the cluster analysis. Students in this group reported very high levels of both value and expectancy components, i.e., they did not vary across components. The second assumption that some students may differ in expectancy and value components (Bråten & Claussen, 2005) was also confirmed by the findings of this study. Students in the low motivation, reward, and confident groups varied across expectancy and value components. For example, the students in the reward group reported very high levels of external goal orientation (value component) and moderate levels of self-efficacy (expectancy component).

Based on the expectancy-value theory, the value that students hold for completing a task and their expectations for successfully completing that task determine their motivation which in

turn influence students' performance and thus performance outcomes (Bråten & Claussen, 2005). This study did not directly confirm this relationship; however, significant differences were observed in academic performance as measured by student GPA across different motivational profiles. The students in the groups (confident and determined) who reported high to very high value (intrinsic goal orientation) and high to very high expectancy (control of learning beliefs and self-efficacy) outperformed other students who did not share the same motivational profiles (low motivation and reward oriented groups).

According to attribution theory (Weiner, 1985) individuals' perceptions for the cause of their success or failure affects their achievement by determining whether or not they will engage in that behavior again. For example, students who believe their academic success is due to their own efforts are more likely to engage in tasks such as completing homework and studying. This engagement of effort to complete academic tasks logically leads to good academic performance. The current study found evidence of two dimensions of attribution theory (controllability and locus of control) in that students in the confident and determined groups (profiles high in control of learning beliefs) on average reported higher academic performance than students in the other groups with moderate levels of control of learning beliefs (low motivation and reward groups). This study's examination of locus of control (as measured by control of learning beliefs) of gifted achieving students adds to what Castor (1996) noted as a limited body of knowledge on the subject. Castor cites that research that focuses on locus of control in gifted achievers and gifted underachievers is sparse, and research that examines locus of control and self-concept in gifted achieving and underachieving students is also limited. This study examined both the locus of control (control of learning beliefs) and aspects of self-concept (self-efficacy) of achieving gifted students.

The motivational patterns found within this study along with student performance (by cluster group) may be related to the implicit theories of intelligence (Dweck & Leggett, 1988) held by the students in each cluster group. Theories of intelligence (or mindsets) have been associated with the development of goal orientation and the development of both adaptive and maladaptive motivational patterns (Abd-El-Fattah & Al-Nabhani, 2012; Blackwell, Trzesniewski, & Dweck, 2007; Burnette, O'Boyle, Van Epps, & Pollack, 2013; Dweck & Leggett, 1988; Elliot & Dweck, 1988). "Adaptive motivational patterns... promote the establishment, maintenance, and attainment of personally challenging and personally valued achievement goals" (Dweck, 1986, p. 1040) and are associated with primarily mastery goal orientation, persistence despite difficulty, and academic performance (Blackwell, Trzesniewski, & Dweck, 2007; Dweck, 2012). Maladaptive patterns "are associated with a failure to establish reasonable, valued goals to maintain effective striving towards those goals or ...to attain valued goals that are potentially within one's reach" (Dweck, 1986, p. 1040). Maladaptive patterns are primarily performance goal orientated and have been associated with helplessness response patterns; perceptions of failure as uncontrollable, insurmountable, and inevitable; and negative emotions (Burnette, O'Boyle, Van Epps & Pollack, 2013; Dweck, 2012; Dweck & Leggett, 1988; Faria, 1996). Mindset (Dweck, 2008), individuals' perception of their own attributes (in this case intelligence) as fixed or malleable, may explain more in-depth the development of the motivational profiles and how the profiles might affect student performance. The works of Elliott and Dweck (1988) on implicit theories of intelligence and Dweck (2012) offer plausible explanation of the high performance of students within the determined group who performed well despite high levels of performance goal orientation.

The findings of this study, in particular those relating to the existence of four distinct motivational profiles, possibly support conceptualizing goal orientation on multiple spectra. This idea of two continuums may allow for a more in-depth view of motivation and enable greater understanding of the complex creatures that are human learners. Recognizing that students may be both intrinsically and extrinsically motivated may lead to better understanding of the relationship between motivation and performance. A multidimensional approach may extend to conceptualizing mindset across multiple rather than a single continuum. Might gifted learners view aspects of their intelligence as both fixed and malleable? While studying theories of intelligence in young children as either fixed or incremental has been informative, it is possible that a different approach may provide additional understanding of adolescents' implicit theories of intelligence. Modifying the conceptualization of mindset is of interest for future research.

Implications for Future Research

While the findings of this study answer the five proposed research questions, further research is needed to fully understand the impact of motivational profiles on student performance and their anxieties about their performance. Recommendations for future study include improved methodological approach to sampling, measurements, and the inclusion of additional variables to aid in interpretation of findings and development of implications for practice.

The way in which participants are recruited for research has the potential to greatly impact findings. Future studies should seek to include participants from different learning environments (school and county). Inclusion of a diverse group of students will increase generalizability and make subsequent study findings and implications more useful for students from a variety of learning backgrounds. Additionally, students who are seeking admission to a

highly competitive camp and participating in a study conducted by the same researcher should be invited to participate in the study after admission decisions have been made. Delaying invitation to participate may provide an additional guard against impression management.

There are many conceptualizations of giftedness. The present study operationally defined intellectually gifted based upon the tripartite model of giftedness. Based on this model, the intellectually gifted participants of this study also likely met the criteria for the academically gifted lens. Previous studies that have examined components of motivation and test anxiety have often examined these components in different categories of students such as intellectually gifted students or high achieving students for example, but none examine these variables in the third lens of gifted students, the potentially gifted. While potentially gifted students have not been identified as gifted, they do demonstrate high performance when given the necessary tools. Would the motivational profiles found within the intellectually gifted high school students remain the same for academically gifted students and potentially gifted students? Future research should examine the motivational profile of these potentially gifted students to determine if they share in common the motivational profile with intellectually and academically gifted students. With the many conceptions of giftedness, would other gifted students based upon different definitions share the same motivational profile as intellectually gifted students? Important research on concepts such as grit and mindset point to the critical role aspects of motivation play in the academic performance and the long-term success of individuals. Findings from future research may provide justification for inclusion of these potentially gifted students in enhanced learning programs and eventually possible access to gifted programs that will provide opportunity for students to reach their full academic potential.

Researchers conducting future studies should consider using a standardized measure, such as an achievement test that is typically administered annually, to provide a more accurate measure of students' academic performance. While GPA does provide some insight into a student's performance, it may be impacted by other factors such as tardiness and absenteeism. When possible, student GPA should be retrieved from the students' cumulative files. Utilizing these measures of academic performance also allows for examination of student performance across time. Academic performance and motivation measures taken longitudinally can inform teachers of students' changing motivation profiles, enabling instructors to either adapt their teaching styles for the learners or intervene to attempt to change student motivation patterns (Bråten & Olaussen, 2005).

Regarding improving the understanding and scope of the findings, researchers conducting future studies should consider utilizing the full *MSLQ* or additional instruments that assess student motivational characteristics and learning strategies, particularly within the gifted population. Research that examines these variables in gifted students is minimal, and inclusion of these measures could lead to better understanding of not only motivational profiles of gifted students but also the learning strategies employed by students with specific profiles. Understanding of motivational profiles, related strategy use and their subsequent relationship with student performance may be a step towards understanding the learning process for achieving gifted students. Furthermore, examination of student mindset may provide a better understanding of the development of motivational profiles. Studies that include mindset, motivational profiles, learning strategies, and student performance may shed light on how student performance is impacted by motivation and give indication of possible interventions that may improve maladaptive patterns and thus improve student performance.

Questions from this study that require further investigation include the following: Do gifted students' motivational profiles differ across contexts? Which motivational profile, general or domain specific, is the most useful predictor of student performance? Do gifted students identify with both incremental and entity theories of intelligence rather than one or the other? Are specific profiles of motivation related to mindset and grit?

Implications for Education

Based upon the study findings, there is a positive relationship between aspects of motivation and academic performance. There is also indication that aspects of motivation are related to lower levels of test anxiety. Motivation profiles that seem to have high levels of mastery goal orientation, control of learning, and self-efficacy regardless of students' classification as intellectually gifted or non-gifted are related to higher academic performance and lower test anxiety. It is important for educators to recognize the important relationship between motivation and performance. While educators may not be aware of the motivational profile of individual students within their class, effort can be made to enhance motivation and thereby affect performance. Educators should focus on increasing students' awareness of their abilities and confidence in their ability to accomplish assigned academic tasks. Teachers can nurture a greater sense of control over outcomes by assisting students in making the connection between their academic behaviors and subsequent outcomes. Finally, encouraging an incremental view of intelligence may help students adopt more mastery goal oriented values for learning and thereby increasing adaptive behaviors and attitudes that promote learning. Tuominen-Soini, Salmela-Aro, and Niemivirta (2011) observed that achievement motivation goals in high school students are malleable and stable, again highlighting the important role educators can play in helping students develop and maintain adaptive motivation profiles.

Because a unique profile of motivation was not discovered for intellectually gifted students, students involved in regular education as well as those involved in gifted education may benefit from the enhancement of positive aspects of motivation.

Conclusion

This study purposed to examine the motivation of non-gifted students and intellectually gifted students in an attempt to bridge the gap in the literature regarding gifted students and motivation often caused by the exclusion of gifted students from the study, or questions regarding generalizability of results to gifted students within the U.S. This study also sought to give direction to future studies that can impact important areas such as student achievement and greater understanding of the relationship between motivation and academic performance. The findings of this study revealed that while intellectually gifted students differ significantly on some aspects of motivation, when examining motivation patterns, a unique profile does not appear for these students. Findings indicate the importance of enhancing student motivation across gifted and regular education. Wasted potential, regardless of status as gifted or non-gifted, is detrimental to a productive society. It is important to continue this line of research in order to better understand the experiences of students and what leads to their success and failures in the classroom.

APPENDIX A

IRB APPROVAL



Office of the Vice President For Research
Human Subjects Committee
Tallahassee, Florida 32306-2742
(850) 644-8673 · FAX (850) 644-4392

APPROVAL MEMORANDUM

Date: 11/21/2012

To: Benetta Whelkha <bnkwhkha@hotmail.com>

Address: 5545 Driftwood Drive, Lakeland, FL 33809

Dept.: EDUCATIONAL PSYCHOLOGY AND LEARNING SYSTEMS

From: Thomas L. Jacobson, Chair

Re: Use of Human Subjects in Research
EXAMINATION OF THE MOTIVATED STRATEGIES FOR LEARNING OF GIFTED AND NON-GIFTED
STUDENTS AS IT RELATES TO ACADEMIC PERFORMANCE

The application that you submitted to this office in regard to the use of human subjects in the research proposal referenced above has been reviewed by the Human Subjects Committee at its meeting on 11/21/2012. Your project was approved by the Committee.

The Human Subjects Committee has not evaluated your proposal for scientific merit, except to weigh the risk to the human participants and the aspects of the proposal related to potential risk and benefit. This approval does not replace any departmental or other approvals which may be required.

If you submitted a proposed consent form with your application, the approved stamped consent form is attached to this approval notice. Only the stamped version of the consent form may be used in recruiting research subjects.

If the project has not been completed by 11/20/2013, you must request a renewal of approval for continuation of the project. As a courtesy, a renewal notice will be sent to you prior to your expiration date; however, it is your responsibility as the Principal Investigator to timely request renewal of your approval from the Committee.

You are advised that any change in protocol for this project must be reviewed and approved by the Committee prior to implementation of the proposed change in the protocol. A protocol change/amendment form is required to be submitted for approval by the Committee. In addition, federal regulations require that the Principal Investigator promptly report, in writing, any unanticipated problems or adverse events involving risks to research subjects or others.

By copy of this memorandum, the chairman of your department and/or your major professor is reminded that he/she is responsible for being informed concerning research projects involving human subjects in the department, and should review protocols as often as needed to insure that the project is being conducted in compliance with our institution and with DHHS regulations.

This institution has an Assurance on file with the Office for Human Research Protection. The Assurance Number is IRB0000446.

Cc: Steven Heiffer <sheiffer@fsu.edu>, Advisor
HSC No. 2012.9265

APPENDIX B
IRB RE-APPROVAL



Office of the Vice President For Research
Human Subjects Committee
P. O. Box 3062742
Tallahassee, Florida 32306-2742
(850) 644-8673 · FAX (850) 644-4392

RE-APPROVAL MEMORANDUM

Date: 09/13/2013

To: Benetta Whohuba <bwho@fsu.edu>

Address: 5545

Dept: EDUCATIONAL PSYCHOLOGY AND LEARNING SYSTEMS

From: Thomas L. Jacobson, Chair

Re: Re-approval of Use of Human subjects in Research:
EXAMINATION OF THE MOTIVATED STRATEGIES FOR LEARNING OF GIFTED AND NON-GIFTED
STUDENTS AS IT RELATES TO ACADEMIC PERFORMANCE

Your request to continue the research project listed above involving human subjects has been approved by the Human Subjects Committee. If your project has not been completed by 09/10/2014, you are must request renewed approval by the Committee.

If you submitted a proposed consent form with your renewal request, the approved stamped consent form is attached to this re-approval notice. Only the stamped version of the consent form may be used in recruiting of research subjects. You are reminded that any change in protocol for this project must be reviewed and approved by the Committee prior to implementation of the proposed change in the protocol. A protocol change/amendment form is required to be submitted for approval by the Committee. In addition, federal regulations require that the Principal Investigator promptly report in writing, any unanticipated problems or adverse events involving risks to research subjects or others.

By copy of this memorandum, the Chairman of your department and/or your major professor are reminded of their responsibility for being informed concerning research projects involving human subjects in their department. They are advised to review the protocols as often as necessary to insure that the project is being conducted in compliance with our institution and with DHHS regulations.

Cc:
HSC No. 2013.11167

APPENDIX C

COPY OF ORIGINAL STUDY IRB APPROVAL

Office of the Vice President For Research
Human Subjects Committee
Tallahassee, Florida 32306-2742
(850) 644-8673 · FAX (850) 644-4392

APPROVAL MEMORANDUM (for change in research protocol)

Date: 8/27/2010

To: Marcia Saintil

Address: [REDACTED]
Dept.: EDUCATIONAL PSYCHOLOGY AND LEARNING SYSTEMS

From: Thomas L. Jacobson, Chair

Re: Use of Human Subjects in Research (Approval for Change in Protocol)
Project entitled: Psychological Assessment of Gifted Students

The form that you submitted to this office in regard to the requested change/amendment to your research protocol for the above-referenced project has been reviewed and approved.

If the project has not been completed by 3/16/2011, you must request a renewal of approval for continuation of the project. As a courtesy, a renewal notice will be sent to you prior to your expiration date; however, it is your responsibility as the Principal Investigator to timely request renewal of your approval from the Committee.

By copy of this memorandum, the chairman of your department and/or your major professor is reminded that he/she is responsible for being informed concerning research projects involving human subjects in the department, and should review protocols as often as needed to insure that the project is being conducted in compliance with our institution and with DHHS regulations.

This institution has an Assurance on file with the Office for Human Research Protection. The Assurance Number is IRB00000446.

Cc: Steven Pfeiffer, Chair
HSC No. 2010.4476

APPENDIX D

COPY OF ORIGINAL STUDY IRB RE-APPROVAL

Office of the Vice President For Research
Human Subjects Committee
Tallahassee, Florida 32306-2742
(850) 644-8673 - FAX (850) 644-4392

RE-APPROVAL MEMORANDUM

Date: 2/14/2011

To: Marcia Saintil

Address: [REDACTED]
Dept.: EDUCATIONAL PSYCHOLOGY AND LEARNING SYSTEMS

From: Thomas L. Jacobson, Chair

Re: Re-approval of Use of Human subjects in Research
Online Psychological Assessment of Gifted Students

Your request to continue the research project listed above involving human subjects has been approved by the Human Subjects Committee. If your project has not been completed by 2/8/2012, you must request a renewal of approval for continuation of the project. As a courtesy, a renewal notice will be sent to you prior to your expiration date; however, it is your responsibility as the Principal Investigator to timely request renewal of your approval from the committee.

If you submitted a proposed consent form with your renewal request, the approved stamped consent form is attached to this re-approval notice. Only the stamped version of the consent form may be used in recruiting of research subjects. You are reminded that any change in protocol for this project must be reviewed and approved by the Committee prior to implementation of the proposed change in the protocol. A protocol change/amendment form is required to be submitted for approval by the Committee. In addition, federal regulations require that the Principal Investigator promptly report in writing, any unanticipated problems or adverse events involving risks to research subjects or others.

By copy of this memorandum, the Chair of your department and/or your major professor are reminded of their responsibility for being informed concerning research projects involving human subjects in their department. They are advised to review the protocols as often as necessary to insure that the project is being conducted in compliance with our institution and with DHHS regulations.

Cc: Steven Pfeiffer, Advisor
HSC No. 2010.5648

APPENDIX E

E-PARENT INFORMED CONSENT & COVER LETTER



FSU Department of Educational Psychology

March 30, 2010

Dear Parent,

You have been contacted because your son/daughter applied to the 2010 summer academy-engineering the future. "Engineering the Future," sponsored by the Florida Center for Advanced Aero-Propulsion (FCAAP) will provide 20 students with a unique learning opportunity. We hope to select finalists for the summer academy by the end of April.

We are writing to invite your participation, and for you to grant your son/daughter's participation, in an online research study. You were selected because your son/daughter applied to the Engineering the Future summer academy. This invitation and accompanying online survey is being sent all parents of applicants to the summer program.

We hope that you are willing to participate in this online research survey. And we hope that you will grant permission for your son/daughter to participate in the online research survey. We will contact your son/daughter only after we receive confirmation from you that you authorize their participation. Because they are a minor, your authorization as parent is required for them to participate in the study.

The online research survey examines how a number of psychological factors including self-control, self-esteem, perfectionism, and creativity influence academic competence and life satisfaction among bright and highly motivated high school students like your son/daughter.

If you agree to participate in this study, and authorize your son/daughter's participation, we would ask you to do the following things:

1. Click the yes on the online survey tool granting your consent to participate and your authorization to allow your son/daughter to participate
2. Complete the online survey tool, which consists of two brief questionnaires related to self-control and views on academic achievement.
3. Your son/daughter will receive a separate e-cover letter which will invite them to participate in the research study by completing eight online surveys. Their participation should take approximately 50-60 minutes.

The total amount of time expected for you as a parent to complete the two questionnaires is about 10-15 minutes.

There is very minimal risk associated with the online study. The two surveys that you and the eight surveys that your son/daughter will complete are routinely used in educational research studies. In granting consent, you agree to permit us to include in our research data from your son/daughter's Engineering the Future application (date of birth, grade, GPA, SAT or ACT scores, 500-word essay, and IQ score, if available). After we input this data from the application, we will delete any names or identifying information to ensure the confidentiality and anonymity of your son/daughter and you.

The study will help us better understand reasons why high school students are successful academically.

All information obtained as a result of this online survey tool will be kept confidential, to the extent allowed by law. Confidentiality will be ensured in the following ways: No individual student or family will ever be identified publicly. The researchers will not keep the names or any other identifying information on any research participant. Any identifying information obtained from the Engineering the Future summer academy application will be destroyed. Information from the online survey tool will be used solely for research purposes. All information gathered will be kept in locked file storage in research office at the Department of Educational Psychology of Florida State University, identified only by a code, and will not be available to anyone other than the research team.

You are not required to participate in the study. Your son/daughter is not required to participate. If you decide not to participate, your son/daughter's application to the Engineering the Future summer academy will in no way be affected. Your participation and your son/daughter's participation are totally voluntary. The summer academy admissions committee will not know whether you agreed to participate or not. You may decide to participate, and then decide later to discontinue completing the online survey tool. That is perfectly fine (although we hope you will participate and complete the survey tool!).

The survey tool for parents consists of two forms. It should take you no longer than 10-15 minutes to complete. The survey tool that your son/daughter completes consists of 8 forms. It should take them no longer than 40-60 minutes to complete.

All online survey results will be confidential, to the extent permitted by law. Only the principal investigator and the FSU research team will have access to the results for the purpose of analysis.

Contacts and Questions:

Please feel free to share any concerns you have. The researchers conducting this study are YeoJu Chung, and Steven Pfeiffer, Ph.D. If you have any questions later, you are encouraged to contact us. If you have any questions or concerns regarding the study and would like to talk to someone other than the researchers, you are encouraged to contact the Florida State University Human Subject Committee. They are people who work for the protection of research participants' privacy, rights, and well-being. You can reach them at 1-850-644-8633 or humansubjects@magnet.fsu.edu. Their address is: 2010 Levy Street, Research Building B, Suite 276, Tallahassee, FL 32306-2742.

YeoJu Chung

Dr. Steven Pfeiffer

(850)644-8796

spfeiffer@fsu.edu

By proceeding to the online survey tool, you are acknowledging that you consent to participate in the study and that you permit your son/daughter to participate in the study.

Do you agree to permit your son/daughter participate in the online study?

YES

NO

Please visit the online survey site : www._____

Sincerely,

Steven Pfeiffer, Ph.D.

Professor

College of Education

Florida State University

APPENDIX F

E-YOUTH ASSENT AND COVER LETTER



FSU Department of Educational Psychology

March 30, 2010

Dear Student,

We are conducting an on line research study. We are inviting your participation because you are an applicant to the 2010 summer academy. We have already contacted your parent/guardian to obtain their permission for your participation in the study. We did this because you are a minor. Your parent/guardian provided us with their consent/authorization for you to participate in the research study.

We are inviting applicants to the 2010 summer academy-engineering the future to participate in this online study.

We hope that you are willing to participate in this online study. We think that you may find the various surveys and questionnaires interesting!

The online research survey examines how a number of psychological factors, including self-control, self-esteem, perfectionism, creativity, and stereotyping influence academic achievement and satisfaction among bright and motivated high school students like yourself.

If you agree to participate in this study, which we hope you will, we ask that you do the following things:

1. Click the yes on the online survey tool granting your assent to participate
2. Complete the online survey tool, which consists of a set of brief questionnaires related to self-control, self-esteem, perfectionism, creativity, motivation, name calling, life satisfaction and academic achievement

The total amount of time expected for full completion of this study is about 40-60 minutes. There is very minimal risk associated with the study. The surveys that you will complete are routinely used in

educational research studies. In agreeing to participate, you agree to permit us to include in our research data from your Engineering the Future application (date of birth, grade, GPA, SAT or ACT scores, your 500-word essay, and IQ score, if available). After we input this data from the application, we will delete your name and identifying information from all research forms to ensure that the data is confidential.

The study will help us better understand reasons why high school students are successful academically.

All information obtained as a result of this online survey tool will be kept confidential, to the extent allowed by law. Confidentiality will be ensured in the following ways: No individual student or family will ever be identified publicly. The researchers will not keep the names or any other identifying information on any research participant. Any identifying information obtained from the Engineering the Future summer academy application will be destroyed. Information from the online survey tool will be used solely for research purposes. All information gathered will be kept in locked file storage in research office at the Department of Educational Psychology of Florida State University, identified only by a code, and will not be available to anyone other than the research team.

You are not required to participate in the study. If you decide not to participate, your application to the Engineering the Future summer academy will in no way be affected. Your participation and parent/guardian's participation are totally voluntary. You may decide to participate, and then decide later to discontinue completing the online survey tool. That is perfectly fine. Although we hope you will participate and complete the survey tool!

The survey tool that you would complete consists of eight forms. It should take you no longer than 40-60 minutes to complete. Your parent/guardian was invited to complete consisted of two forms. All online survey results will be confidential, to the extent permitted by law. Only the principal investigator and the FSU research team will have access to the results for the purpose of analysis.

Contacts and Questions:

Please feel free to share any concerns you have. The researchers conducting this study are YeoJu Chung, and Steven Pfeiffer, Ph.D. If you have any questions later, you are encouraged to contact us. If you have any questions or concerns regarding the study and would like to talk to someone other than the researchers, you are encouraged to contact the Florida State University Human Subject Committee. They are people who work for the protection of research participants' privacy, rights, and well-being. You can

reach them at 1-850-644-8633 or humansubjects@magnet.fsu.edu. Their address is: 2010 Levy Street, Research Building B, Suite 276, Tallahassee, FL 32306-2742.

Dr. Steven Pfeiffer
(850)644-8796
spfeiffer@fsu.edu

By proceeding to the online survey tool, you are acknowledging that you freely and willingly agree to participate in the online survey.

Do you agree to participate in the online study?

YES

NO

Please go to the online survey site : www._____

Sincerely,

Steven Pfeiffer, Ph.D.

Professor

College of Education

Florida State University

APPENDIX G

PARENT INFORMED CONSENT AND COVER LETTER

Dear Parent,

You are receiving this e-mail message because your son/daughter applied to the 2010 summer academy, Engineering the Future.

We earlier sent out invitations to a group of parents of applicants to the 2010 summer academy. However, learned that a few got lost in junk mail, which is why we are following up with this e-message. We are inviting you to participate in an online research study affiliated with the summer academy. We didn't hear back from you or receive a completed survey and did not know whether you received our first e-message. We fear that some of our original e-mail messages may have been lost or forwarded to recipient's junk mail. We are writing now to make sure that you have received this invitation to participate in our online research study, and to solicit your permission for your son/daughter to participate in the online survey, as well. We hope that you are willing to take the time to participate.

We understand if you don't want to participate and/or would prefer that your son/daughter not participate. That is perfectly fine. All you would need to do is delete this e-message if you do not want to participate. If you agree to participate, we will contact your son/daughter only after we receive confirmation from you that you authorize their participation.

The online research study explores how a number of educational and psychological factors including self-control, self-esteem, perfectionism, and creativity influence academic success and life satisfaction among bright and highly motivated high school students.

If you agree to participate in this study, and authorize your son/daughter's participation, we would ask you to do the following things:

1. Click the yes on the online survey tool granting your consent to participate and your authorization to allow your son/daughter to participate

2. Complete the parent online survey tool, which consists of two brief questionnaires related to self-control and views on academic achievement.
3. Your son/daughter will receive a separate e-mail with cover letter inviting them to participate in the research study, and asking them to complete eight online surveys. Their participation should take approximately 50-60 minutes.

The total amount of time expected for you to complete the two parent questionnaires is 10-15 minutes.

There is very minimal risk associated with the online study. The surveys that you and your son/daughter will complete are routinely used in educational research studies. In granting consent, you agree to permit us to include information from your son/daughter's Engineering the Future application (date of birth, grade, GPA, SAT or ACT scores, 500-word essay, and IQ score, if available). After we input this data from the application, we will delete any names or identifying information to ensure the confidentiality and anonymity of your son/daughter and you.

This study is designed to better understand why high school students are successful academically.

All information obtained as a result of this online survey tool will be kept confidential, to the extent allowed by law. Confidentiality will be ensured in the following ways: No individual student or family will ever be identified publicly. The researchers will not keep the names or any other identifying information on any research participant. Any identifying information obtained from the Engineering the Future summer academy application will be destroyed. Information from the online survey tool will be used solely for research purposes. All information gathered will be kept in locked file storage in research office at the Department of Educational Psychology of Florida State University, identified only by a code, and will not be available to anyone other than the research team.

As we said, you are not required to participate in the study. Your son/daughter is not required to participate. If you decide not to participate, your son/daughter's participation in the Summer Academy Engineering the Future will in no way be affected. Your participation and your son/daughter's participation are totally voluntary. You may decide to participate, and then decide later to discontinue completing the online survey tool. That is perfectly fine. Although we hope you will participate and complete the survey tool!

Contacts and Questions:

Please feel free to share any concerns you have. The researchers conducting this study are YeoJu Chung, and Dr. Steven Pfeiffer. If you have any questions later, you are encouraged to contact us. If you have any questions or concerns regarding the study and would like to talk to someone other than the researchers, you are encouraged to contact the Florida State University Human Subject Committee. They are people who work for the protection of research participants' privacy, rights, and well-being. You can reach them at 1-850-644-8633 or humansubjects@magnet.fsu.edu. Their address is: 2010 Levy Street, Research Building B, Suite 276, Tallahassee, FL 32306-2742.

YeoJu Chung

Dr. Steven Pfeiffer

(850)644-8796

spfeiffer@fsu.edu

By proceeding to the online survey tool, you are acknowledging that you consent to participate in the study and that you permit your son/daughter to participate in the study.

Please visit the online survey site :

http://www.surveymonkey.com/s/OnlineSurveyofGiftedStudents_Parent

Steven I Pfeiffer, PhD, ABPP

Professor and Director Clinical Training

Florida State University

Tallahassee, FL

(850)644-8796

APPENDIX H

YOUTH ASSENT AND COVER LETTER

Dear (Student's name),

We are contacting you because we would like to invite you to participate in an online research study associated with the 2010 summer academy, Engineering the Future.

We earlier sent you an e-mail invitation to participate, but fear that you may not have received our invitation. We worry that sometimes e-mail messages get lost or sent to junk mail.

We hope that you are willing to participate in this online research study. Of course, you are in no way obligated to participate. We already contacted your parent and obtained their permission for your participation. They completed a parent online survey as part of this research project. We appreciate their willingness to participate.

This is a follow-up e-mail sent to applicants selected to attend the FSU Summer Academy Engineering the Future who did not yet complete the online survey. We are concerned that you may not have received the earlier e-mail invitation. When conducting an online study, one can never be sure if there may be a computer or online glitch that prevents a person from receiving the invitation.

We understand that you are busy at this time of the year! However, we hope that you will participate in the online study. If you don't want to participate, for whatever reason, that is fine. Simply delete this message.

To participate, simply click the yes on the online survey tool and complete the online survey tool. It is as easy as that! You will be asked to complete eight online surveys. It should take you approximately 40-50 minutes to complete. The different surveys ask questions about a range of educational and psychological topics such as passion for academics, motivation, self-esteem,

perfectionism. There is very little risk in participating and you may find the survey questions interesting!

Online Survey Link :

http://www.surveymonkey.com/s/onlinesurveyofgiftedstudents_studentform

Please feel free to contact us to share any concerns you have. The researchers conducting this study are YeoJu Chung, and Dr. Steven Pfeiffer (Camp Director, Summer Academy). If you have any questions or concerns regarding the study and would like to talk to someone other than the researchers, you are encouraged to contact the Florida State University Human Subject Committee. They are people who work for the protection of research participants' privacy, rights, and well-being. You can reach them at 1-850-644-8633 or humansubjects@magnet.fsu.edu. Their address is: 2010 Levy Street, Research Building B, Suite 276, Tallahassee, FL 32306-2742.

Steven Pfeiffer, PhD
Professor and Director Clinical Training
Florida State University
Tallahassee, FL 32306
(850) 644-8796

APPENDIX I

DEMOGRAPHIC SURVEY

2.

Please answer all of demographic questions.

* 1. What is your full (first and last) name:

* 2. What is your parent/ guardian's full (first and last) name:

* 3. What is your gender?

- Male
 Female

* 4. Date of Birth

MM / DD / YYYY
 / /

* 5. How do you describe yourself? (Check one or more responses)

- American Indian or Alaska Native
 Asian
 Black or African American
 Hawaiian or Latino
 Native Hawaiian or Other Pacific Islander
 White
 Other

* 6. Current High School grade:

- 10th
 11th
 12th

* 7. What is your average overall grade in each of the following subjects in high school (9th - 12th grades)?

	A	A-	B+	B	B-	C	D	F
Science	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Math	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Social Studies	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
English/Language Arts	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

APPENDIX J

BRIEF MOTIVATION SCALE

8.							
Motivation Scale							
<p>Instructions: Please rate each item with regards to how it describes you using the following scale of 1 (not at all true of me) to 7 (very true of me).</p>							
	1 not at all true	2	3	4	5	6	7 very true
1. I prefer course material that really challenges me so I can learn new things.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. If I study in appropriate ways, then I will be able to learn material.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. When I take a test I think about how poorly I am doing compared with other students.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. I believe I will receive an excellent grade in my classes.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5. I'm certain I can understand the most difficult material presented in the challenging classes.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6. Getting a good grade is the most satisfying thing for me right now.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7. It is my own fault if I don't learn material in classes.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8. The most important thing for me right now is improving my overall grade point average, so my main concern is getting good grades.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
9. When I take a test I think of the consequences of failing.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
10. I'm confident I can understand complex material presented in challenging classes.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
11. I prefer course material that arouses my curiosity, even if it is difficult to learn.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
12. If I try hard enough, then I understand even difficult class material.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
13. I have an uneasy, upset feeling when I take an exam.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
14. I'm confident I will do an excellent job on assignments and tests.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
15. I expect to do well in my classes.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
16. The most satisfying thing for me in a class is trying to understand the content as thoroughly as possible.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
17. When I have the opportunity, I choose course assignments that I can learn from even if they don't guarantee a good grade.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
18. If I don't understand course material, it is because I didn't try hard enough.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
19. I feel my heart beating when I take an exam.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
20. I want to do well in my classes because it is important to show my ability to my family, friends, or others.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

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BIOGRAPHICAL SKETCH

Benetta H. Wholuba is a native of Central Florida. She completed her Bachelors of Science degree in Psychology and minor in Sociology at Florida State University. She successfully completed her studies in the Combined Counseling Psychology and School Psychology Doctoral Program at Florida State University.

During her undergraduate matriculation, Benetta's research interests included spirituality as a protective factor in at-risk youths. She also participated in collecting data pertaining to early detection of children's social dysfunction and future personality disorders. As a graduate student, Benetta was a member of the gifted research team under the direction of Dr. Steven Pfeiffer. Her research interests have since expanded to include the underrepresentation of minority students in gifted programs, issues in gifted identification, and motivation of gifted students.

Benetta completed her doctoral internship at Pennsylvania Counseling Services where she provided clinical intervention in both inpatient and outpatient settings. She worked with patients from a wide variety of socio-economic backgrounds, race/ethnicity, age, and sexual orientation. She describes her theoretical orientation as person-centered and cognitive behavioral though she is able to integrate multiple orientations to provide services that best fit the needs of her clients. Her next steps include seeking a post-doctoral clinical position, obtaining state licensure, and working in a community setting providing intervention services. She would like to open a private community practice and provide a place of training for student practitioners.