

THE PREDICTIVE VALUE OF SELF-REGULATION TO PREDICT THE  
UNDERACHIEVEMENT OF GIFTED PREADOLESCENT STUDENTS

by

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A DISSERTATION

Submitted in partial fulfillment of the requirements  
for the degree of Doctor of Philosophy  
in the Department of Educational Studies in Psychology, Research Methods and Counseling  
in the Graduate School of  
The University of Alabama

TUSCALOOSA, ALABAMA

2017

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## ABSTRACT

The relationship between self-regulation and achievement has been identified. The literature suggests, students with high levels of self-regulation have higher academic achievement. However, less is known about gifted students' self-regulation, although it is widely accepted that underachievement is an issue facing the gifted school-aged population (National Association for Gifted Children (NAGC), 2000). Underachievement is a problem and self-regulation and underachievement are related (Stoeger & Ziegler, 2005). Self-regulation studies have been inconsistent in that higher levels of self-regulation and lower levels of self-regulation among gifted students have been reported (Stoeger & Ziegler, 2005). A number of studies have examined self-regulation in the gifted adolescent population few have examined the preadolescent population. Most studies compare levels of self-regulation in gifted students to their non-gifted counterparts. In an attempt to broaden the research on self-regulation in gifted students, this study investigated underachievement in preadolescent gifted students receiving special education services in public schools while regarding potential predictor variables gender and self-regulation.

Survey data were collected from 114 gifted students in Grades 4 to 6 and their teachers in two different school districts. The study used the *School Attitude Assessment Revised* (SAAS-R) (McCoach & Seigle, 2003) and the *Comprehensive Executive Functioning Inventory* (CEFI) (Naglieri & Goldstein, 2013). The SAAS-R measures students' attitudes toward school/teachers,

goal valuation, motivation/self-regulation, and general academic self-perceptions. The CEFI measures the level of executive functioning across nine subscales: attention, emotional regulation, flexibility, inhibitory control, initiation, organization, planning, self-monitoring, and working memory.

No significant differences were found between race and gender on the dependent variable of self-regulation indicating the effects of self-regulation are dissimilar based on race and gender. The regression models yielded significant results on the predictors reading and math achievement. Reading and math achievement significantly predicted self-regulation. There was not a significant difference on reported levels of self-regulation based on grade level.

Implications from this study suggest that practitioners should consider the impact of self-regulation on achievement and implement strategies to enhance self-regulation in the classroom. Additionally, gender, grade level, and racial difference in achievement and self-regulation should be acknowledged and factors to remediate them should be implemented.

## DEDICATION

I dedicate my dissertation to my family and friends. A special thanks to my beloved parents whose prayers and encouraging words gave me the strength to finish this dissertation. To my brother Blake, who has been a constant source of support, thank you for encouraging me. I give thanks to God for blessing me with exceptional parents, family, and friends. Your grace and mercy sustained me through this process.

## ACKNOWLEDGEMENTS

I would like to convey my deepest appreciation to my committee chair, Dr. Burnham who has been a constant by my side with her support and encouragement. Without her guidance and continued help this dissertation would not be possible. I am very grateful for Dr. Robinson for his guidance with analyzing and understanding statistical concepts. I am appreciative of Dr. Powell, for her kind words of encouragement and continuing to remain invested in my success. With great appreciation I also thank Dr. Britnell and Dr. Tomek for their support commitment to my dissertation.

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## CHAPTER 1

### INTRODUCTION

#### **Background Statement of the Problem**

Both educators and parents want to see children perform at their maximum potential. Developing the maximum potential of children has been the foundation of many educational laws in the United States for many years. For example, in 1965, President Lydon B. Johnson signed the Elementary and Secondary Education Act (ESEA) with the thought that all children should have the opportunity to reach their maximum potential (U.S. Department of Education, 2013). This act established the importance of providing full educational opportunities to all students. ESEA provided grants, special education centers, library use, and textbooks to low income students (U.S. Department of Education, 2013).

In continuing with the development of maximum potential of all students, President George W. Bush reauthorized the Elementary and Secondary Education Act (ESEA; 1965). In 2001, President Bush signed the No Child Left Behind Act (NCLB; 2001). The aim of this law was to fill gaps in the educational process. The overall goal was to ensure that no child would be left behind in the classroom. Like ESEA, the NCLB act provided federal funding for school children in disadvantaged areas of the United States, requiring states to assess children to determine if state standards were met in order to receive this federal funding. By 2014, the NCLB goal was for all students to be performing at grade level. This goal was to be met by setting high standards for students and having high quality teachers in all classrooms

With NCLB educators' natural focus is on students who struggle academically in the classroom. Surprisingly, gifted children are also found among the set of underachievers. Even though parents and teachers expect gifted students to excel in all academic tasks, gifted students can struggle academically and are often overlooked as a group of students that need intervention.

### **Statement of the Problem**

Struggling students are typically seen as students who have difficulty with ability (IQ) or achievement levels (Reis & McCoach, 2000). Gifted students offer a unique dichotomy. While gifted students may not struggle with their ability levels, they may struggle with their academic achievement. Studies (Bruns, 1992; Clark, 1988; Diaz, 1998; Fine & Pitt, 1980; Fink, 1965; Ford, 1996) have shown numerous reasons for achievement concerns among gifted as well as how to measure and define giftedness (Reis & McCoach, 2000). Nonetheless, the variables and measurements related to giftedness are wide-ranging and vary and gifted students can be unnoticed and left out of needed intervention.

Underachievement is a very serious problem as it impacts many students. Some researchers report that 40–60% of students are underachieving (Ciaccio, 1998). Given the number of children potentially impacted by underachievement, there is a critical need to study and understand the roots of this phenomenon. Additionally, as schools are becoming more accountable for student success, it is imperative for educators and parents to understand potential barriers to that success. As the United States continues to be competitive with other nations, it is important that students educated in the United States achieve to their maximum ability. Reportedly, by the time students are in fourth grade, the performance of most children in the United States is below national expectations and below other competing countries (Ciaccio, 1998). When students do not demonstrate their maximum level of achievement during their

primary education (K–12), this impacts college readiness, attendance, and graduation, thus impacting future leadership positions.

To add to this, gifted children are often overlooked in the underachievement category because of their high intelligence. In addition, other variables related to gifted achievement such as self-regulation are often overlooked. With this in mind, the gifted literature has variables and definitions that need further exploration, especially related to underachievement and self-regulation. After a brief overview, each variable explored in this study will be offered.

### **Variables and Measurements Related to Giftedness**

#### **Underachievement Concerns**

Underachievement can be problematic with gifted students. One of the potential reasons gifted students may become underachievers is a lack of engagement in the curriculum (Renzulli, 1977). When the curriculum does not engage students, they can become disinterested and lose motivation to perform to their ability.

The issue of gifted student underachievement; that is not performing to their ability, has been discussed for the past three decades in the literature (Bruns, 1992; Clark, 1988; Diaz, 1998; Fine & Pitt, 1980; Fink, 1965; Ford, 1996). In 1990, the National Research Center for the gifted and talented conducted a national needs assessment (NRC/GT, 2013) that pointed to underachievement. The purpose of this assessment was to create solidarity in the gifted research field on what was impacting this area of research the most. Following the needs assessment, a list was compiled of nineteen different areas that were of high importance for gifted research. One of those topics of high importance for research in the gifted field was underachievement (Reid, 2013).

## **Defining Underachievement**

With the prominence of underachievement in the gifted literature, a broader look at this term is indicated. Developing a consensus definition of underachievement has been explored in the field of psychology and education for years (Baum, Renzulli, & Herbert, 1995; Butler-Por, 1987; Dowdall & Colangelo, 1982; Emerick, 1992; Redding, 1990; Rimm, 1997; Stoeger & Ziegler, 2005; Supplee, 1990; Whitmore, 1980; & Wolfe, 1991). Numerous definitions of underachievement can be found in the literature. For the purpose of this study, the operational definition chosen was Shaw's (1964) definition. Shaw defined underachievement as an IQ in the 25th percentile and scholastic achievement below the class average (Stoeger & Ziegler, 2005). This study will also use a discrepancy model examining differences in the expected achievement (as measured by a standardized test) and the actual achievement (measured by state assessments) (Matthews & McBee, 2007).

Experts refer to underachievement as an inconsistency between predicted potential and actual achievement. Predicted potential often is determined by standardized tests. However, another widely accepted definition is the discrepancy between potential or ability and performance in school (Rayneri, Gerber, & Wiley, 2006). Academic underachievement is generally conceptualized as the discrepancy between ability and performance. Ability is typically determined by standardized tests and performance determined by grade point average (GPA).

## **Measuring Student's Achievement**

Throughout the literature achievement has often been measured by using standardized tests or grade point averages (GPAs). When a standardized test is used, typically a psycho educational test such as the Woodcock-Johnson Tests of Achievement (Woodcock & Bonner, 1977) provides researchers information about students' current level of achievement (Ritchotte,

Matthews, & Flowers, 2014). The Woodcock-Johnson Tests of Achievement provides standard scores in the areas of reading, writing, and math and is used for ages 7-17. Additionally, current grade level functioning and age equivalent information is provided (Gottfried, Cook, Gottfried, & Morris, 2005). GPA is used by researchers when measuring achievement because it provides readily available information about how the student is performing currently. It helps determine achievement by providing a discrepancy between potential and performance, with most researchers using the cutoff of a “C” average or lower for underachievement (Ritchotte et al., 2014).

Academic performance is usually measured by standardized tests, but it can also be determined by grades. If standardized assessments are the sole bases for determining students’ classification as underachievers it can lead to under-identification of this population.

Additionally, gifted students who do not earn high grades may excel on standardized tests, thus not reflecting their underachievement in the classroom. This indicates that when assessing a student’s achievement status, classroom grades should be included (Reis & McCoach, 2000).

State assessments will be used to assess student’s achievement status in this study. The use of state assessments to determine achievement was investigated in a study by Sommers, Zhu, and Wong (2011). After a review of previous studies the authors determined that state assessments were useful in determining students’ achievement. State assessments are in alignment with future academic outcomes as they assess college readiness, which is a symbol of academic achievement. State assessments also allow for comparison of achievement across large groups of students (state-wide) (Sommers et al., 2011).

## **Defining Giftedness**

Over the years intelligence theories evolved from a singular ability definition to include multiple abilities. As the definition of intelligence widened, special populations began to be considered, such as gifted children. Singular ability intelligence theories indicated that intelligence was determined by one factor, while multiple abilities theories supported an unknown number of intelligence related abilities. However, much like the identifier *intelligence*, there is no commonly agreed upon definition of *gifted*.

The National Association for Gifted Children (NAGC, 2000) defined gifted as displaying exceptional levels of aptitude or competence in one or more areas. The federal definition of gifted states that the child must provide evidence of high performance ability in domains such as intellectual, creative, artistic, leadership, or specific academic fields and necessitate services not typically provided by schools to develop such abilities (NAGC, 2000). Furthermore, each state has the ability to define *gifted* and how a student qualifies as a *gifted student*. Once a student qualifies as gifted they are eligible to receive special education services.

For the purpose of this study, the state definition (i.e., state of Texas) for gifted and talented students was used. Gifted and talented students in the state of Texas are students who have demonstrated performance or showed potential for performance at an extraordinarily high level in comparison to others of the same age, experience, or environment. These students have displayed an advanced performance capability in intelligence, artistic skills, or creation, capacity for leadership, or excel in an academic field (Texas Education Code, Subchapter A, Texas Administrative Code, Title 19, Part II, Chapter 89).



## **Self-Regulation**

Self-regulation has been defined as the ability to activate different approaches to strategize and control behavior to achieve a goal (Skibble, Brophy-Herb, Phillips, Day, & Connor, 2012). These self-regulation strategies have included the ability to maintain attention, the ability to restrain behavior, and the ability to manage emotions. The ability to identify inner feelings and the feelings of others as well as the ability to express feelings has also been considered and is called social-emotional regulation (Cleaver, 2013). Behavioral regulation has also been included. Behavioral regulation is related to the ability to restrain impulses, resist inappropriate stimulation, and continue to perform tasks when unmotivated to do so. Behavioral regulation can be seen in learning and has been known as self-regulated learning (Pintrich, 2000).

The role of self-regulation in school success has been demonstrated in numerous studies. In fact, some studies imply that the degree of self-regulation can predict school success to a greater magnitude than cognitive skills and family background (Boyd, Barnett, Bodrova, Leong, & Gomby, 2005). Self-regulation shows a relationship with constructive outcomes for students. These outcomes include, but are not limited to increased academic performance, problem-solving skills, reading comprehension, motivation, self-worth, and self-efficacy (Eisenberg, Smith, Sadovsky, & Spinard, 2009).

When students engage in self-regulated learning strategies, they control their thoughts, behaviors, and emotions to successfully navigate their learning environment. Researchers have divided this regulation into three phases: forethought and planning, performance monitoring, and reflections on performance. Forethought and planning involve setting specific goals toward completing a task. Performance and monitoring is the use of different approaches to make

progress toward goal and monitoring the effectiveness of the approaches. In the performance phase, self-regulated learners assess their performance and the effectiveness of their strategies.

The effectiveness of self-regulation learning strategies has been the focus of several research studies (Bandura & Schunk, 1981; Mischel & Mischel, 1983). In Labuhn, Zimmerman, and Hasslehorn (2010), learners who were taught self-regulation learning skills demonstrated higher levels of academic self-efficacy and had higher levels of academic achievement. This study indicated that self-regulation learning strategies could be the difference between achievement and underachievement (Labuhn et al., 2010).

### **Gender Differences**

A few studies have looked at gender differences in self-regulation literature. These studies are somewhat inconsistent in findings. Studies have revealed a notable difference between girls and boys (Matthews, Pointz, & Morrison, 2009). The self-regulation of kindergarten students was examined at the beginning and end of the school year. While boys demonstrated lower self-regulation at the beginning they made progress over time. However, their self-regulation levels did not rise to the same level as that of the girls (Matthews et al., 2009).

In a literature review by Pintrich and Zusho (2007), girls had lower self-perceptions of their academic capabilities in science and math, even when the girls outperformed the boys. One explanation for this discrepancy is that girls conform to gender stereotypes during adolescence. In this work, Pinchtrich and Zusho concluded that the differences in gender self-regulation are a result of the function of gender stereotypes, not a gender difference (Velayutham, Aldridge, & Fraser, 2012). Given the limited and varied response to gender differences in self-regulation in the literature, this study will attempt add to the literature by exploring gender differences in self-

regulation. In this study, gender differences will be explored through self-reported and teacher reported self-regulation.

### **Purpose**

To a great extent the literature on underachievement has examined the differences between low achieving and high achieving gifted students (Baum et al., 1995; Butler-Por, 1987; Cakir, 2014; Colangelo, Kerr, Christensen, & Maxey, 1993; Diaz, 1998; Emerick, 1992). In these studies, underachievement has frequently been researched in middle and high school gifted population, using self-rating scales to obtain quantitative data about underachievement. A smaller quantity of studies has focused on the preadolescent population of gifted students and no study has examined the difference in achievement of non-gifted and gifted preadolescent students. Thus, this study aims to fill in some relevant gaps in the literature.

The main scope of this study was to address the problem of underachievement in gifted youth. Underachievement impacts a large number of students with lasting effects on students and society. Thus, identifying potential factors associated with underachievement is important. Specifically, this study examined self-regulation and its relationship to underachievement.

Identifying such a relationship can lead to the discovery of interventions to increase achievement. Within this study variables such as gender and race will be considered. Since the literature on gender and racial differences in self-regulation is not substantial or consistent this study sought to contribute more to the literature. Consequently, since gender and race should not be ignored, this study evaluated whether gender and race moderates a relationship between self-regulation and achievement, and will hopefully offer new insight. Furthermore, with the increased accountability expected of schools, this study sought to provide insight into factors impacting underachievement and thus enlighten teaching strategies.

## **Research Questions**

In order to investigate self-regulation among gifted achievers and underachievers this study was directed by the following research questions. They are:

1. Do the self-reported and teacher reported scores of self-regulation differ by gender and race between gifted achieving students and gifted underachieving students as measured by the CEFI and CEFIT?
2. Are the scores of self-reported self-regulation predictive of gifted students' achievement levels in reading and math as measured by the SAAS-R?
3. Do the self-reported and teacher reported scores of self-regulation differ by grade level between gifted achieving students and gifted underachieving students as measured by the CEFI and CEFIT?

## **Rationale of Study**

With a focus on gifted achieving and underachieving students receiving special education services, this study targeted upper elementary and early middle school-aged population. The study recognized possible differences among gifted achievers and underachievers in Grades 4–6 that have been identified as gifted and are receiving special education services. This study identified predictive group membership (achieving or underachieving) and identified differences between male and female gifted students.

The research questions were designed to establish if self-regulation is associated with underachievement. In particular, a focus on potential factors that may influence underachievement such as self-regulation, gender, and race will be evaluated. Gaining knowledge about underachievement and factors that might impact it can contribute to greater educational results for gifted students. Furthermore, exploring gender differences in self-

regulation among pre-adolescent gifted students may provide knowledge into the social-emotional development of pre-adolescent gifted students.

An investigation of self-regulation in gifted males and females who achieve and underachieve can help educators. This study may shed light on areas where gifted underachievers may need additional support. In particular, with the focus of this study on self-regulation in gifted students (and if self-regulation is identified as having a strong relationship with gifted underachievement), this study could point to potential interventions as to prevent underachievement. Further, this study may offer insight into other factors affecting self-regulation such as grade level (age) by comparing the self-regulation of gifted students across grade levels.

All data for this study were collected using the School Attitude Assessment Survey Revised (SAAS-R; McCoach & Siegle, 2003) and the Comprehensive Executive Functioning Inventory (CEFI; Naglieri & Goldstein, 2013). The researcher collected demographic student information. The demographic student data supplied information for further data analyses, offering the researcher potential association between such variables and students' self-regulation behavior.

### **Limitations**

Several limitations of this study should be acknowledged. First, all of the schools that were allowed to participate in this study were selected by the school district. The researcher did not have access to all schools in the schools district. This could potentially affect the characteristics of the participants such as social economic status. A second limitation is this study utilized rating scales as the primary method for collecting data. Limitations of self-report instruments include accuracy of student responses and the comprehension of items on the survey.

However, rating scales are widely used in a large number of research studies in psychology and education.

Additionally, this study used students identified as gifted intellectually. This will exclude students who have been identified as gifted in other areas such as leadership, music, or art.

Lastly, there are many definitions used in research to define underachievement. The definition used in this study may or may not be the same definition used by other researchers.

### **Summary**

This chapter addressed the surprising occurrence of underachievement in gifted students. Furthermore this chapter addressed the purpose of this study, research questions, and offered limitations. Chapter 2 provides a review of the literature. Chapter 3 provides the methodology of this study, participants, instrumentation, and procedures. Chapter 4 provides an overview of the data results from the study. Chapter 5 presents a discussion of the data and its implications for practice as well as possible future research.

## CHAPTER 2

### REVIEW OF LITERATURE

Three primary models are used to describe the underachievement of gifted students. In an attempt to identify underachievers and develop a profile of characteristics all factors/models are important to consider. Each will be explained subsequently.

The first model, School Etiology Model (Rayneri, Gerber, & Wiley, 2006), examines underachievement with a broad scope. In this model the student is viewed within the school context. The second model, the Family Etiology Model (Rayneri et al., 2006), is narrower in scope and describes underachievement from a familial context. Student and their relationships with family members are the focal point. The third model, the Individual Etiology Model (Rayneri et al., 2006), emphasizes emotional and behavioral problems as the origin of underachievement. This Individual Etiology Model is the narrowest in focus.

The personal factors supported by the Individual Etiology Model have received the most attention, in particular the individual factor of self-regulation. Self-regulation has garnered much attention because of its perceived direct relationship to achievement. Because this literature review addresses this relationship between self-regulation and underachievement, this body of research is important. Additionally, other factors such as school and family will also be reviewed. In particular, parenting styles, parental attitudes toward education, student attitude toward school, and student/teacher relationships will be examined. Thus, this literature review will first address school factors, family factors, and personal factors related to underachievement followed by a review of self-regulation.

## **Models of Underachievement in Gifted Students**

### **School Etiology Model**

#### **School factors.**

*Learning style.* Given the amount of time students spend in school, school factors are important to consider when investigating underachievement. One school factor that has gained attention as a source of potential issues for gifted underachievers is learning style. Learning style has been described as the way in which a student relates with and retains new information. Previous studies have shown that when there is a connection between learning style and instruction, students' test scores increase (Rayneri et al., 2006).

Rayneri et al. (2006) built on this learning style research by examining the goodness of fit between gifted students learning styles and classroom environment. The purpose of Rayneri's work was to discover how the degree of goodness of fit of the learning style influenced classroom performance. In the study, middle school students were given The Learning Style Inventory (Rayneri & Gerber, 2003) that provided data in the following three categories. The first data category included environmental, physical, emotionality, and sociological functioning. The second data category was perception of the learning environment via the Student Perception Inventory (Rayneri & Gerber, 2003). The third data category was classroom performance in which the grades earned provided the data.

The results from Rayneri et al. (2006) showed a relationship between learning styles and achievement. Learning styles that had high levels of persistence were highly correlated with higher levels of achievement. Additionally, there was a moderately significant relationship between grades in all content areas and perceived classroom environment. The students in this study did not identify many factors to be highly compatible with their learning style;



however, they still excelled at a high level. Overall, conclusions suggested that the classroom environment was not as important as characteristics within the student. For the underachieving gifted students in this study the lack of goodness of fit with the learning environment and learning style along with low persistence may have resulted in underachievement. From this study, it can be concluded that learning style plays a role in the student achievement (Rayneri et al., 2006).

***Classroom environment.*** As the Rayneri et al. (2006) study showed, when the classroom environment does not meet the student's needs, underachievement may persist. In a study conducted by Matthew and McBee (2007), the researchers studied the impact of classroom environment on gifted students. They studied gifted students in Grades 8-10 in a summer program, hypothesizing that if classroom environment was a factor of underachievement, then the students' behavior would be different in the summer program than what was observed in their typical classroom.

In the Matthews and McBee study (2007), the students were given the School Attitude Assessment questionnaire (McCoach & Seigle, 2003), which measured their attitudes toward school. In addition data were collected from their summer school teachers about the gifted students' behavior socially, academically, and behaviorally. The summer academic performance was measured by the teacher at the beginning of the summer program. The results from this study indicated that school factors did aid in underachievement. The students' school performance prior to the summer program did not predict academic achievement; however, SAT/ACT scores were significant predictors of academic achievement. Self-regulation was also shown to be a predictor of underachievement. Underachievement changed as the students' academic and social environment changed.

The Matthew and McBee (2007) study revealed that changing a students' classroom environment may help decrease underachievement. Nonetheless, it is equally important to identify things that may place students at-risk for underachievement.

In a study by Peterson and Colangelo (1996), the researchers attempted to use information in school files to identify at-risk students among junior high and high school students. Data on gender, attendance, tardiness, GPA, semester grades, required, and selected courses were gathered.

The students were divided into four groups: high achievers, moderate achievers, low achievers, and extreme underachievers. The results from this study suggested differences in tardiness, course selection, attendance, and length of underachievement related to at-risk behaviors. This study showed that underachievement began to take hold in the junior high years. Of those who were achievers, 17% had been absent 10 or more times while underachievers were absent 10 or more times, 37% of the time. To add, 47% of high achievers enrolled in 15 or more demanding classes while only 25% of extreme underachievers did the same. While, achievers were tardy 5% of the time, the underachievers were tardy 35% of the time (Peterson & Colangelo, 1996).

Additional school factors, peer relationships, teacher expectations, and negative attention to students were studied by Peterson (2001). Person's study investigated underachievers through the lenses of familial and school factors, (e.g., where underachievers became successful in the professional domain).

The Peterson (2001) study concluded that the classroom environment was a contributing factor to underachievement. In fact, the study found that the classroom environment of underachieving students was different than the classroom environment of high achieving

students. Additionally, this study found that teacher-student interactions for underachieving male students was different than those of underachieving female students. Males reported more interactions with their teachers surrounding academic work and receiving positive feedback at a higher rate than females (Peterson, 2001). This study showed that the classroom environment aided in the onset, maintenance, and reversal of underachievement in students.

### **Family Etiology Model**

#### **Family factors.**

*Parent/child relationship.* The Peterson (2001) study also examined family factors. Peterson concluded that not only did school factors aid in the development of underachievement, but family factors also played a significant role. In fact, it is stated that the interaction between these factors led to underachievement. The parent-adolescent relationship was examined. Previous studies (Albert, 1980; Rimm & Lowe, 1988) indicated that parents of underachieving gifted students were represented at two opposite ends of the spectrum: over-indulgent and over-protective. Over-indulgent parents allowed their children to have or do anything they desired. Over-protective parents prevented their children from having experiences. Findings from this study showed that underachievers felt a lack of support from their parents. Interestingly, mothers were identified as the lead encourager for academics and fathers for other achievement. Additionally, conflicted families were typical for underachieving gifted students (Peterson, 2001).

In another study conducted by Green, Fine, and Tollefsa (1988), the role of family functionality and satisfaction on student underachievement was examined. The results from this study showed no disparity in family functionality. Achieving gifted students showed greater

achievement satisfaction, while dysfunctional families with underachieving students had a greater likelihood to be less satisfied with the student's achievement (Green et al., 1988).

*Life events.* Outside of the school environment most of students' time is spent with their family. Therefore, it is important to study the impact of major life events. In a study conducted by Peterson, Duncan, and Canady (2009), a group of gifted students were followed from fourth grade until they graduated from high school. Each year the negative life events of the students were documented by their parents. Once they graduated, the gifted students were asked to talk about key life events and the influence those events had on their academic achievement (Peterson et al., 2009).

Peterson et al. (2009) found a 36% agreement between students and their parents about the key life events. High achievers had the ability to maintain a high level of achievement even when they had to deal with life events that caused stress. The gifted students were most aware of school-related stressors. They named academic challenges, school transitions, peer relationships, and over-commitment as the most common stressors. The study suggested that although these students were dealing with stressful events in their family lives, only those stressors related to school registered to them as major life events.

## **Individual Etiology Model**

### **Individual factors.**

*Motivation.* According to McCoach and Del Siegle (2003), studying personal factors of gifted underachievers is as important as studying school and family factors because they can suggest characteristics of this population. McCoach and Del Siegle (2003) investigated if differences existed between gifted underachievers and high achievers in the areas of academic self-perception, attitude toward school and teachers, motivation, and self-regulation. A group of

high school students were given The School Attitude Assessment Survey – R (McCoach & Del Siegle, 2003). Both the underachieving and high achieving group displayed high academic self-perception, which was contrary to what had been reported in the literature. Low-achieving students had a greater tendency to report low academic self-concept than high achieving gifted students (McCoach & Del Siegle, 2003).

High-achieving gifted students are also more likely to have positive attitudes toward school and their teachers (McCoach & Del Siegle, 2003). However, in this study, positive attitudes were not a significant predictor of achievement or underachievement. Furthermore, it was found that motivation and goal values were highly correlated with each other. Motivation encouraged the development of self-regulation (i.e., high achievers had a 1.5 point increase on motivation than underachievers and levels of motivation was a predictor of underachievement and achievement in this study; McCoach & Del Siegle, 2003).

Davis and Connell's (1985) study investigated the separate and combined effects of aptitude and achievement on self-system. The self-system is an individual's compilation of self-perceptions. This system can be a protective factor and may keep a person from believing negative things or thoughts about themselves. In this study, the participants were divided into four groups: gifted achievers, gifted underachievers, average achievers, and underachievers. They were given the following self-report questionnaires: Perceived Competence Scale (Harter, 1982), Intrinsic vs. Extrinsic Orientation in the Classroom (Harter, 1981), Multi-dimensional Measure of Children's Perceptions of Control (Davis & Connell, 1985). The results of this study were that the gifted and average group stated the same reason (effort) for success and failure in school. This study indicated that there was no difference in the reason the two groups achieved in school.

Davis and Connell (1985) reported that both gifted and average underachieving students viewed themselves as performing less well than their counterparts. Further, these two groups did not differ on other self-related measures. The average group had higher levels of anxiety and unknown control, while the gifted students showed higher levels on competence evaluation, mastery motivation, and autonomous judgment (Davis & Connell, 1985).

*Gender differences.* Gender differences were noted between high achievers and underachievers, with males in a greater number among the high and low achiever groups (Colangelo, Kerr, Christensen, & Maxey, 1993). Underachievers were more likely to go to a high school with over 200 students and were less satisfied with their classroom instruction. On the other hand, high achievers were more involved outside of the classroom. Often, overachievers chose health and engineering majors at a higher rate while underachievers typically chose such majors as applied arts. In this study, 49% of high achievers aimed to obtain a professional degree, while 33% of underachievers had the same goal for a professional degree. While the underachievers felt less need for help in the education domain than the high achievers, they did want more assistance with study skills (Colangelo et al., 1993).

### **Self-Regulation**

Many of the factors that contribute to underachievement in gifted students can be related to the Individual Etiology Model (Baker, Bridger, & Evans, 1998). The factors have usually included self-regulation, academic self-perception, negative school views, and low motivation, negative views about teachers and classes, and low goal meaningfulness.

Previous research has shown a relationship between self-regulation and achievement. However, there are exceptions. For instance, Tang and Neber (2008) did not find such a relationship. Tang and Neber (2008) examined the difference in self-regulation in regard to the

use of self-regulated learning strategies and gender. In this study, 135 students in Grades 10–12 in China, the United States, and Germany were given self-report instruments (i.e., Likert scales describing the motivational beliefs, goals orientations, use of cognitive strategies, and self-regulated strategy use). The children from the U.S. scored higher on self-regulated learning strategies than the children from Germany and China. Additionally, German and Chinese students used similar strategies. The results from this study did not show a correlation between higher self-regulation and higher grades. In regard, to gender differences, females demonstrated higher goal orientations and the use of more superficial cognitive strategies (Tang & Neber, 2008).

### **Self-Regulated Learning**

In another study, Dresel and Haughwitz, (2005), the role of intelligence in the preference for self-regulated learning was investigated. Four research questions were explored in this study. The questions were: (1) Is there a correlation between intelligence and self-regulated learning at the beginning of 4th Grade?, (2) Are there differences between high IQ and average IQ in self-regulation?, (3) Does self-regulation change over time?, and (4) Does intelligence predict change? The data were collected three times during the school year.

The first data collection was at the beginning of the year, at 11 weeks, and then 10 weeks later. The 368 students were in the 4th Grade from Germany. The results indicated that there was not a preference for self-regulated learning in relation to IQ. Additionally, there was no change in self-regulation over the course of the 4th Grade year.

In another study Dresel and Haugwitz, (2005) examined the relationship between cognitive abilities and the use of self-regulated strategies in 449 students in the 6th Grade. The researchers answered four questions: (1) Is there a correlation between cognitive abilities and the

use of self-regulated learning when gender and motivation are controlled? (2) Is the correlation gender specific?, (3) Is the relationship between cognitive abilities and self-regulation moderated by self-concept?, and (4) Are these moderator effects gender specific? The students were also given a questionnaire to measure self-regulation and motivation. The results showed a negative relationship between cognitive abilities and self-regulated learning. Additionally, the results revealed a less efficient use of strategies from gifted students than non-gifted students. Interestingly, the researchers found that self-concept was a mediating factor for boys, but not for the girls. However, girls used self-regulation strategies more often than boys. While this study also revealed that there was a positive relationship between cognitive abilities and self-regulation strategies with lower self-concept, the relationship became more negative as the self-concept increased (Dresel & Haughwitz, 2005).

In a case study, Neumeister and Thomas (2003) explored the role of self-regulation and underachievement. The experiences and expectations of a university student who had been labeled as underachieving was studied. In this case study, the student had high self-concept and self-regulation, which was not consistent with underachievement. Typically high self-concept and self-regulation correlate with high achievement. This study was significant because it highlighted the difference between underachievement and selective achievement. Selective achievement happens when the learner is internally motivated however their performance only matches their ability in the area of their specific interest. While underachievement occurs when a person's ability does not match their performance, this study found that when the learning environment is not consistent with self-regulation then selective achievement is more likely (Neumeister & Thomas, 2003).



The relationship between self-regulation and achievement was further explored by Ablard and Lipshultz (1998). Both underachieving and high-achieving 7th grade students answered questions about their use of self-regulated learning strategies. High-achieving students reported that their use of these strategies varied in frequency and intensity. This variation in use implied that it was not necessary for high achievement. Two types of goals were studied by the researchers; performance and mastery goals. Performance goals are related to the outcome (e.g., getting an A on a test) and mastery goals (e.g., being the best at the activity). Mastery goals and gender were significantly correlated to self-regulation learning. Girls demonstrated a higher use of self-regulation learning. Also, the study revealed that mastery goals increased with the use of self-regulation (Ablard & Lipshultz, 1998).

In another study, Stoeger and Ziegler (2005) focused on teaching self-regulation strategies and the impact on achievement to 4th Grade underachievers who displayed a discrepancy between their IQ and math achievement. Students were taught time management and preparation of classroom materials during the second half of the school year.

The students were also taught self-regulated learning (SRL) over a six-week period. Prior to the training, the students were given measures to assess their thoughts about their academic strategies currently in place. During the training, students took a math test at the end of each week and discussed effective and ineffective learning strategies. The results of this study indicated that there was an improvement in the students' time management skills and the strategies that they implemented (Stoeger & Ziegler, 2005).

In the Willoughby, Kupersmidt, Voegler-Lee and Bryant (2011) study, researchers examined self-regulation in preschool students ages 3-5. The students were assessed over the course of two different sessions. During the first session, academic achievement was assessed

using the Woodcock-Johnson Tests of Achievement (Woodcock & Bonner, 1977) and during the second session self-regulation was assessed using the Pre-school Self-Regulation Assessment (PSRA; Smith-Donald, Raver, Hayes, & Richardson, 2007). In addition, teachers completed behavior rating scales: Iowa Conners Rating Scale (Waschbusch & Willoughby, 2008) and Types of Aggression Rating Scale (Halperin, McKay, & Newcorn, 2002).

The results of this study, Willoughby et al., (2011) supported previous research (i.e., self-regulation and achievement were related). However, in contrast, the researchers found that there were two different types of self-regulation: hot and cool. Cool regulation happened when an individual was trying to resolve new problems that were emotionally neutral. Hot regulation happened when an individual was trying to resolve new problems that were emotionally exciting. Both hot and cool regulation were significantly correlated with disruptive behavior. These results indicate that levels of cool regulation can predict levels of disruptive behavior while levels of hot regulation can predict levels of academic achievement. When looking at the two types of regulation separately, cool regulation is associated to academic achievement, while hot regulation is correlated with overactive behavior (Willoughby et al., 2011).

### **Diversity**

Self-regulation continues to develop as children progress through different developmental milestones. Developmental change in self-regulation is evidenced in three areas: attentiveness, inhibitory control, and impulsive behavior. Ability to control these three areas increases with age. As children age they are more likely to delay gratification for a bigger reward, suggesting self-regulation is a lasting individual trait. Children at age four who could delay gratification showed stronger levels of academic proficiency ten years later (Raffaelli, Crockett, & Shen, 2005).

There were also gender differences in self-regulation. Research revealed a visible difference between girls and boys (Matthews, Pointz, & Morrison, 2009). In one study the self-regulation of kindergarten students was examined at the beginning and end of the school year (Matthews et al., 2009). While boys demonstrated lower self-regulation at the beginning they made progress over time. However, boys' self-regulation levels did not rise to the same level as the girls' (Matthews et al., 2009).

Matthews et al. (2009) answered three questions regarding gender differences in self-regulation: (1) Are there gender differences in self-regulation?; (2) Is there a size effect in the difference?; and, (3) Does gender and self-regulation predict achievement? In order to answer these questions, kindergarten parents completed a childhood behavior rating scale during the fall and teacher completed the same scale during the spring. Students were administered academic achievement test and given a direct self-regulation assessment.

Matthews et al. (2009) reported that results of the teacher report and direct measure were similar and they indicted gender differences in the fall and the spring terms. Both measures of self-regulation showed that girls had higher self-regulation than boys. However, there were no academic achievement outcome differences in the spring, indicating that both boys and girls achieved at an equal level. Additionally, self-regulation was predictive of math achievement and phonological awareness. The results from this study indicated that boys had lower levels of self-regulation in the fall, but their self-regulation levels increased by the spring. However, the boys' level of self-regulation never matched the level of girls' self-regulation. Additionally, the teacher scores of self-regulation were similar to the direct levels of self-regulation assessment scores. This was significant, as this finding was different than what had been reported in previous

literature (i.e., teacher ratings are biased and do not provide accurate self-regulation ratings; Matthews et al., 2009).

This study focused on factors identified in the Individual Etiology Model (self-regulation/motivation) as impacting achievement. In literature motivation and self-regulation are often used interchangeably. Motivation is described as the belief that sustained efforts will lead to the accomplishment of a goal. Pride and persistence are often indicative of motivation. Self-regulation is described as the ability to change behavior according to a desired goal (Berhenke, 2013).

### **Measuring Self-Regulation**

A review of the literature on self-regulation implies several measures have been typically used to investigate self-regulation in children. These measures include: *School Attitude Assessment Survey-Revised (SAAS-R; McCoach & Siegle, 2003)*, *Child Behavior Rating Scale (Bronson, Goodson, Layzer, & Love, 1990)*, and *Head-Toes-Knees-Shoulders (HKTKS; Ponitz et al., 2008)*. The subsequent paragraphs provide a brief description of the measurements that have been previously used in literature.

McCoach and Siegle's *School Attitude Assessment Survey-Revised (SAAS-R; 2003)* is a widely used instrument for measuring self-regulation in students. This 35-item tool measures five constructs that address: academic self-perceptions, attitude toward teachers, attitude toward school, goal valuation, and motivation/self-regulation (Ritchotte et al., 2014). *The Child Behavior Rating Scale (CBRS; Bronson et al., 1990)* was designed to measure teachers' and parents' perceptions of students' behavior regulation. The rating scale allows teachers and parents to rate the students' ability to regulate behavior such as following directions and completing and persisting on classroom tasks (Matthews et al., 2009).

The previous two instruments are indirect assessments of a child's level of self-regulation. *The Head-Toes-Knees-Shoulders (HTKS)*; Ponitz et al., 2008) assessment tool is a direct measure of self-regulation for children aged 3.5 to 6.5. This tool uses a game to measure three different facets of executive function, including: paying attention, using working memory, and using inhibitory control (McClelland et al., 2007).

Indirect assessments are useful in research because they are practical when collecting data for a large group. Indirect assessments are also helpful when the data needs to be collected over a short amount of time and allow for limited effect on their validity. The SAAS-R (McCoach & Siegle, 2003) is a psychometrically sound tool to use for students in Grades 4th – 6th. This tool measures students' self-regulation. The SAAS-R (McCoach & Siegle, 2003) includes 35 items and five subscales, and asks students to respond to statements using a Likert scale ranging from 1 - *strongly agree* to 7 - *disagree*. The items evaluate the level of self-regulation behaviors students exhibit. The SAAS-R (McCoach & Siegle, 2003) psychometric data are strong and the measures have demonstrated effectiveness in a variety of places such as research and clinical settings (Matthews et al., 2009).

Another psychometrically sound tool used to measure self-regulation is the Comprehensive Executive Functioning Inventory (CEFI; Naglieri & Goldstein, 2013). This rating scale is for ages 5 to 18 and uses three forms: Parent, Teacher and Self-Report. The forms provide information about executive functioning, represented as a full scale score and information about nine subscale scores: (attention, emotional regulation, flexibility, inhibitory control, initiation, organization, planning, self-monitoring, and working memory (CEFI, 2013).

Executive Functioning (Hofmann, Schmeichel, & Baddeley, 2012) is used to measure self-regulation as aspects of executive functioning are primary tenants of self-regulation

(working memory and behavior inhibition). Additionally, executive functioning deficits are potential indicators of poor self-regulation (Hofmann et al., 2012). Executive skill deficits indicate poor self-monitoring, a key to self-regulation. Self-monitoring helps individuals keep track of and monitor their performance.

## **Intelligence Theories**

### **General Intelligence**

The idea of intelligence has been debated for many years (Al-Salameh, 2012). These debates have inspired a number of intelligence theories. Some intelligence theories include but are not limited to general intelligence, primary mental, multiple intelligence, and triarchic theory (Al-Salameh, 2012). These theories were selected as they show the progression of intelligence theories. With time, intelligence theories have included a wider range of definition. However despite the number of theories, there remains no set definition of intelligence (Al-Salameh, 2012). For example, some theories state that intelligence is a singular ability while others consider intelligence to include several abilities.

Early theorists such as Charles Spearman developed the General Intelligence Theory (Spearman, 1904). Spearman believed that a singular factor, the “g” factor contributed to intelligence. His belief in the “g” factor was strengthened following his factor analysis. Spearman found that people who did well on cognitive test also performed well on other tests. He thought intelligence was represented by a single number value such as an IQ score (Al-Salameh, 2012).

### **Primary Mental Abilities**

Louis L. Thurstone (1938) provided a different view of intelligence than Spearman (1904). Thurstone believed that intelligence involved seven mental abilities. In his theory,

Primary Mental Ability (1938), the seven abilities were identified: verbal comprehension, reasoning, perceptual speed, numerical ability, word fluency, associative memory, and spatial visualization. In this framework, *verbal comprehension* is the capability to use words while *reasoning* is the ability to determine rules and relationships and *perceptual speed* the ability to quickly identify similarities and differences. Using numbers to explain problems reflects *numerical ability*. *Word fluency* involves the capability to rapidly and fluently use words. *Associative memory* is the ability to recall lists and numbers and *spatial visualization* involves the capability to visualize and maneuver objects in space (Al-Salameh, 2012).

### **Multiple Intelligence**

Howard Gardner (1983) also believed in multiple abilities. However, his theory of intelligence was not based on a numeric value but instead was determined by how valuable the ability is in the culture. His Multiple Intelligence Theory (Gardner, 1983) described eight intelligences: visual-spatial, verbal-linguistic, bodily-kinesthetic, logical-mathematical, interpersonal, musical, intra-personal, and naturalistic. *Bodily-kinesthetic intelligence* involves using the body to communicate feelings, thoughts, and answer problems. *Interpersonal intelligence* encompasses comprehending others' mood while *intra-personal intelligence* is an understanding of the self. Individuals displaying *naturalist intelligence* have the ability to categorize and identify nature. *Logical intelligence* centers on using numbers and reason. *Visual-spatial intelligence* understands the use of lines and colors and their context within space. *Linguistic intelligence* is the ability to convey meaning with words. Lastly, *musical intelligence* is the ability to make meaning of rhyme beats and sounds.

In sum, the Multiple Intelligence Theory (Gardner, 1983) has four major points: (1) intelligence works together in a variety of ways; (2) there are various ways to be considered

intelligent; (3) intelligence can be developed, and everyone has the nine intelligences; and (4) the intelligences work together in different ways (Al-Salameh, 2012).

### **Triarchic Theory**

The Triarchic Theory was developed by Sternberg (1984). This theory posited that intelligence happened separately and in specific areas (Song & Porath, 2015). This theory represented a shift from viewing intelligence as abilities to intelligence in terms of patterns. The triarchic model views intelligence in terms of patterns instead of people. For example, people exhibit strengths and weakness and these create a pattern. Three types of patterns are observed in people, including: analytical, creative, and practical patterns. Analytical patterns have the ability to analyze and evaluate their ideas and the ideas of others. Creative patterns have the ability to develop high quality new ideas. Practical patterns have the ability to understand the world around them (Sternberg, 2000).

The Triarchic Theory (Sternburg, 1984) has posited that intelligence is explained by universal factors and environmental factors. Environmental factors involve experiences and context. Universal factors address information processing (Song & Porath, 2005). Analytic patterns of intelligence deal with information acquisition, while creative patterns address new tasks and activities. Practical patterns deal with how well a person adapts to real world environments. This theory states that intelligence is exhibited when people use information processing components of intelligence to address new tasks encountered in the real world. A person can excel in all three areas of intelligence or one to be considered gifted in one area (Sternberg, Castejun, Prieto, Hautamaki, & Grigorenko, 2001).

Intelligence has been viewed as related to the world within the person. Cerebral aspects that lead to intelligent behavior are at the forefront. This theory includes three sub theories which



are briefly explained. Information processing has been an important component part of the first sub theory. In particular, discovering how to do things, preparing what to do, and executing plans are important to the first sub theory. The second sub theory addresses how individuals use those factors when they encounter a new task. The third sub theory addresses the external world with a focus on embracing, influencing, and choosing the environment (Sternberg, 1984).

### **Giftedness**

As the intelligence theories evolved from singular ability theories to include multiple abilities, special populations began to be considered as gifted; however, much like intelligence, there is no commonly agreed upon definition of giftedness. The National Association for Gifted Children (NAGC, 2000) defined gifted as displaying exceptional levels of aptitude or competence in one or more areas. The federal definition of gifted states that the child must provide evidence of high performance ability in domains such as intellectual, creative, artistic, leadership, or specific academic fields and necessitate services not typically provided by schools to develop such abilities (NAGC, 2000). Additionally, each state in the United States has a description for what it means to be gifted.

### **Theories of Gifted**

#### **Developmental Models of Gifted**

Theories of giftedness are based on developmental models: biological, domain specific, achievement oriented, socio-cultural, and multidimensional (Bejes-de Bock & De Ruyter, 2011). In the biological model (Bejes-de Bock & De Ruyter, 2011) IQ was viewed as an innate quality. This model is applied to academics. The domain specific model was made popular by Gardner's Multiple Intelligence (Besjes-de Bock & De Ruyter, 2011). Within this model, academic abilities are accepted as gifted; however, it is also broad enough to include other talents. The

Achievement orientation model views gifted as an interaction between environmental and personal factors. Socio-cultural giftedness was determined by what is valued in society. Societal values take precedence over intellectual abilities (Bejes-de Brock & De Ruyter, 2011).

Multidimensional giftedness takes into account several factors such as personal, social values, and how they develop alongside biological features (Besjes-de Bock & De Ruyter, 2011).

**Enrichment triad.** Several models have been developed by theorists to explain giftedness. One such model was developed by Joseph Renzulli called the Enrichment Triad Model (Renzulli, 1977). The model was developed to provide an application of giftedness for educating students. The model has been called a triad because three enrichment activities are described for best practice with gifted students.

**Types of activities.** The first activity (type one) is a general probing activity that can be used in the general education classroom with all students (Renzulli, 1977). The activities are designed to tap into students' interest by activating the thinking and feeling process, and the students' interests are peaked as a result of these activities. Teachers can incorporate activities such as having students answer open-ended questions. An example would be, "Imagine you are writing your first book, what is the title of you book and what is the book about?" (Bain, Bourgeois, & Pappas, 2003) Additionally, students can complete a learning style survey as part of a type one activity.

The second activity (type two) would be group training. During this training the activities the students are engaged in activities that help them identify the strategies that help them learn. At this stage in the training, students develop critical thinking skills and problem-solving. The third stage (final stage) involves individual projects in areas of interest to the students.

Type one activities are created by teachers to generate higher order and creative thinking in students. Students are exposed to a wide range of topics and activities and the primary focus is on topics that are not usually encountered in the classroom (Bain et al., 2003). While type one and type two activities can be provided to all students, type three activities are designed for gifted students only, including projects that engage students in solving real world problems (Garcia-Cepro, 2008).

**Factors.** When teachers create activities for type three enrichment for gifted children, several factors must be taken into consideration (Renzulli, 1999). According to Renzulli, first, the uniqueness of the learner should be considered (i.e. the abilities, interest, and learning styles of the learner should be taken into consideration when creating an educational environment for the student). Second, the role of enjoyment is an important factor (i.e. the learning environment is more effective when the students enjoy what they are doing). The third factor is the personalization of learning, (i.e., when the topics studied are relevant they are more meaningful and the student is more engaged). A fourth factor to take into consideration is how authentic the problem being solved is to the gifted student. Lastly, there is a focus on products and services, because students want to have an impact on the area they are studying and want to contribute to society (Renzulli, 1999).

**Three ring concept.** Joseph Renzulli (1977) also created the three ring concept model of giftedness. With the three-ring concept, giftedness has been described as only present when a person has characteristics from all three traits (three rings) that are working together. The three traits are ability, task commitment, and creativity. According to this model, ability does not have to be superior, it just must be greater than average (Culter, 1996). Those who are gifted have all

three traits and have the ability to appropriately use them. However, within this model, not all people are gifted and those who are gifted, do not use these abilities all of the time.

**PASS theory.** Luria's (1966) early work was used as the foundation for the PASS theory (1975). This theory uses a two-level model, with the top level considered as general intelligence and on the second level (lower level), there are four PASS abilities (i.e., planning, attention, simultaneous, and successive). The PASS abilities are described as follows. Planning happens when a person selects, applies, and evaluates solutions to problems. Attention involves the ability to focus and inhibit responses to irrelevant stimuli. Simultaneous is the ability to combine information from different sources while successive is the ability to combine information from different sources and place in order (Nagleri, Kauffman, & Jones, 2001). A person can be considered gifted if he or she demonstrates superior ability or potential in general intelligence and or outstanding potential in specific PASS abilities (Volker, Lopata, & Cook-Cottone, 2006).

**Pentagonal theory.** Explicit theories are developed as a result of testing and data collection. Implicit theories are what theorists believe about giftedness. Implicit theories contribute to literature by asking what it means to be gifted, not testing the phenomenon of being gifted. Implicit theories supply the structure to define giftedness while explicit theories provide content within the structure (Sternberg & Zhang, 1995). One such theory is the Pentagonal theory (Sternberg & Zhang, 1995). This theory stated that five criteria must be present to be considered gifted. The five criteria were: (1) excellence – must be superior in activity/task/thought, (2) rarity – excellence relative to peers, (3) demonstrative – must be able to show/perform giftedness, (4) productivity – must be able to duplicate giftedness, (5) value – deemed important by society (Sternberg & Zhang, 1995).

## **Underachievement**

Gifted and underachievement are not words that are commonly linked; however, this phenomena does exist and, in fact, some approximations of gifted underachievers are as high as 50% of gifted students (Supple, 1990). Three prominent definitions of gifted underachievement have been described (Supple, 1990).

The first definition of underachievement has been discussed as a difference between probable achievement and actual achievement (Supple, 1990). The second definition stated a difference between calculated achievement and actual achievement and the third definition has been described as an inability to develop or utilize potential (Supple, 1990).

### **Model of Underachievement**

**The achievement orientation model.** The Achievement Orientation Model (Siegle & McCoach, 2005) emphasized the importance of self-perception. In particular; three areas of self-perception have been highlighted within this model (i.e., self-efficacy, goal meaningfulness, and environmental perception). Self-efficacy has been identified as the belief that a person has the ability to do a task. Research has shown a relationship between positive self-efficacy and academic achievement (Rubenstein, Del Siegle, Reis, & McCoach, 2012). An additional relationship has been shown between goal meaningfulness and achievement. Goal meaningfulness involves how important the task was to an individual. If the task was not viewed as important then it will not be pursued. A third relationship between perceptions of the environment and academic achievement was shown in the research. Perceptions of the environment are the way an individual sees others' expectations of themselves, how the individual views events, and how the individual views their interactions with other people. All of

these things influence individuals' perception of the environment and these perceptions dictate the decisions that they make, positively or negatively (Rubenstein et al., 2012).

According to this model, self-efficacy, goal meaningfulness, and environmental perceptions impact achievement indirectly due to their influence on motivation. Motivation regulates academic achievement. Furthermore, when all three of these areas are found within a person they lend themselves to self-regulation. Self-regulation has been shown to lead to academic achievement (Rubenstein et al., 2012).

**Achievement models of giftedness.** Although the Achievement Orientation Model (Seigle & McCoach, 2005) has been used and researched often, other models used by researchers provide a better understanding of achievement (Rubenstein et al., 2012). In particular, three other models examine a different locus of control for the source of underachievement. The first model, the Individual Etiology Model (Baker et al., 1998) has a strong medical base. It states that underachievement is a result of a problem within the individual. In particular, in this model a lack of motivation and behavioral/emotional conflict are the main sources for underachievement (Baker et al., 1998). Lack of motivation contributes to underachievement as it influences the study skills and habits of a person, while fear of failure and striving for perfection can cause emotional and behavioral conflict within an individual. Many of the factors that the Individual Etiology Model highlights are contributing factors to underachievement that are also highlighted by the Achievement Orientation Model (Seigle & McCoach, 2005).

**Family etiology model.** In the second model, the Family Etiology Model (Baker et al., 1998), the family system was used as the framework to provide an understanding of gifted underachievement. Within this model the individual's behavior is viewed in terms of the relationship and interactions between the family members (Baker et al., 1998). Theorists who

support this framework believe gifted underachievers have an unstable family environment and this environment does not provide support for the gifted student. In particular, the issues of stability surround the family structure.

The rules that govern the family are typically disorganized and disjointed. These families are disorganized and do not have clearly defined boundaries about academic behavior expectations. Additionally, researchers have investigated the emotional environment within gifted academic underachievers and the findings reveal a lack of emotional connection between the family members (Baker et al., 1998). The emotional discord among parents also contributes to the dysfunction of underachieving gifted students family environment (Baker et. al., 1998). For example emotional discord can be present when parents do not have the same academic expectations for students and do not promote an environment that develops students' independence (Baker et al., 1998). Furthermore, self-confidence and appropriate risk-taking may not be developed in these students. Instead, the families are described as having high conflict. In sum, the literature stated that underachievers have a lack of support within their family dynamic and this contributes to their underachievement (Baker et al., 1998).

**School etiology model.** The School Etiology Model (Baker et al., 1998) is the third model described in the literature. This model further expanded on the students' environment as a source of their underachievement. The model recognized the influence that the schools' environment has on behavior. Boredom and poor academic class selection are seen as contributing factors to underachievement in this model. These two factors have been the most studied in literature and they contribute to underachievement by influencing motivation (Baker et al., 1998). When students are not engaged, their achievement will decrease.

Additionally, peer relationships have an impact on students' academic achievement (Baker et al., 1998). This impact is typically seen in middle and high school when social acceptance is highly valued. In early childhood high academic achievement is valued among; however, in middle and high school it is less valued (Baker et al., 1998). The influence of peer relationships on academic achievement are so strong that it has been shown to reverse the pattern of underachievement (Reis & McCoach, 2000). Peer relationships can have both a positive and negative impact on academic achievement. In a 1999 study, Berndt revealed that students' grades in the spring semester matched their friends' grades from the fall semester. Students who had friends with low grades in the fall saw a decrease in their grades in the spring (Reis & McCoach, 2000).

### **Theories of Self-Regulation**

#### **Social Cognitive Theory**

Social Cognitive Theory (SCT) was developed by Albert Bandura (1977) to describe and explain behavior. One tenet of SCT is the mutual relationship between personal factors, behavior, and environment (Zimmerman, 2004). This triad within a person is influenced through agency. Bandura described agency as manipulating behavior and the environment to reach a goal (Bandura, 2001). In this Social Cognitive Theory framework people are agents in their development and therefore development is considered proactive (Burney, 2008). People are agents because they execute behaviors purposefully to achieve a goal (Martin, 2004).

Agency has four features: (1) "intentionality or behavior done purposefully" (Bandura, 2001, p. 6), (2) "forethought, the ability to see positive future outcomes" (Bandura, 2001, p. 7), (3) "self-reactiveness which involves self-regulation and motivation" (Bandura, 2001, p. 8), and (4) "self-evaluation to monitor self-efficacy" (Bandura, 2001, p. 10). Self-efficacy is the belief



that actions will create desired change and decrease likelihood of unwanted outcomes (Bandura, 2001).

**Concepts.** There are five concepts of Social Cognitive Theory described by Bandura (1977). The first concept is modeling. Modeling occurs when an observer uses the model's behaviors and thoughts as blueprint for their behavior (Schunk & Zimmerman, 1997). The second concept in SCT is outcome expectations. These types of expectations are the anticipated consequence about following a behavior. The four types of outcome expectations are performance attainment, vicarious experience, hearing from others, and physiological arousal (Martin, 2004).

The third concept of Social Cognitive Theory is perceived self-efficacy (i.e., the confidence related to achievement on a task) (Zimmerman, 2004). Goal-setting is the fourth concept, which has been described as the anticipated and desired outcome for a task. The fifth concept is self-regulation and is reliant on goal-setting and self-efficacy. This requires an individual to establish goals followed by organized behaviors and cognitions to achieve their goal (Bandura, 2001).

Social Cognitive theory states that the environment has a larger role in molding behaviors than genetics. Bandura believes that people learn by two methods: direct experience and observing others. Learning takes place when a previous experience is used to guide future actions (Bandura, 1991).

The self-system involves a set of cognitive structures which include perception, evaluation, and regulation of behavior. Behavior is evaluated when previous experiences and predicted future consequences are examined. Following this evaluation a person exerts control

over their behavior and this process is identified by Bandura as self-regulation. Self-regulation is the process of consciously not responding to stimulation.

Self-regulation is comprised of three parts: Self-observation, judgment, and self-response. Self-observation is the process of looking inward and understanding the intent and consequences of behavior, while judgment is the act of comparing yourself to a standard. Standards that are used as a comparison are external (expectations and traditions) and internal (comparing current performance with past performance). Self-response is the positive response typically occurring after doing well on a standard or a negative response from doing well (Bandura, 1991).

Within in this framework self-observation plays a key role in the development of self-regulation. Children learn from observation which behaviors are endorsed and which behaviors provide consequences. These observations leads to the belief that certain behaviors will produce future outcomes and thus creating an internal precedent for judging their behavior and its effectiveness (Berhenke, 2013).

### **Learning and Cognition**

Lev Vygotsky (1962) developed the Social Cognition Learning Theory. This theory states that culture is the principal method through which people learn (Levykh, 2008). In particular children learn through their culture, typically their families and school, as this is where they spend the majority of their time. Culture contributes to learning in two ways: (1) it is the method for how children attain the content of their thinking; and, (2) it provides a way for thinking to be developed. Thus culture demonstrates for children how and what is culturally acceptable to think (Kozulin & Presseisen, 1995).

Learning takes place as children problem-solve through exchanges with parents, teachers, and peers. These interactions afford children the opportunity for cognitive development as the

adults or peers takes on the burden of resolving the problem and slowly shift this responsibility to the child. Vygotsky (1962) stated that this transfer occurs through the use of tools. The primary tool used during these interactions is language. This transfer of cultural knowledge with language happens as the language used is initially that of the adults but becomes the child's language as they internalize it and use the language to direct their behavior (Levykh, 2008).

**Zone of proximal development.** One of the main tenets of The Social Cognition Learning Theory (1962) is the zone of proximal development. Most tasks are initially beyond the capability of children to solve independently; however, they can solve these tasks with the help of a more advanced individual such as an adult or peer. As they progress through the zone of proximal development children can master a task (Levykh, 2008).

Zone of proximal development (ZPD) (Vygotsky, 1962) is the area between the existing development level of solving a task and the prospective level of development with help from a more advanced person. Learning occurs as language and strategies used become internalized by the child. Within this framework learning is a collaborative effort between the more experienced individual and the child. Children learn to master their environment through the mastery of tools. Learning takes place indirectly through the use of cultural tools once they are internalized (Kozulin & Presseisen, 1995).

The Social Cognition Learning Theory framework views self-regulation as mastery of behavior. This happens as the environment exerts less control over the individual's behavior which occurs as the cultural tools become mastered. Three conditions are needed for self-regulation to develop. The conditions are: the opportunity to be involved in regulation of others and self-regulation, children need their behavior to be regulated by someone else typically an adult such as a parent or teacher, and equally important is peer-to-peer regulation of behavior.

**Language.** The second condition is learning to use cultural tools such as language to influence desired behavioral results (Levykh, 2008). In particular, private speech is what children need to use to develop self-regulation. Private speech is the process of internalizing language. Internalized language was previously used by adults to control/regulate children's behavior and is now used by the child to regulate their behavior. The third condition is opportunities to engage in pretend play. Pretend play allows children to plan their behaviors and execute the same. Additionally, pretend play helps children to learn to delay gratification, a skill indicative of emergent self-regulation skills (Levykh, 2008).

Another concept within this theory is scaffolding. Scaffolding provides a way for self-regulation to develop by way of social interactions. This occurs when a more experienced person helps the child perform a novel task with the intention that the child will perform a similar task independently (Bodrova, Leong, & Akhutina, 2011). During pretend play children must hold one another accountable for following the rules. Learning takes place as children improve their knowledge of rules within the play environment and transfer this knowledge to other situations.

CHAPTER 3  
METHODOLOGY

**Overview**

In this chapter information about the methodology used in the study is provided. The study's setting, participants, and instruments are presented. Furthermore, this chapter includes information about procedure, research questions and data analyses designed to explore possible differences in self-regulation of gifted preadolescent achievers and underachievers. To investigate these potential differences, the researcher explored three different research questions:

1. Do the self-reported and teacher reported scores of self-regulation differ by gender and race between gifted achieving students and gifted underachieving students as measured by the CEFI and CEFIT?
2. Are the scores of self-reported self-regulation predictive of gifted students' achievement levels in reading and math as measured by the SAAS-R?
3. Do the self-reported and teacher reported scores of self-regulation differ by grade level between gifted achieving students and gifted underachieving students as measured by the CEFI and CEFIT?

**Survey Research Design**

Self-report and teacher-report surveys were used to gather data in this study. This study used a survey design for several different reasons: (1) self-report Likert scales provide information about how strongly a participant feels about something, (2) the data is quantitative,

increasing the ease that it can be statistically analyzed, and (3) information can be gathered about situations when observational data cannot be gathered (Saris & Gallhofer, 2007).

A cross-sectional research design that uses survey methodology was used in this study to facilitate data collection, analysis, and interpretation. Cross-sectional designs allow for the research to determine the pervasiveness of the topic of interest. Additionally, cross-sectional designs are often used when the study is descriptive in nature (Levin, 2006).

### **Population**

The population from which the sample was drawn came from two public school systems, one in the southwestern region of the United States and the other in the western region. The southwestern school district provides services to 111,348 students. This district has 53 elementary schools, 17 middle schools, 11 high schools, and 4 special program facilities. According to data collected during the 2013-2014 school year, 50% of the district's students are economically disadvantaged. Additionally, 14,970 students are English Language Learners (ELL) and 7,058 receive special education services. The demographic breakdown of the district's students show the following race/ethnicities: 43.6% Hispanic, 28.32% White, 16.51% Black, 8.59% Asian, 2.3% Multiracial, .59% Native American, and .08% Pacific Islander (Cypress-Fairbanks Independent School District, 2014).

The western region school district serves 320,000 students. The district has 217 elementary schools, 59 middle schools, and 49 high schools, 14 alternative schools, 9 adult schools, and 8 special schools. Data provided for the 2015-2016 school year indicates the following demographic break down: 45.7% Hispanic/Latino, 26.2% White, 13.3% Black, 6.4% Asian, 6.4% Multiracial, 1.6% Hawaiian, and .4% Native American. The district has 18.5%

English Language Learners and provides free and reduced lunch to 60.3% of its students (Clark County School District, 2015).

### **Sample**

The sample from the population described above was elementary and middle school students. Demographic information is be provided for four elementary schools and three middle schools where recruitment took place. Enrollment in the elementary schools is approximately:  $n=1,000$ ,  $n=831$ ,  $n=865$ , and  $n=880$ . Enrollment in the middle schools is approximately:  $n=1,230$ ,  $n=1,550$ , and  $n=1,395$ . There are 1,555 gifted students in the school district in Grades 4 to 6. Between 45-82% of students are considered economically disadvantaged in the elementary and middle schools. The elementary schools that were selected by researcher were selected based on convenience. The schools were easily accessible because of close proximity to the researcher and a previous working relationship with the district. The middle schools were selected because the selected elementary schools feed into the middle schools. The survey was given to 150 potential participants and 114 participated in this study, thus the response rate for this study was 76%. There was 100% response rate for the six teachers recruited to participate in this study.

### **Setting**

The school districts where the study was conducted serves students who are diverse in their language, ethnicity, economic, and social background in the southwestern region of the United States. The classrooms with in this school district serve special and general education students. The classrooms of interest in this study were gifted education classrooms that serve gifted special education students in Grades 4 through 6.

## **Eligibility**

Special education students who receive services under the gifted category were eligible to participate in this study. Students who have a gifted eligibility are required to meet the state eligibility criteria. Specifically, students qualify for gifted services if they demonstrate performance at a high level when compared to their same aged peers, same environment, and experience. In addition, gifted students must also (1) demonstrate high performance capability in the areas of: intelligence, creativity, and art (2) have unusual capacity for leadership, or (3) excel in a specific academic field (Texas Educational Agency, 2014). The specific academic fields in which a gifted student must excel include reading, writing, mathematics, and science.

## **Instrumentation**

All of the data were collected using the School Attitude Assessment Survey Revised (SAAS-R) (McCoach & Seigle, 2003), Comprehensive Executive Functioning Inventory (CEFI) (2013) (self-report and teacher report) additionally, demographic information (i.e. age, gender, and grade) was also collected.

### **School Attitude Assessment Survey Revised (SAAS-R)**

The SAAS-R was developed by McCoach in 2000 (McCoach & Seigle, 2003). The SAAS-R is a 35 - item survey which measures student's attitude in five different areas: teachers, school, motivation, self-regulation, and goal valuation. Sample questions from this survey include:

- (1) Teacher: My teachers care about me.
- (2) School: I am glad I go to this school.
- (3) Motivation: I am self-motivated to do my school work.
- (4) Self-regulation: I check my assignments before I turn them in.



(5) Goal Valuation: Doing well in school is important for my future career goals.

The survey was designed for students with a 5th grade reading level. Although students who are in the 4th grade are included in this sample, it is considered appropriate because these 4th grade gifted students are reading on a grade level higher than 5th grade and the survey items were read aloud to the participants. The survey takes 15 minutes to administer. The format of the SAAS-R (McCoach & Seigle, 2003) involves students responding to statements that reference their attitudes in five areas (previously described). Students rate how often they display the attitudes in the five areas using a 7-point Likert scale ranging from 1- strongly agree to 7 strongly disagree (Ritchotte et al., 2014).

Scoring on the SAAS-R is as follows. Frequency ratings were summed for each subscale to supply a frequency score (for each subscale factor). There are seven questions that measure each factor on the SAAS-R. Frequency scores range from 7-49 for each subscale. The subscales were added together to provide a total attitude scale, where scores range from 35-245.

For this study, the self-regulation subscale was administered and the score utilized in the data analysis. There are seven questions on the SAAS-R that measure behavioral self-regulation. These questions address the ability of the individual to alter behaviors to fit the needs of the situation. The items analyzed in this study include: “I complete my schoolwork regularly,” “I am organized about my schoolwork,” “I use a variety of strategies when I learn new material,” “I check my assignments before turning them in,” “I concentrate on my schoolwork,” “I work hard at school,” and “I put a lot of effort into my schoolwork.”

A 7-point Likert scale was used, ranging from 1–7 (i.e., 1 indicates “strongly agree” and 7 indicates “strongly disagree”). Participants rated how closely the statements described them (i.e., circling one number between 1 and 7). The numbers correspond to the following

statements: “strongly agree,” “agree,” “agree somewhat,” “undecided,” “disagree somewhat,” “disagree,” and “strongly disagree.”

### **Comprehensive Executive Functioning Inventory (CEFI)**

The CEFI was developed by Naglieri and Goldstein in 2013. The CEFI is a 100 item survey which measures executive functioning strengths and weakness in youth aged 5-18. The areas of executive functioning are attention, emotion regulation, flexibility, inhibitory control, initiation, organization, planning, self-monitoring, and working memory. Sample questions from this survey include:

Inhibitory Control: Think before acting?

Working Memory: Remember how to do something?

Organization: Prepare for work or school?

Flexibility: Solve problems creatively?

Attention: Work well for a long period of time?

Self-Monitoring: Fix your mistakes?

Emotional Regulation: Control Emotions when under stress?

Planning: Keep goals in mind when making decisions?

Initiation: start conversations?

This instrument was designed for a 3.7 reading level. The survey takes 15 minutes to administer. The format of the, CEFI (Naglieri & Goldstein, 2013) involves raters responding to statements that reference their executive functioning strengths and weaknesses or observed strengths and weaknesses in nine areas (previously described). Raters rate how often they displayed the behaviors or observed the behaviors being displayed in the nine areas using a 6 - point Likert scale ranging from never to always (Naglieri, & Goldstein, 2013).

Scoring on the CEFI is as follows. Frequency ratings are summed for each subscale to supply a subscale score. The nine subscales are then summed to generate a full scale score.

### **Instrument Reliability and Validity**

Research on the SAAS-R suggests psychometric data are strong (McCoach & Siegle, 2003). Evidence of validity and reliability for the SAAS-R has been provided in previous studies. All scales had reliability coefficients above .88 (McCoach & Del Siegle, 2003). The motivation/self-regulation subscale has a Cronbach's Alpha of .94 (McCoach & Del Siegle, 2003). To determine how related the factors were to each other an internal consistency reliability coefficient was obtained. The internal consistency was at least .85 on each of the five subscales, indicating that the factors are highly related to one another (McCoach & Del Siegle, 2003).

Construct validity was obtained by using factor analysis and goodness of fit evaluation. All of the questions on the survey were indicators of the hypothesized factor. The last model demonstrated reasonable fit:  $\chi^2(550) = 1,581.7$ , CFI = .911, TLI = .918, RMSEA = .059, SRMR = .057 (McCoach & Del Siegle, 2003). Thus, the questions that were designed to measure feelings about school measured feelings about school and questions designed to measure feelings about teachers measured feelings about teachers. Additionally, the pattern coefficients were significantly different than zero, demonstrating that the SAAS-R showed goodness of fit. Criterion validity was also found for this survey. T-test demonstrated that the SAAS-R could differentiate between gifted achievers and gifted underachievers (McCoach & Del Siegle, 2003). For more information about factor pattern and structure analysis see Table 1. In this study, Cronbach's Alpha will be used to assess if the survey will always provide consistent and reliable responses. According to Nunnally (1978), acceptable ranges are .7 and higher.

Table 1

*Cronbach's Alpha Reliabilities and Interfactor Correlations for the Five Factors of the School Attitude Assessment Survey-Revised (SAAS-R)*

Factor	1	2	3	4	5
ASP	(.855)				
ATT	.364	(.892)			
ATS	.267	.603	(.865)		
Goals	.367	.507	.343	(.889)	
MOT/S-R	.339	.650	.447	.741	(.912)

*Note:* ASP = academic self-perceptions; ATT: attitudes toward teachers; ATS: attitudes toward school; MOT/S-R: motivation/self-regulation. Reliabilities of the five factors are in parentheses.

Reliability and validity data for the CEFI indicate strong psychometric properties. The internal reliability of the CEFI Full Scale, Cronbach's alpha ranges from .97-.99. Additionally the teacher reliability scores were high, ranging from .90-.96. While the individual rater scores were lower, .74-.86 they were still within the acceptable range (Naglieri, & Goldstein, 2013).

Table 2 below provides the Cronbach's Alpha reliability coefficients.

Table 2

*Cronbach's Alpha Reliabilities for the Comprehensive Executive Functioning Inventory (CEFI)*

Scale	Number of Items	Teacher	Teacher	Self-Report
		5-11 year olds	12-18 year olds	
Full Scale	90	.99	.99	.97
Attention	12	.96	.06	.86
Emotional Regulation	9	.93	.93	.78

Flexibility	7	.90	.90	.77
Inhibitory Control	10	.94	.94	.80
Initiation	10	.92	.93	.80
Organization	10	.93	.94	.85
Planning	11	.95	.96	.85
Self-Monitoring	10	.91	.92	.78
Working Memory	11	.94	.94	.83

Additionally further psychometric data were collected regarding the construct validity of the CEFI. The consistency between raters was examined, it can be anticipated that there would be some level of inconsistency due to raters observing different behavior as well as some consistency. The data supplied an adequate amount of consistency between raters indicating strong construct validity (Naglieri & Goldstein, 2013). Table 3 below shows the level of consistency between raters.

Table 3

*Consistency between raters for the Comprehensive Executive Functioning Inventory (CEFI) (Pearson's r).*

Scale	Consistency Between Rater-Types: Parent to Teacher	Consistency Between Rater-Types: Parent to Self-Report	Consistency Between Rater-Types: Teacher to Self-Report
Full Scale	.79	.71	.68

Attention	.76	.63	.64
Emotion Regulation	.58	.58	.39
Flexibility	.72	.44	.36
Inhibitory Control	.69	.65	.54
Initiation	.76	.67	.70
Organization	.73	.68	.61
Planning	.73	.63	.66
Self-Monitoring	.75	.56	.52
Working Memory	.72	.56	.56

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### **Demographic Information**

In addition to the administration of the SAAS-R and CEFI, the researcher collected demographic information. Information from participants was collected on gender, race, and grade level. This data were collected by the use of a self-report survey (see Appendix D). This provided information for additional analysis, allowing for additional information about possible relationships between variables and self-regulation. Students' achievement status was determined based on their scores on the state assessments (STAAR). Students who passed both their reading and math state assessments were considered high achieving students and students who passed one or neither were considered underachieving students.

### **Procedure**

#### **Approval for Research**

Prior to collecting data, the researcher obtained approval from both the University of Alabama's Institutional Review Board (IRB) and the school districts. After IRB approval, the

researcher contacted the school districts. After approval from school districts the researcher met with research coordinators from participating schools. During the meetings potential dates and times for data collection were discussed.

To be considered for this study, written consent from parents and or legal guardians was acquired. Research coordinators identified a pool of prospective students who met the criteria to participate in the planned study. Parents/guardians were asked to sign the informed consent form and return it to school. Only students who returned signed consent forms were eligible to participate in this study.

In an attempt to increase participation in the proposed study, the researcher provided a parent contact/information letter. The letter outlined the proposed study as well as the anticipated benefits of the information gleaned from this study. Parents were assured that student grades or academic standing would not be impacted or affected by their decision to allow their student to participate in this study.

Consent for participation in this study was indicated by parents signing and returning the consent form to school. Once parental consent was obtained students had the opportunity to provide written assent before participating in the study. The written assent document was read aloud to students by their homeroom teacher to ensure students understood that participation was voluntary. Those who gave consent and had a signed consent form from a parent/guardian participated in the study during a time in which the content area being taught was not tested on state standardized tests. For example students did not participate in this study at the expense of missing instruction on core academic subjects such as reading, writing, mathematics, and science. Potential times when students participated included but were not limited to: following morning announcements or at the end of the day before dismissal. Students had the opportunity

to opt out of participating in the study without any penalty. The confidentiality of the data being collected was discussed with students prior to the administration of the survey.

### **Administration of SAAS-R, CEFI and Demographic Questions to Participants**

The teacher read the demographic questions aloud and provided help to students as needed in filling out the answers to these questions. Students were directed to ask if they had a question during the administration of the SAAS-R and CEFI. The directions are: “You will be asked to respond to sentences about your feelings toward school. Read each sentence carefully and respond truthfully. There are no right or wrong answers. For each sentence you will be asked to circle how much you agree with the statement”. After the directions were read aloud to the students, they were directed to follow along with the teacher as he/she read each question aloud. All information was collected by means of paper and pencil survey.

The CEFI was administered during another session. The students were reminded of the assent forms they previously signed. The researcher read aloud the following directions:

“You will be asked to respond to questions about how often you have done a behavior in the last four weeks. Read each question carefully and respond truthfully. There are no right or wrong answers. For each question you will be asked to circle how much you agree with the statement”. The teacher form of the CEFI rating scale was provided to teachers along with a letter giving directions on how to complete the survey. This form was completed at the teacher’s leisure and returned to the researcher.

### **Data Analysis**

Descriptive statistics were obtained on demographic variables as well as the self-regulation scale of the SAAS-R and the CEFI survey. The data management plan is also included, which details how each research question was analyzed.



### **Research Question 1**

Do the self-reported and teacher-reported scores of self-regulation differ by gender and race between gifted achieving students and gifted underachieving students as measured by the CEFI and CEFIT?

To answer this question a three-way MANOVA was completed. This type of analysis is used when there are three factors (independent variables) and two dependent variables. This analysis provides information about interactions between the three independent variables and the two dependent variables.

### **Research Question 2**

Are the scores of self-reported self-regulation predictive of gifted students' achievement levels in reading and math as measured by the SAAS-R?

To answer this question a linear regression was completed. The linear regression is used to determine the relationships between a categorical dependent variable and one or more independent variables.

### **Research Question 3**

Do the self-reported and teacher reported scores of self-regulation differ by grade level between gifted achieving students and gifted underachieving students as measured by the CEFIT and CEFIT.

To answer this question a two-way MANOVA was completed. This type of analysis is used to compare the means of independent groups with more than one dependent variable (MANOVA).

### **Assumptions**

There were two assumptions present in this study. The first assumption was that all students will comply with the directions and be honest in their responses. The second assumption was that the self-report survey will measure the intended constructs.

### **Power Analysis.**

To determine the power, first the alpha level was established. The alpha level in this study was .05. This was done to approximate the effect size. The power for this study was set to .80. Identifying the power allowed the researcher to identify the minimum number of participants needed to show significance in the study. The sample sized needed for this study was 65 participants, the minimum number of participants to show an effect between the variables for each research question.

### **Summary**

This chapter provided information about the research design, participants, instrumentation, and data analysis employed by the researcher to answer the research questions. Additionally, the reliability and validity of the instrument was addressed. Chapter 4 provides details regarding the results of the study.

## CHAPTER 4

### RESULTS

#### **Introduction**

The relationship between self-regulation and gifted achievement was examined in this study. One hundred and fourteen students and six elementary teachers completed this study. Student participants were in Grades 4 to 6. Student participants completed two measures, The Comprehensive Executive Functioning Inventory (CEFI; Naglieri & Goldstein, (2013), The School Attitude Assessment Revised (SAAS-R; McCoach & Seigle, 2003), and a demographic questionnaire. Teacher participants completed the Comprehensive Executive Functioning Inventory (CEFIT; Naglieri & Goldstein, 2013). There were three research questions for this study:

1. Do the self-reported and teacher reported scores of self-regulation differ by gender and race between gifted achieving students and gifted underachieving students as measured by the CEFI and CEFIT?
2. Are the scores of self-reported self-regulation predictive of gifted students' achievement levels in reading and math as measured by the SAAS-R?
3. Do the self-reported and teacher reported scores of self-regulation differ by grade level between gifted achieving students and gifted underachieving students as measured by the CEFI and CEFIT?

## Demographic Variables

Descriptive statistics were calculated on all surveys in this study. One hundred fourteen surveys were completed by students and six teachers completed the teacher version of the survey for all one hundred fourteen students. Thus the sample for the survey is  $n = 114$ . Once surveys were completed they were examined to determine if any items were omitted. All statistical analysis used in this study were done using the *Statistical Package for the Social Sciences (SPSS) software program version 23* (SPSS, 2016). A summary of the demographic information is reported in the Table 4. The surveys were completed in one suburban area and one metropolitan area located in the southern and western region of the United States. In the western region, two schools provided data and the in the southern region four schools provided data. Thus, the data for this research was collected from six different schools, four elementary schools and two middle schools.

The sample for this survey was almost evenly split between female and male, female (55.2%;  $n = 63$ ) and male (44.7%;  $n = 51$ ). Most participants identified White as their racial identity (67.5%;  $n = 77$ ) while (15.7%;  $n = 18$ ) identified as Black and (16.6%;  $n = 19$ ) identified as Other. Fifth graders formed the largest grade level represented in the sample (43.8%;  $n = 50$ ), while (38.5%;  $n = 44$ ) sixth graders completed the study and (17.5%;  $n = 20$ ) fourth graders completed the survey. Within this study the majority of the participants were achieving gifted students (67.5%;  $n = 77$ ) while 32.5%; ( $n = 37$ ) were underachieving gifted students. One teacher per school completed the survey (homeroom teacher) thus six teachers completed the survey data for this study.

All data for this study were collected from multiple schools in two different school districts and regions. In the first elementary school from the western region there were three

fourth graders and 17 fifth graders. In the second school in that region there were five fourth graders and twenty fifth graders. The first school in the southern region had eight fourth graders and twenty-five fifth graders. At the second school there were four fourth graders and eighteen fifth graders. The two middle schools had thirty and fourteen participants, respectively. Table 4, provide cross-tab descriptive statistics for the participants in the study.

Table 4

*Summary of Descriptive Data*

	Female	Male
Fourth	8	11
Fifth	34	17
Sixth	21	23
Black	16	2
Other	6	13
White	41	36
Achiever	41	34
Underachiever	22	17

**SAAS-R**

**Descriptive Statistics**

The sample size included 114 student responses. The mean score for the self-regulation subscale on the SAAS-R was ( $M = 25.4, SD = 2.53$ ). These statistics suggest that the majority of students believe that their attitudes about school, teachers, peers, goals, and self-regulation are average. Scores ranged from “strongly disagree” to “strongly agree.” The mean indicates that the majority of students rated their self-regulation between 3 and 4 on the Likert scale.

## CEFI

### Descriptive Statistics

The results of the student responses indicate the mean score for the CEFI was ( $M = 1.47$ ,  $SD = 0.801$ ). The teacher reported CEFIT scores were completed by 6 teachers providing the following mean score ( $M = 1.55$ ,  $SD = 0.821$ ). The CEFI means were based on ratings from the gifted students while the CEFIT means are based on ratings from the teachers.

Scores ranged from “well below average” to “very superior.” No scores were in the well below average or the very superior range. The mean score for low average was ( $M = 0.88$ ,  $SD = 0.641$ ). The mean score for average was ( $M = 0.98$ ,  $SD = 0.510$ ). The mean score for high average was ( $M = 1.90$ ,  $SD = .680$ ). The mean score for superior was ( $M = 2.31$ ,  $SD = 0.602$ ).

### Research Question 1

“Do the self-reported and teacher reported scores of self-regulation differ by gender and race between gifted achieving students and gifted underachieving students as measured by the CEFI and CEFIT? A three-way multivariate analysis of variance (MANOVA) was used to answer this question. Before the analysis was completed, several assumptions were made. The boxplots and scatterplot were reviewed. The assumption of normality was tested using the Shapiro-Wilk test. The assumption of homogeneity was tested using the M Test of Equality of Covariance Matrices.

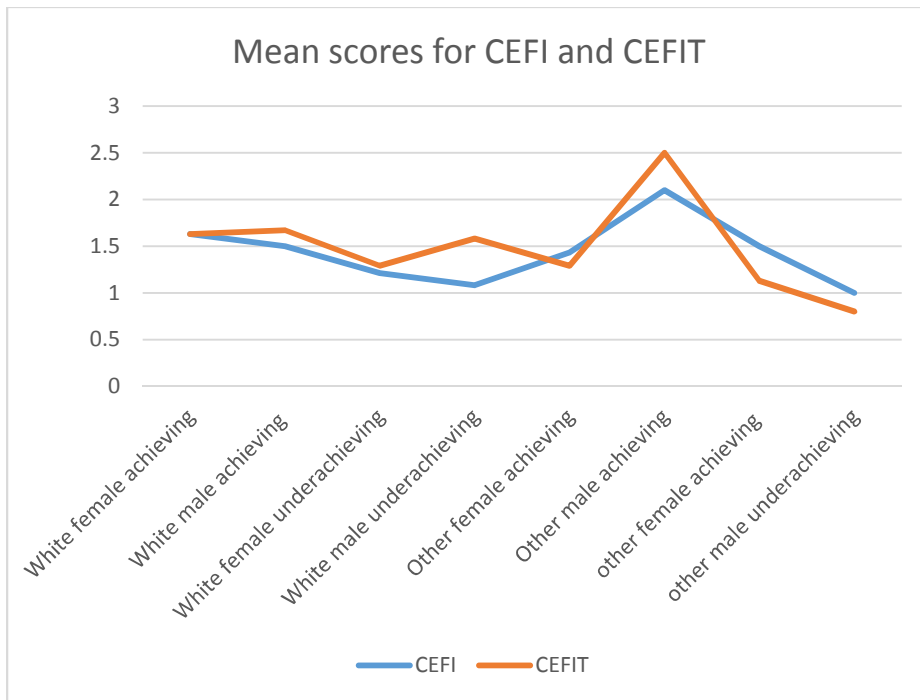
A three way MANOVA was conducted on the influence of three independent variables (gender, race, and achievement status) on the level of self-regulation. All effects were statistically significant except race. The main effect for gender, Wilks Lambda = .942, ( $F(2, 105) = 3.234$ ,  $p = .043$ ), indicating a significant difference between males ( $M = 1.421$ ,  $SD = .127$ ) and females ( $M = 1.44$ ,  $SD = .107$ ). The main effect for achievement was significant, Wilks

Lambda = .890, ( $F(2, 105) = 6.498, p = .002$ ), indicating there a significant difference between underachieving students ( $M = 1.665, SD = .097$ ) and achieving students ( $M = 1.199, SD = .134$ ). The main effect for race was not significant, white ( $M = 1.357, SD = .094$ ) and other ( $M = 1.507, SD = .137$ ). There was significance for the interaction between race, gender, and achievement, Wilks Lambda = .932, ( $F(2, 105) = 3.856, p = .024$ ).

The two way interaction effect between gender and achievement were not significant, Wilks Lambda = .997, ( $F(2, 105) = .134, p = .875$ ). The two way interaction effect between gender and race were not significant, Wilks Lambda = .996, ( $F(2, 105) = .898, p = .466$ ). The two way interaction effect between race and achievement were not significant, Wilks Lambda = .940, ( $F(2, 105) = 1.614, p = .172$ ).

Table 5

*Descriptive Statistics for Race, Gender, and Achievement*



The means for the CEFI and CEFIT can be found in Table 5. The mean was higher for achieving white female students on the CEFI and CEFIT which indicated that both teachers and students reported white students as having higher self-regulation. For underachieving female students, the mean was highest for other on the CEFI while the white female underachieving students had the highest mean on the CEFIT. The means for male students was different in that white achieving students had lower means on the CEFI and CEFIT but higher means were seen by white male underachieving students on both the CEFI and the CEFIT. The results from the Tukey HSD test revealed a significant difference between white and other students,  $p < .001$  on the CEFI. The Tukey HSD test did not reveal a significant difference between black and white students, between white and other students,  $p = <.001$ .

## **Research Question 2**

Are the scores of self-reported self-regulation predictive of gifted students' achievement levels in reading and math as measured by the SAAS-R? Linear regression was used to answer this question. Regression models were used to explore the association between self-regulation and achievement.

Before the analysis of this research question some basic assumptions of regression were assessed: (1) linearity (2) independence, and (3) homoscedasticity. For regression model #,1 the predictor variable was achievement status. The criterion variable was self-reported self-regulation. Assumption of linearity was confirmed after observing the scatterplot. Further exploration of the scatterplot revealed that the assumption of independence was met. The third assumption of homoscedasticity was met by observing the residuals plot. No outliers were observed.



In the first model the predictor variable was self-reported regulation. The criterion variable was reading achievement. A significant regression equation was found ( $F(1,112) = 9.630, p < .002$ , with an  $R^2$  of .079. 7.9% of the variance in reading achievement can be explained by self-regulation. Self-regulation significantly predicted reading achievement ( $\beta = 0.281, p = .002$ ). The relationship between self-regulation and reading achievement is positive, indicating the higher the self-regulation the higher the reading achievement. Students reading achievement increased .281 for every point of increase in self-regulation. Assumption of linearity was confirmed after observing the scatterplot. Further exploration of the scatterplot revealed that the assumption of independence was met. The third assumption of homoscedasticity was met by observing the residuals plot. No outliers were observed.

In the second model the predictor was self-reported regulation. The criterion variable was math achievement. The analysis was not significant ( $F(1,112) = .173, p > .678$ ), with an  $R^2$  of .002. .2% of the variance in math achievement can be explained by self-regulation. Self-regulation did not significantly predict math achievement ( $\beta = .039, p = .678$ ). There was no relationship between self-regulation and math achievement. Assumption of linearity was confirmed after observing the scatterplot. Further exploration of the scatterplot revealed that the assumption of independence was met. The third assumption of homoscedasticity was met by observing the residuals plot. No outliers were observed.

### **Research Question 3**

Research question 3 asks, “Do the self-reported and teacher reported scores of self-regulation differ by grade level between gifted achieving students and gifted underachieving students as measured by the CEFI and CEFIT?” A two-way multivariate analysis of variance (MANOVA) was used to answer the question. Before analyzing the research question, some

basic assumptions were tested: (1) independence among participants, (2) normality, and (3) homogeneity of the variances (Gall et al., 2007).

A two-way MANOVA was conducted in an effort to evaluate the independent variable grade. The dependent variables were self-reported self-regulation and teacher reported self-regulation as measured by the CEFI. The first assumption of independence was satisfied as there was no relationship among the participants. The second assumption of normality was assessed with the Shapiro-Wilk test of normality. Homogeneity was assessed using the Box's M test of equality of covariance. These results support the assumption of homogeneity of the variance between groups on the construct of self-regulation. Additionally, no outliers were observed during an inspection of the box plots.

A two-way MANOVA revealed a non-significant interaction between achievement and grade level, Wilks Lambda = .938,  $F(1) = 1.749$ ,  $p = .140$ . The two way MANOVA revealed a significant main effect for achievement, Wilks Lambda = .911, ( $F(2, 107) = 5.235$ ,  $p = .007$ ). The main effect for grade was not significant, Wilks Lambda = .991, ( $F(2, 214) = .503$ ,  $p = .734$ ). The results from the Tukey HSD test for the CEFI and CEFIT did not reveal a significant difference.

The univariate results for the CEFI are as follows:  $F(1) = 9.979$ ,  $p = .002$ . The univariate results for the CEFIT are as follows:  $F(1) = 6.844$ ,  $p = .010$ . The overall means for the CEFI achievement are as follows, for the underachieving students ( $M = 1.194$ ,  $SD = .130$ ) and for achieving students ( $M = 1.715$ ,  $SD = .101$ ). The overall means for the CEFIT achievement are as follows, for the underachieving students ( $M = 1.276$ ,  $SD = .136$ ) and for achieving students ( $M = 1.728$ ,  $SD = .106$ ).  $F(1) = 9.979$ ,  $p = .002$ .

Table 6

*Descriptive Statistics for CEFI and CEFIT*

Variable	CEFI Mean			CEFIT Mean		
	4	5	6	4	5	6
Achieving	2.09	1.57	1.48	1.82	1.57	1.79
Underachieving	1.13	1.13	1.33	1.25	1.31	1.27

Note: grade levels are entered as 4, 5, and 6

The means for achievers and underachievers can be found in the Table 6. Means for achievers were higher than means for underachievers on the CEFI and CEFIT, which indicated that higher levels of self-regulation were reported by participants and their teachers. The grade level means were not consistent for the CEFI and CEFIT. There was no clear direction of means by grade level for achieving students and underachieving students.

**Summary of Findings**

This chapter reviewed the demographic results in addition to the results of the relationship between self-regulation and achievement. A review of mean scores of the SAAS-R suggests that gifted students perceive that their school experience is positive and they use goal setting and self-regulation strategies at school. The mean scores of the CEFI and CEFIT indicate that teachers and gifted students rate gifted students' executive functioning/self-regulation similarly; they rate them to be in the superior range.

The results of the three-way MANOVA were significant for an interaction between race, gender, and achievement. The main effects for gender and achievement were significant; however, not for race. These results suggest that the effect of achievement on the dependent variables is not the same for females/males and white/other. Further the results suggest there is a

difference between achievers and underachievers as well as females and males in levels of self-regulation.

Findings from the regression model with the constructs reading achievement and math achievement were significant. The significance of these models indicate that self-regulation was a predictor of reading and math achievement. The correlation was highest for reading (.30) indicating a moderate correlation.

The results of the two-way MANOVA were not significant. There was no significant interaction between achievement and grade. There was a significant main effect for achievement; however, there was no significant main effect for grade level. This indicates that no relationship was found between grade level and self-regulation. The means for the grade level self-regulation did not display directionality, further supporting lack of a relationship between grade level and self-regulation. The results also indicated that there was a relationship between achievement and self-regulation, there was a difference between achieving students and underachieving.

## CHAPTER 5

### DISCUSSION

#### **Introduction and Discussion**

In this chapter the results are discussed, as well as the limitations, and recommendations following the data collection using the SAAS-R (McCoach & Seigle, 2003) and the CEFI (Naglieri Goldstein, 2013). Even though there is extensive research about underachievement, there are many unclear findings about gifted underachievement and the relationship to self-regulation and underachievement in this population. The purpose of this study was to identify if self-regulation was related to achievement of gifted students. Additionally, the researcher attempted to determine if other variables, such as grade level, gender and race, played a role in self-regulation.

Framed around three research questions that were outlined in the preceding chapters, this chapter discusses the significant findings in conjunction with a comparative review of the literature findings. The final portion of this chapter offers the limitations of the study, implications, and recommendations for future research.

The 75 (65%) gifted achieving students and 39 (34%) gifted underachieving students provided information about their self-regulation, along with six teachers who provided information about students' self-regulation. Such factors as achievement status, gender, and race were considered.

Research Question 1 examined if there were gender and racial differences on scores of self-regulation reported by gifted students and their teachers as measured by the CEFI and

CEFIT (Naglieri & Goldstein, 2013). Significant findings were revealed from the analyses of Research Question 1, providing some insight on perceived levels of self-regulation. Particularly, gifted students in this study reported higher levels of self-regulation for white students than black students in self-report as well as teacher report, which was similar to the literature (Lynam, Moffitt, & Stouthamer-Loeber, 1993; Rushton & Jenson, 2005; Wilson & Hermstein, 1985). Additionally gifted students in this study reported higher levels of self-regulation for female students than male students based on the descriptive statistics.

Higher levels of reported female self-regulation are similar to previous research studies (Colangelo et al., 1993; Matthew et al., 2009; Pintrich & Zusho, 2007; Velayutham, Aldridge, & Fraser, 2012). Additionally, previous research found similar finding to this study in regard to racial differences in self-regulation; specifically, these studies have reported that White students demonstrate higher levels of self-regulation (Barnes et al., 2016). Responses from the teachers indicate that teachers view student level of self-regulation similarly to the students. Identifying the differences in self-regulation is important as this may lead to differential treatment of students by their teachers. The potential to treat students differently based on perceived self-regulation can be addressed during professional development courses as well as teacher training programs.

Additionally, the findings from Research Question 1 that there are gender and racial differences in self-regulation are important for developing inclusive classrooms that support academic success for all students. These differences in self-regulation indicate that teachers should teach to the strengths of students in order to increase their academic success. Therefore, classrooms that provide students an opportunity to receive their academic instruction in ways that build upon their strengths allow for increased success in the classroom. Differences in self-

regulation emphasize practical implications for educators who select and create curricula for students. From these findings implications for practice include increased awareness of differences in levels of perceived self-regulation. Furthermore, these findings highlight diversity among students.

Moreover, from this study, the concept of potential stereotype threat is highlighted. Previous research has shown that stereotype threat can decrease students' performance (Steel & Aronson, 1995). Stereotype threat is present when there is a possibility that a person will conform to the negative stereotypes of their group (Steel & Aronson, 1995). Although stereotype threats have not been shown to create achievement gaps they have been shown to increase the achievement gap (American Psychological Association, 2006). In this study there were substantial racial differences in both self-reported and teacher reported self-regulation indicating that students and teachers see minority students as having lower levels of self-regulation. This viewpoint could prevent students who should excel in the classroom from exceling. Implications from this include teachers reducing stereotype threat in the classroom. The impact of stereotype threat can be reduced when examinations are presented in such a way that the teacher's ability to provide instruction is being evaluated instead of the student's ability. Other ways to reduce this threat is by teachers expressing to students that intelligence and ability are fluid and not fixed. This reassures students that they can improve their skills (Aronson, 2002).

In Research Question 2, the ability of self-regulation to predict achievement as measured by SAAS-R was addressed. It was revealed that self-regulation was predictive of reading and math achievement. These significant findings are similar to previous research (Ablard & Lipshultz, 1998; Pintrich & DeGroot, 1990; Stoeger & Zieger, 2005), thus, indicating a link between self-regulation and achievement. These findings from this study offer support to

previous research that creating classrooms that incorporate self-regulation strategies increased academic success for students (Vidal-Abarca, Maria & Gil, 2010).

Teaching students self-regulated learning strategies has many benefits. Not only does it increase achievement it also increases their self-esteem and overall feelings about school, teachers, and peers (Vidal-Abarca et al., 2010). The findings from this study that self-regulation predicts achievement provides implications for practice as the findings highlight ways to improve student achievement. As U.S. students continue to fall behind their national counterparts in math and reading, this study provides practical implications (Fite, 2002). To help improve students' ability to compete on a national level, teachers need to teach self-regulation learning strategies. The more self-regulation learning strategies are taught to students, the higher their achievement scores should be. This indicates that self-regulation strategies should be taught daily and students should be given opportunities to practice these strategies so that they can be generalized across academic settings.

In Research Question 3, the difference between self-regulation at different grade levels was examined. It was revealed that there was no directionality between grade level and achievement. This lack of significance is contrary to previous research (Matthews et al., 2009). These results provide increased evidence that self-regulation continues to develop and grow as students get older and become more stable. These findings further contribute to the difficulty in evaluating self-regulation and achievement in elementary school. To add, this study suggests that if signs of academic underperformance are evident as early as fourth grade, self-regulation learning should be taught before students reach fourth grade. No doubt, early intervention is imperative for students to learn and develop self-regulation.



The implications for educators and parents alike are for providing children with self-regulation strategies at an early age. The earlier students are introduced to self-regulated learning strategies the sooner they can practice and begin implementing them. Perhaps this early introduction of self-regulated learning strategies can remediate the achievement decline in fourth grade. This type of early intervention is in alignment with early intervention for academics. Given the increased pressure schools are under for children to perform academically, providing students with interventions as soon as possible to help remediate their achievement would be beneficial.

### **Limitations**

There were limitations associated with this study. One limitation surrounds the racial diversity of the sample. Particularly, the sample had an unequal sample size with regard to race. It should be noted that both school districts have a larger number of White students than racial minorities in the gifted program. Additionally, this study used a self-report questionnaire. It is possible that socially desirable responses may have affected the results.

Socioeconomic status (SES) may have affected the results of the study. Almost 75% of the sample represented a high SES. There were no participants in the study that were receiving free and reduced lunch. This could have led to over-reporting of self-regulation and may have impacted teachers' ratings of self-regulation.

The data collected for this study were from two school districts in two states. Thus, generalizability to other schools and other states is questionable.

### **Implications and Future Research**

This study offers implications for teachers, parents, and school psychologists. This study provides implications for school psychologist in the schools. In particular, the findings from this

study are important for school psychologists' roles in prevention, screening, assessment, and intervention. Regarding the prevention of self-regulation deficits, school psychologists can help design comprehensive data management systems within the school setting. The data management systems can utilize the Response to Intervention (RTI) framework. Universal screenings can be conducted by the school psychologists three times a year: fall, winter, and spring to identify students who may be exhibiting self-regulation deficits. Some potential screening options could include behavior rating scales, behavior observations, and direct assessment of self-regulation.

School psychologists' roles in the assessment of self-regulation could involve the direct assessment of executive functioning. As mentioned in this study, executive functioning and self-regulation are often used interchangeably. School psychologists can provide assessment of executive functioning using a variety of assessment tools such as but not limited to Behavior Rating Index of Executive Functioning (BRIEF) (Gerard, Kenworthy & Guy, 2012), Child Behavior Checklist (CBCL) (Achenbach & Rescorla, 2001), and A developmental neuropsychological assessment (NEPSYII) (Korkman, Kirk & Kemp, 2007).

The implications from this study also indicate that school psychologists should take an active role by helping to provide interventions to teach self-regulation to students. The Second Step program has been used in schools to provide students with tools for self-regulation. Self-regulation skills in this program are taught by incorporating games such as brain builders which allow students to play short 5-minute games that teach focus, attention, use of memory and behavior control. Additionally, four skills for learning are taught: focus/attention, listening, using self-talk, and being assertive.

Coinciding with this implication, school psychologists need to ensure that not only are students being taught self-regulation skills but that they are given the opportunity to practice

these skills. Research supports that providing explicit instruction and allowing opportunity to practice is beneficial to students in the learning environment (Morrison, Pointz, & McClelland, 2000). Opportunities to practice can take place in a small group setting or in whole group settings. Additionally, emphasizing self-regulation in the school is appropriate given the mandates of No Child Left Behind Act, children will benefit from improved quality instruction if they are demonstrating self-regulation (Morrison et al., 2000).

Beyond academic implications this study provided social-emotional implications. The white students and their teachers in this study rated white students as having higher self-regulation skills than their peers. Increased ratings of white students self-regulation was established in this study and previously in the literature (Ablard & Lipshultz, 1998; Pintrich & DeGroot, 1990; Stoeger & Zieger, 2005). This knowledge is important to consider as school systems work to close the racial achievement gap. Given the increased accountability efforts in schools, this study underlines the need to develop the self-regulation skills of minority students. The self-regulated learning strategies can be implemented in the classroom and could potentially decrease the number of minority students referred and placed into special education. To add, self-regulation and its association with behavioral outcomes should be explored. Oftentimes minority students receive disciplinary actions for their behaviors if there is a connection between self-regulation and behavior then this further supports the need to teach all student self-regulation strategies.

The literature consistently suggests that teaching students self-regulation learning strategies is imperative to their success in the classroom (Ablard & Lipshultz, 1998; Pintrich & DeGroot, 1990; Stoeger & Zieger, 2005). From this study, there are implications that teachers

need more training in self-regulation learning strategies. Additionally, it is important for school psychologists to have more training about self-regulation and the impact it has on achievement.

With increased accountability in schools, along with literature on achievement (Ablard & Lipshultz, 1998; Pintrich & DeGroot, 1990; Stoeger & Zieger, 2005) this study sheds light on the necessity of self-regulated learning strategies for students. Educators are increasingly being held to a higher standard in order to prepare students to compete at a global level. Teaching students strategies to increase their achievement will help produce high achievers. While there is no set curriculum regarding teaching self-regulation, there are some suggested instructional strategies to help students develop self-regulation. Research on implementing self-regulation learning strategies with gifted children suggests that teachers should provide instruction using four instructional practices (Reis & Greene, 2002). These instructional strategies include guiding self-beliefs and goal setting, promoting reflective dialogue, providing corrective feedback, and helping learners make new connections (Reis & Greene, 2002). Once again, school psychologists are in the forefront and need to advocate to school officials about the importance of implementing self-regulating strategies for students.

Additionally, this study highlighted the need for more teacher training. This study indicated that teachers could benefit from culturally-sensitive training, particularly in this study about stereotyping and bias. School psychologists can work in conjunction with school counselors to be change agents and offer teacher trainings as well as possible social emotional curriculum in the classroom.

While this study focused on the impact of personal factors impacting achievement there are other factors such as family and school factors that were not addressed in this study. Given the extensive research on self-regulation and its correlation to achievement, this study sought to

further add to this area of research thus personal factors were studied. Previous research has shown the ability to reverse underachievement by teaching students some self-regulated learning strategies such as goal development (Reis & Greene, 2002). Given that the reversal of underachievement by changing personal factors, this research attempted to further explore personal factors.

### **Conclusions**

In summary, the literature has shown that achievement is directly impacted by self-regulation (Ablard & Lipshultz, 1998; Pintrich & DeGroot, 1990; Stoeger & Zieger, 2005). Thus, increased self-regulation is linked to higher levels of achievement (Ablard & Lipshultz, 1998; Pintrich & DeGroot, 1990; Stoeger & Zieger, 2005). In addition, there are gender differences in self-regulation (Matthews et al., 2009; Pintrich & Zusho, 2007; Velayutham, Aldridge, & Fraser, 2012). Much of the research has focused on achievement in middle school and beyond, evoking the interest of beginning interventions prior to middle school (Rayneri et al., 2006). Other research has documented the start of underachievement to fourth grade, indicating that interventions should begin in fourth grade (McCoach & Siegle, 2003).

The results of this study are in conjunction with the literature that achievement and self-regulation are linked. Given the connection of achievement and self-regulation, providing self-regulated learning opportunities is important. Self-regulation strategies helps increase student achievement, higher student achievement helps prepare students to compete on a global market. The goal of education is to prepare students to become successful adults, higher achieving students are more likely to have successful jobs and contribute to society.

The results of this study imply that self-regulated learning strategies should be taught to students because it is predictive of achievement. If students are taught self-regulation strategies

their academic achievement should improve and increased academic achievement supports later success in life. In addition, because literature supports females as out-performing males, self-regulated learning interventions should be reviewed for this population. Males may need to be more explicitly taught self-regulation strategies and how to implement them in the classroom. Males may also need more frequent opportunities to practice self-regulation strategies.

With increased accountability more intense efforts to educate teachers about the connections between self-regulated learning and achievement should take place. Teachers need to be aware of how students' achievement is impacted by self-regulation. This increased awareness can help teachers remediate low achievement by teaching self-regulation strategies to students.

Furthermore, schools should educate parents on the importance of self-regulated learning in an effort to promote home/school collaboration. It appears to be evident that low levels of self-regulation places students at-risk for academic underachievement. If parents are aware of the influence of self-regulation on academic achievement then they can also incorporate self-regulation strategies at home. When students have the opportunity to learn and practice in more than one setting it increases the likelihood that the strategies generalized across settings.

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APPENDIX A  
AGENCY PERMISSION

<p>Assessment, Accountability, Research, and School Improvement</p>	
<p>4212 Eucalyptus Avenue • Las Vegas, Nevada 89121 • (702) 799-1041 • FAX (702) 799-5067</p>	<p>BOARD OF SCHOOL TRUSTEES</p>
<p>August 3, 2016</p>	<p>Dr. Linda E. Young, President Chris Garvey, Vice President Patricia Ivey, Clerk Kevin L. Child, Member John E. Cannon, Member Carolee Edwards, Member Deanna L. Wright, Member</p>
<p>Brittney Danielle Brown University of Alabama 15000 Philippine St Apt. 616 Houston, TX 77040</p>	<p>Pat Saboke, Superintendent</p>
<p>Dear Ms. Brown:</p>	
<p>The Research Review Committee of the Clark County School District has reviewed your request entitled: <i>The Predictive Value of Self-Regulation to Predict the Underachievement of Gifted Pre-Adolescent Students #153</i>. The committee is pleased to inform you that your proposal has been approved with the following provisos:</p>	
<ol style="list-style-type: none"><li>1. Participation is strictly and solely on a voluntary basis.</li><li>2. Provide letter of acceptance from any additional principals who agree to be involved with the study.</li></ol>	
<p>This research protocol is approved for a period of one year from the approval date. The expiration of this protocol is 8/2/2017. If the use of human subjects described in the referenced protocol will continue beyond the expiration date, you must provide a letter requesting an extension <i>one month</i> prior to the date of expiration. The letter must indicate whether there will be any modifications to the original protocol. If there is any change to the protocol it will be necessary to request additional approval for such change(s) in writing to the Research Review Committee.</p>	
<p>Please provide a copy of your research findings to this office upon completion. We look forward to the results. If you have any questions or require assistance please do not hesitate to contact this office at (702) 799-5195 or e-mail at <a href="mailto:saboke@nv.ccsd.net">saboke@nv.ccsd.net</a>.</p>	
<p>Sincerely,</p>	
	
<p>Kent E. Sabo, Ph.D. Coordinator III Department of Accountability &amp; Research Co-Chair, Research Review Committee</p>	
<p>Main Office: 5100 WEST SAHARA AVENUE • LAS VEGAS, NEVADA 89146 • TELEPHONE (702) 799-5000</p>	



APPENDIX B  
IRB PERMISSION

THE UNIVERSITY OF  
**ALABAMA**

Office of the Vice President  
Research & Economic Development  
Institutional Review Board for the Protection of Human Subjects

April 27, 2016

Brittney Brown  
Department of ESPRMC  
College of Education  
Box #: 870321

Re: IRB# 16-OR-176 "The Predictive Value of Self-Regulation to Predict the Underachievement of Gifted Preadolescent Students"

Dear Ms. Brown,

The University of Alabama Institutional Review Board for the Protection of Human Subjects (IRB) has reviewed your research protocol titled "The Predictive Value of Self-Regulation to Predict the Underachievement of Gifted Preadolescent Students". Following review the IRB has granted pre-authorization for your research protocol. The IRB requests that you provide a statement of permission to conduct research from the school district listed in your project. Following receipt of the letter an approval letter will be granted by the IRB.

If I can be of further assistance, please feel free to contact me.

Sincerely,



Carpantato, T. Myles, MSM, CIM, CIP  
Director & Research Compliance Officer

APPENDIX C

DATA MANAGEMENT PLAN

Research Question	Measures	Independent or Grouping Variables	Dependent Variables	Analysis
1	School Attitude Assessment Survey Revised  Comprehensive Executive Functioning Inventory (CEFI)	Achievement  -gifted underachiever  -gifted high achiever  Gender  -Female  -Male	Average score on Self-Regulation scale (SAAS-R)  (CEFI)	Two way ANNOVA
2	School Attitude Assessment Survey Revised  Comprehensive Executive Functioning Inventory (CEFI)	Average score on Self-Regulation scale (SAAS-R)  (CEFI)	Achievement  -gifted underachiever  -gifted high achiever   Reading and Math scores on statewide assessments	Regression  Logistic  Multiple

3	School Attitude Assessment Survey Revised  Comprehensive Executive Functioning Inventory (CEFI)	Achievement -gifted underachiever  -gifted high achiever  Gender -Female  -Male	Average score on Self-Regulation scale (SAAS-R)  (CEFI)	Two way ANNOVA
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APPENDIX D  
DEMOGRAPHIC QUESTIONNAIRE

**Directions: Please answer the following questions**

**1. What is your age?**

**2. What is your gender?**

Male

Female

**3. How do you identify your race?**

African American

White

White Hispanic

Black Hispanic

Asian

Pacific Islander

**4. What grade are you in?**

APPENDIX E

SCHOOL ATTITUDE ASSESSMENT SURVEY-REVISED (SAAS-R)

1. My classes are interesting.

1 2 3 4 5 6 7 (1 Strongly Disagree to 7 Strongly Agree)

2. I am intelligent.

1 2 3 4 5 6 7 (1 Strongly Disagree to 7 Strongly Agree)

3. I can learn new ideas quickly in school.

1 2 3 4 5 6 7 (1 Strongly Disagree to 7 Strongly Agree)

4. I am glad I go to this school.

1 2 3 4 5 6 7 (1 Strongly Disagree to 7 Strongly Agree)

5. This is a good school.

1 2 3 4 5 6 7 (1 Strongly Disagree to 7 Strongly Agree)

6. I work hard at school.

1 2 3 4 5 6 7 (1 Strongly Disagree to 7 Strongly Agree)

7. I am self-motivated to do my schoolwork.

1 2 3 4 5 6 7 (1 Strongly Disagree to 7 Strongly Agree)

8. This school is a good match for me.

1 2 3 4 5 6 7 (1 Strongly Disagree to 7 Strongly Agree)

9. School is easy for me.

1 2 3 4 5 6 7 (1 Strongly Disagree to 7 Strongly Agree)

10. I like my teachers.

1 2 3 4 5 6 7 (1 Strongly Disagree to 7 Strongly Agree)

11. I relate well to my teachers.

1 2 3 4 5 6 7 (1 Strongly Disagree to 7 Strongly Agree)

12. My teachers make learning interesting.

1 2 3 4 5 6 7 (1 Strongly Disagree to 7 Strongly Agree)

13. My teachers care about me.

1 2 3 4 5 6 7 (1 Strongly Disagree to 7 Strongly Agree)

14. I like this school.

1 2 3 4 5 6 7 (1 Strongly Disagree to 7 Strongly Agree)

15. I can grasp complex concepts in school.

1 2 3 4 5 6 7 (1 Strongly Disagree to 7 Strongly Agree)

16. I am capable of getting straight A's.

1 2 3 4 5 6 7 (1 Strongly Disagree to 7 Strongly Agree)

17. I am good at learning new things in school.

1 2 3 4 5 6 7 (1 Strongly Disagree to 7 Strongly Agree)

18. I am smart in school.

1 2 3 4 5 6 7 (1 Strongly Disagree to 7 Strongly Agree)

19. Most of the teachers at this school are good teachers.

1 2 3 4 5 6 7 (1 Strongly Disagree to 7 Strongly Agree)

20. I like my classes.

1 2 3 4 5 6 7 (1 Strongly Disagree to 7 Strongly Agree)

21. I am proud of this school.

1 2 3 4 5 6 7 (1 Strongly Disagree to 7 Strongly Agree)

22. Doing well in school is important for my future career goals.

1 2 3 4 5 6 7 (1 Strongly Disagree to 7 Strongly Agree)

23. Doing well in school is one of my goals.

1 2 3 4 5 6 7 (1 Strongly Disagree to 7 Strongly Agree)

24. It's important to get good grades in school.

1 2 3 4 5 6 7 (1 Strongly Disagree to 7 Strongly Agree)

25. I want to do my best in school.

1 2 3 4 5 6 7 (1 Strongly Disagree to 7 Strongly Agree)

26. It is important for me to do well in school.

1 2 3 4 5 6 7 (1 Strongly Disagree to 7 Strongly Agree)

27. I want to get good grades in school.

1 2 3 4 5 6 7 (1 Strongly Disagree to 7 Strongly Agree)

28. I complete my schoolwork regularly.

1 2 3 4 5 6 7 (1 Strongly Disagree to 7 Strongly Agree)

29. I am organized about my schoolwork.

1 2 3 4 5 6 7 (1 Strongly Disagree to 7 Strongly Agree)

30. I use a variety of strategies to learn new material.

1 2 3 4 5 6 7 (1 Strongly Disagree to 7 Strongly Agree)

31. I spend a lot of time on my school work.

1 2 3 4 5 6 7 (1 Strongly Disagree to 7 Strongly Agree)

32. I am a responsible student.

1 2 3 4 5 6 7 (1 Strongly Disagree to 7 Strongly Agree)

33. I put a lot of effort into my schoolwork.

1 2 3 4 5 6 7 (1 Strongly Disagree to 7 Strongly Agree)

34. I concentrate on my schoolwork.

1 2 3 4 5 6 7 (1 Strongly Disagree to 7 Strongly Agree)

35. I check my assignments before I turn them in.

1 2 3 4 5 6 7 (1 Strongly Disagree to 7 Strongly Agree)