

THE RELATIONSHIP BETWEEN GRADE POINT AVERAGE AND UNDERSTANDING  
HOMEWORK'S PURPOSE AND MANAGEMENT IN ECONOMICALLY  
DISADVANTAGED HIGH SCHOOL STUDENTS

by

Diane Keeler Bush

Liberty University

A Dissertation Presented in Partial Fulfillment

Of the Requirements for the Degree

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## ABSTRACT

The purpose of this study was to determine whether a key measure of academic achievement, grade point average (GPA), could accurately be predicted from a linear combination of understanding homework's purpose as measured by the Homework Purpose Scale (HPS) and by the student's approach to homework management and homework behaviors as measured by the Homework Management Scale (HMS). This quantitative study is a cross-sectional questionnaire-based survey design comprised of two previously established valid and reliable scales: the Homework Purpose Scale and the Homework Management Scale. The study's design is correlational using a sample (N = 300) of pre-existing high school (grade 9-12) classes within seven Catholic high schools serving economically disadvantaged students located in seven different US cities. A multiple regression was conducted to evaluate whether there is a significant predictive relationship between the criterion variable (GPA) and the linear combination of predictor variables (HPS and HMS) for the economically disadvantaged Catholic high school students. The study's results demonstrated no statistically significant relationship between students' understanding of homework's purpose and management of homework and students' grade point average. Recommendations for future research are to examine whether relationships exist between homework purpose, homework management, and grade point average with students of different races and ethnicity, with students of different genders, and students at different grade levels. Though not in the purpose of the current study, when these variables were looked at separately, significant correlations were found to be present.

*Keywords:* homework, self-efficacy, self-regulation, predictive, achievement, high school

### **Dedication**

This dissertation is dedicated to my unfailingly patient and loving husband, Gary Bush. Without your support and patience, I would never have been able to take this journey. Katie, thank you for everything: the help, love, and support.

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### **List of Abbreviations**

Homework Purpose Scale (HPS)

Sum of scores on the HPS Scale (HPS Sum)

Homework Management Scale (HMS)

Sum of scores on the HMS Scale (HMS Sum)

Combined Score of the HPS and HMS Scales (Comp)

Grade Point Average (GPA)

Ethnicity Abbreviations:

Hispanic/Latino (HL)

Non-Hispanic/Latino (NH)

Race Abbreviations:

Asian (A)

American Indian/Alaskan Native (AI/AN)

Black/African American (B)

Native Hawaiian/Pacific Islander (NH/PI)

Other Race (OR)

White (W)

Gender Abbreviations:

Male (M)

Female (F)

## **CHAPTER ONE: INTRODUCTION**

### **Overview**

Few studies have investigated how well high school students, especially those who come from economically disadvantaged backgrounds, understand the purpose of homework or how well high school students manage homework (Bempechat, Li, Neier, Gillis, & Holloway, 2011). In this chapter, how high school students learn to achieve academically (how they develop behaviors, skills, and traits to allow them to gain knowledge, practice learning behaviors, and earn good grades in order to graduate) and prepare to succeed in college, be a successful military service person, or enter the workforce and earn a living (Kena, Aud, Johnson, Wong, Rathbun, Wilkinson-Flicker, & Kristopovich, 2014) will be discussed, specifically students' understanding of and approach to homework. How secondary school students, specifically those from lower socio-economic groups, understand the effect homework has on achievement has not been closely examined (Bempechat et al., 2011) and is the focus of this study.

### **Background**

For students to achieve academically in high school, they need to develop behaviors, skills, and traits which allow them to gain knowledge, practice learning behaviors, and earn grades that will lead them to graduate from high school prepared to succeed in college, enter the military service, or enter the workforce and earn a living (Kena, Aud, Johnson, Wong, Rathbun, Wilkinson-Flicker, & Kristopovich, 2014). Homework is a topic some educators have deemed essential to achieving academic success while others assert homework is irrelevant to academic achievement, yet research into how students review class material, manage their study time, and understand the connection between homework and academic achievement has determined that academic preparation outside of class time is significantly and positively correlated with

academic achievement (Cooper & Valentine, 2001; Siahi & Maiyo, 2015). Research into homework has often focused on teachers' beliefs about homework as well as parents' ideas concerning the usefulness of homework (Cooper, Robinson, & Patall, 2006).

Many students experience a large drop in their grades as they transition from middle school to high school and are more likely to fail a class in ninth grade than during any other school year (Pharris-Ciurej & Hirschman, 2012; Southern Regional Educational Board, 2002). The grades students earn in ninth grade play a particularly important role in determining whether a student will graduate high school or drop out (McCallumore & Sparapani, 2010; Nelid, 2009), and failing or earning a low grade in a course can begin a student's journey down the path to dropping out of school (Allensworth, 2013; Allensworth & Easton, 2007; Bottoms, 2008).

Approximately 37 of every 100 high school dropouts come from a family classified as economically disadvantaged, meeting the income eligibility guidelines of earning less than 150% of Federal Poverty Guidelines (U.S. Department of Education, 2016). In 2009, the high school dropout rate of students from such families was five times greater than the dropout rate of students from high-income families (Chapman, Laird, Ifill, & KewalRamani, 2011; Murnane, 2013). Without a high school diploma, young people are likely to struggle economically and are 63% more likely to be unemployed than are students who remain in school and receive a high school diploma (U. S. Department of Labor, 2009). In 2012, high school dropouts had a 30% unemployment rate, while unemployment was 17.9% for high school graduates, and just 11-12% for individuals with some postsecondary education (Kena, Aud, Johnson, Wong, Rathbun, Wilkinson-Flicker, & Kristapovich, 2014). According to the National Center for Education Statistics, in 2012 a young adult with a bachelor's degree could expect to earn \$46,000 per year, a high school graduate \$30,000, and a high school dropout only \$22,900 (Kena et al, 2014).

Students from low socio-economic status (low-SES) backgrounds statistically have lower academic achievement levels than do students from higher socio-economic status (higher-SES) backgrounds on both standardized tests and in a student's grade point average (Jeynes, 2009). The socio-economic status of a student's family is the strongest predictor of academic achievement (Reardon, Kalogrides, & Shores, 2018; Reardon, 2012). This income achievement gap between students from low-SES families and students from higher-SES families is two times the size of the academic gap between African-American/Hispanic students and white students (Reardon, 2011). With only a 50% chance of graduating from high school, just being a student from a low socio-economic group is a key risk factor for dropping out of high school (Cohen & Smerdon, 2009).

In a study of Chicago public school students, it was found that 53% of ninth grade students failed a class in one or more of their first high school semesters, and 41% of students failed more than one class (Farrington, Roderick, Allensworth, Nagaoka, Keyes, Johnson, & Beechum, 2012). The downward trajectory of achievement in early high school creates a high risk for dropping out and never experiencing the benefits that come with obtaining a high school degree (Allensworth, 2013; Balfanz, 2009). Conversely, students who have developed the skills, traits, and behaviors that lead to academic success in ninth grade are very likely to graduate from high school (Allensworth & Easton, 2005).

A study conducted to examine the relationship between high school grade point average (HSGPA) and earnings after high school graduation found a significant positive correlation between students' HSGPA and the earnings these students have nine years after graduating from high school (French, Homer, Popovici, & Robins, 2014; Miller, 1998). High school grade point average and class rank have also been correlated with long-term survival from age 18 to 69

(Chetty, Stepner, & Abraham, 2016; Hauser & Palloni, 2011; Herd, 2010). However, the skills, and behaviors students use to achieve academic success have not been well studied, especially among economically disadvantaged students (Bempechat, Li, Neier, Gillis, & Holloway, 2011).

A common way academic achievement in school is measured is by the Grade Point Average (GPA) of a student, the cumulative numerical average of grades (often on a 0.0-4.0 scale) earned at the end of each academic course (National Center for Education Statistics, 2011). A student's GPA earned in the first year of high school is not only a reflection of what a student has learned, it is also a predictor of later high school academic success as well as a predictor of whether a student will persist and graduate from high school (Allensworth & Easton, 2007). High school GPA is a major factor in determining whether a college accepts or rejects a student applicant and is a predictor of college grade point average and college persistence (Westrick, Le, Robbins, Radunzel, & Schmidt, 2015; Belfield & Crosta, 2012). In general, a student's high school GPA may be a better predictor of how a student will achieve academically in postsecondary education than the scores the student earned on a standardized achievement test (Hiss & Franks, 2014; Bowen, Chingos, & McPherson, 2009; Geiser & Santelices, 2007). Some colleges and universities give applicants the option to submit both grades and test scores or simply submit the grades (Espenshde & Chung, 2010).

A student's socio-economic level is significantly correlated with the student's SAT and/or ACT scores (Westrick, Le, Robbins, Radunzel, & Schmidt, 2015; Geiser & Santelices, 2007). In contrast, a student's high school grade point average (GPA) has a weaker correlation with a student's socio-economic status (Sackett, Kuncel, Arneson, Cooper, & Waters, 2009). No significant difference was found between the college GPAs or college graduation rates of students who submitted test scores with their high school grades compared to students who

submitted just their grades (Hiss & Franks, 2014). The latter group was more likely to be from a racial minority background and was also more likely to be first generation college attendees (Hiss & Franks, 2014). It may be particularly important for such students to work to achieve an excellent high school GPA.

Academic achievement is a complex phenomenon that occurs through the interaction of external factors and intrinsic traits, behaviors, and strategies that students employ (Farrington, Roderick, Allensworth, Nagaoka, Keyes, Johnson, & Beechum, 2012). In order to succeed academically and earn high grades, students need to spend time practicing, reviewing, and transferring the skills and knowledge covered in each class to put daily learning into long-term memory. Often the way teachers choose to help students achieve this mastery is by assigning homework. Homework is defined as a task designed and assigned by teachers with the idea that the assignments are completed outside of school (Bembenuddy, 2011; Cooper, 1989). Completing homework is an activity that focuses on deliberate practice and self-regulation, a non-cognitive trait expressed by students in their academic behavior (Ramdass & Zimmerman, 2011).

Whether students understand the purpose of homework can be determined through the administration of the Homework Purpose Scale (HPS), a valid and reliable scale for high school students that was developed by Xu (2010). This instrument consists of 15 statements with response choices to each statement on a Likert-type scale with 1 (strongly disagree), 2 (disagree), 3 (agree), or 4 (strongly agree), administered in a pencil and paper or computer format. The questions are sorted into three different categories: learning-oriented reasons for completing homework, peer-oriented reasons for completing homework, and adult-oriented reasons for completing homework. Students' responses can help educators and school administrators



understand the reasons students complete or do not complete their homework in addition to how well students understand the role homework has in their academic achievement.

The Homework Management Scale measures how students manage their homework behaviors and how students manage the space they use to complete homework (Xu, 2008). The valid and reliable instrument consists of 22 statements that are separated into five different categories associated with homework management: arranging the environment, time management, attention and focus, motivation monitoring, and controlling emotion. Each of the 22 statements has the same five response choices: never, rarely, sometimes, often, or routinely. Analysis of students' answers in the different categories can help teachers, parents, and students understand the challenges students face within themselves as well as the challenges of the environment in which they work to complete their homework.

School success is achieved through the interaction of cognitive neurological processes such as memory, retention, and metacognition with non-cognitive traits, attitudes, skills, behaviors, and strategies (Norman, 2002). Cognitive and non-cognitive factors interact continuously in learning, and both types of factors need to be understood and considered in order to help students achieve academically (Nagaoka, Farrington, Roderick, Allensworth, Keyes, Johnson, & Beechum, 2013). While both academic behaviors and traits play a role in students' academic achievement (Duckworth & Seligman, 2005), to what extent academic behaviors can be changed has not been well researched. In a review of the literature on academic behaviors, the authors concluded that few rigorous studies have been conducted that look into whether specific strategies or interventions can improve academic behaviors such as homework completion (Farrington, Roderick, Allensworth, Nagaoka, Keyes, Johnson, & Beechum, 2012).

Many teachers assign homework without understanding the effect homework has on achievement, while students may fail to complete homework because they do not understand the purpose of homework or how homework affects academic success (Xu, 2013). Economically disadvantaged students do not achieve academically to the level of their medium to high-income peers and they drop out of high school at a much higher rate (Murnane, 2013; U. S. Department of Education, 2013). Research needs to be conducted into whether an economically disadvantaged student's grade point average (GPA) is related to his or her understanding of the purpose of homework, as well as their management of homework, and homework behaviors. This knowledge will allow teachers to help low-income students develop the academic skills and traits that can lead to homework completion and subsequent greater academic achievement.

### **Problem Statement**

While states and school systems have increased academic rigor in an attempt to increase achievement, economically disadvantaged students continue to lag behind their peers in terms of academic achievement, and in fact the achievement gap is growing between students from low-income backgrounds and students from middle to high-income backgrounds (Hemphill & Vanneman, 2011). It is important to consider non-cognitive factors of achievement such as self-regulation and persistence when attempting to improve students' chances of experiencing academic success, since these factors are significantly correlated with academic achievement (Farrington, Roderick, Allensworth, Nagaoka, Keyes, Johnson, & Beechum, 2012). As students move into high school from middle school, academic content becomes more difficult, and students may find that the level of persistence they needed to achieve high grades in middle school is not sufficient for achieving excellent grades in high school (Trautwein, 2007).

Along with non-cognitive behaviors that affect achievement, homework also has a significantly positive relationship with academic achievement (Maltese, Tai, & Fan, 2012; Saihi & Maiyo, 2015). The problem is that much of the research on homework has focused on teachers' beliefs about homework as well as parents' ideas concerning the usefulness of homework. Studies have been conducted on the effect homework has on achievement at the high school level, but there is a lack of research on how economically disadvantaged high school students view, understand, and manage homework (Bempechat, Li, Neier, Gillis, & Holloway, 2011). Therefore, the specific problem related to the proposed quantitative study is to establish whether there is a relationship between economically disadvantaged high school students' understanding and management of homework and their individual high school grade point averages, and to what extent this relationship exists.

### **Purpose Statement**

The purpose of the proposed quantitative study is to determine whether high school Grade Point Average (GPA), the criterion variable in this study, can be predicted for economically disadvantaged high school students by conducting a regression analysis of a combination of the predictor variables of a student's understanding of homework's purpose as measured by the Homework Purpose Scale (HPS) (Xu, 2011) and homework management behavior as measured by the Homework Management Scale (HMS) (Xu, 2008) and to determine the extent to which such relationships exist (see Appendix A for the HPS and HMS).

Understanding how economically disadvantaged students understand the purpose of homework and manage their homework and whether these factors affect the students' grade point averages can lead educators to a greater understanding of non-cognitive academic traits such as self-regulation in understanding and managing homework. Findings from the proposed

study will help educators develop and promote the self-regulation traits in economically disadvantaged students that lead to academic success.

### **Significance of the Study**

In the last 15 years, the achievement gap has widened between students from high-income and low-income families; economically disadvantaged students continue to lag in academic achievement compared to their counterparts from medium to high-income households (Reardon, 2011; U. S. Department of Education, 2015); students from families with middle to high incomes achieve higher grades in high school subjects than do students from families with a low income (Reardon, 2011). In addition, low socio-economic status students matriculate to and graduate from college at lower rates than do their higher income peers (Bailey & Dysnerski, 2011b; Kena et al., 2015). Obtaining a college degree matters; in 2015, an individual with a bachelor's degree could expect to earn a yearly salary 2.3 times higher than someone with less than a high school degree could expect to earn (Bureau of Labor Statistics, 2015).

Homework has a positive effect on academic achievement at the secondary school level, yet students from low socio-economic backgrounds complete less homework than do their peers from higher socio-economic backgrounds (Fernandez-Alonzo & Suarez-Alvarez, 2015; Gershenson & Holt, 2014; Kitsantas, Cheema, & Ware, 2011). Research has demonstrated that students who understand the purpose of homework and employ behaviors that help them complete homework achieve higher grades than do students who do not understand and manage homework well (Saihi & Maiyo, 2015; Xu, 2013). The amount of time spent on homework matters, but academic achievement rises only when homework is managed so that the time spent completing homework is quality time (Dettmers, Trautwein, Ludtke, Kunter, & Baumert, 2010). When students are helped to develop an understanding of the importance of homework as well as

behaviors that lead them to complete homework, academic achievement rises (Xu, Benson, Mudrey-Camino, & Steiner, 2010).

There is a lack of research into how students from low-income households approach and manage homework (Bempechat, et al., 2011; Xu, 2014). The proposed study will add to the body of knowledge of how well economically disadvantaged students understand the purpose of homework and manage their homework, and whether there is a relationship between homework behaviors and the students' grades. Findings from the proposed study will give educators a greater understanding of some of the factors that affect the academic achievement of low-income students, which, by working with students to develop an understanding of homework's purpose as well as positive homework behaviors, will give teachers actionable ways to help close the achievement gap.

### **Research Question**

**RQ1:** Is there a significant predictive relationship between student Grade Point Average (GPA) and a linear combination of students' understanding of homework purpose as measured by the Homework Purpose Scale (HPS) and students' approach to homework management as measured by the Homework Management Scale (HMS) for economically disadvantaged parochial high school students?

### **Definitions**

The following variables are being examined (as this is a correlational survey design, the data, relationships, and distribution of variables will not be manipulated; they are only being identified and studied as they occur in their natural setting (Gall, Gall, & Borg, 2007). The following definitions were used for this study:

1. *Asian* – As defined by the 2010 U.S. Census Bureau, which follows the guidelines of the U.S. Office of Management and Budget’s *Revisions to the Standards for the Classification of Federal Data on Race and Ethnicity* (1997), this racial category refers to any person having an origin in any of the areas of Southeast Asia, the Indian subcontinent, or the Far East (U.S. Census Bureau, 2010).
2. *Black/African American*- As defined by the 2010 U.S. Census Bureau, which follows the guidelines of the U.S. Office of Management and Budget’s *Revisions to the Standards for the Classification of Federal Data on Race and Ethnicity* (1997), this racial category refers to a person having an origin from any of the Black racial groups of Africa (U.S. Census Bureau, 2010).
3. *Ethnicity* – A student’s ethnicity is self-identified and based upon the U.S. Census Bureau’s 2010 categories and definitions, which follow the guidelines of the U.S. Office of Management and Budget’s *Revisions to the Standards for the Classification of Federal Data on Race and Ethnicity* (1997). Under the guidelines, students may identify their ethnicity as Hispanic or Latino versus Not Hispanic or Latino (U.S. Census Bureau, 2010).
4. *Grade Point Average (GPA)* – This quantitative (measurement) variable will be considered a criterion variable and will be measured as an average of grades received in core academic classes throughout a student’s high school career. Averages will be computed for all students. This is a continuous variable, with possible average scores ranging from 0.0-4.0. This average will be calculated by the school (not the researcher) and will be un-weighted (no additional points will be given for Honors, AP, or similar courses).

5. *Low socio-economic status/level/Low-income* - Students whose family taxable income is equal to or less than 150% of the federal poverty level. Federal poverty level is determined taking into consideration the number of household members (U.S. Department of Education, 2016).
6. *Other* – Students may self-identify as Some Other Race if the student does not identify as White, Black/African American, American Indian or Alaska Native, Asian, Native Hawaiian or Other Pacific Islander. Students who self-identify as multiracial are in this category (U.S. Census Bureau, 2010).
7. *Race* – A student’s race is self-identified and is based upon the definition of the race categories used in the 2010 U.S Census, which follows the guidelines of the U.S. Office of Management and Budget’s *Revisions to the Standards for the Classification of Federal Data on Race and Ethnicity* (1997) (U.S. Census Bureau, 2010). Students may self-identify as Black /African American, American Indian or Alaska Native, Asian, Native Hawaiian or Other Pacific Islander, Some Other Race, or White.
8. *Self-regulation* – the action of controlling one’s thoughts, emotions, and behavior in the face of temptation (Duckworth. Grant, Loew, Oettingen, & Gollwitzer, 2010).
9. *White* – As defined by the categories used by the U.S. Census Bureau, which follows the guidelines of the U.S. Office of Management and Budget’s *Revisions to the Standards for the Classification of Federal Data on Race and Ethnicity* (1997), students may self-identify as White if they have an origin from the people of Europe, North Africa, or the Middle East (U.S. Census Bureau, 2010).

## **CHAPTER TWO: LITERATURE REVIEW**

### **Overview**

To succeed and achieve in high school with both higher grades and higher scores on standardized tests, students need to become active learners who use self-regulation and positive academic behaviors in all aspects of their school endeavors (Karabenick & Dembo, 2011). Employing self-regulation and positive academic behaviors is especially important when students are faced with tasks that are not inherently engaging or easy to make into regular habits; homework is an important way for students to develop the self-regulation skills needed for tasks that are not easily completed without a significant level of mental effort and focus (Cheng, 2011). It is not enough for students to have a positive attitude towards their schooling in general or even homework in particular; the self-regulation used when completing the homework, especially in math and science, has a greater effect on academic achievement than does the student's attitude towards school (Gershenson & Holt, 2014).

### **Conceptual or Theoretical Framework**

Since homework has been a part of schooling, opinions concerning the efficacy of homework, its purpose, and whether it should even be assigned have been debated subjects among educators, students, and families (Cooper, Robinson, & Patall, 2006). Whether homework is necessary for academic achievement or even if it has any effect on a student's learning is debated in educational circles, among parent groups, and in the popular press (Cooper, Robinson, & Patall, 2006; Cooper & Valentine, 2001; Núñez, Suárez, Rosário, Vallejo, Valle, & Epstein, 2015). While many contemporary educators believe strongly that homework is necessary for student achievement, many others question the extent to which homework increases academic achievement and therefore its necessity in the modern classroom (Gustafsson, 2013). What is



not as often discussed is whether homework has benefits beyond academic achievement and whether homework has an effect on students' behaviors and skills that in turn affect achievement. A student's effectiveness in employing non-cognitive skills and behaviors is directly related to the student's academic success (Farrington, Roderick, Allensworth, Nagaoka, Keyes, Johnson, & Beechum, 2012), and self-regulation and self-efficacy are both behaviors, rooted in theory, that effect student achievement (Bandura, 1977).

As students enter high school, they are expected to take more responsibility for their studying and learning, and ultimately their grades (Bandura, 1997). Students need to exercise self-regulation in order to plan for and carry out activities such as completing homework, so that they are prepared for tests and quizzes. In order to succeed academically, students must hold the belief that their actions have an effect on achieving a goal (Bandura, 1977). When students enter high school, they may vary in their maturity and ability to regulate their behavior, but by the time students enter college, they are expected to have the non-cognitive factors in place that allow them to exercise the control needed to succeed academically and carry out actions that will lead to success. The external motivators and potential punishments that may have encouraged homework completion are, for the most part, no longer present, and students must employ self-regulation and intrinsic motivation in order to persist in college through to graduation.

Self-efficacy theory is the belief that an individual can accomplish a goal even when working toward a goal that is difficult (Bandura, 1977). Bandura posited that individuals would attempt to achieve a goal only if the individuals believed that the goal could be accomplished. Individuals with high levels of self-efficacy will work toward a difficult goal because they believe they are able to achieve the goal. Individuals with less self-efficacy may feel defeated before they begin because they do not believe they have the ability to surmount obstacles and

achieve. Individuals with a strong sense of self-efficacy are able to set challenging goals and take on and accomplish difficult tasks (Bandura, 1994). A strong sense of self-efficacy can be developed through experiences that allow individuals to experience and take on a difficult task, overcome obstacles and struggle, and eventually achieve mastery; struggle against a difficult task is necessary to develop a sense of self-efficacy (Bandura, 1994).

Self-efficacy theory encompasses the idea that it is not enough for students just to understand that self-regulation is important for academic success; students must also use self-regulatory skills as they make decisions about how to manage their time and learning (Zimmerman & Bandura, 1994). Students who display high levels of self-efficacy are more willing to take on challenging academic tasks than those who have lower levels of self-efficacy, because they hold the belief that they are able to master difficult material and succeed despite encountering obstacles. In general, high school students with high levels of self-efficacy also achieve higher grade point averages than do students with lower levels of self-efficacy (Motlagh, Amrai, Yazdani, Abderahim, & Souri, 2011). Students with high levels of self-efficacy also have high levels of self-regulation and are able to arrange their environment to be able to push away distractions such as watching television, texting friends, spending time on social media, or surfing the Internet in ways un-related to the assignment at hand; they are able to prioritize their tasks and make difficult decisions concerning use of time in order to achieve academically (Bembenutty, 2011).

Students who have such intrinsic motivation to manage and complete their homework have higher levels of self-efficacy and higher academic course grades (Kitsantas & Zimmerman, 2008; Kistantas, Cheema, & Ware, 2011). Without a belief in their own ability to succeed and a sense of intrinsic motivation, even students who display high self-efficacy are often unwilling to

sacrifice spending the time they could use for more enjoyable leisure activities in order to study or complete homework, thus defeating themselves in their efforts to establish better work habits and develop the time-management skills that are necessary to self-regulation (Zimmerman, 1990).

### **Social Cognitive Theory of Self-Regulation**

The theoretical framework upon which this study is based is social cognitive theory of self-regulation and self-efficacy theory (Bandura, 1977). Self-regulation is employed when an individual has an awareness of and control of his or her environment, behavior, and emotions; the individual actively participates in his or her learning process (Bandura, 1991; Zimmerman, 2000). People who are able to observe their own choices, think about their thinking, and pay attention to their performance are able to gather information that allows for setting goals and evaluating their progress toward achieving these goals; this self-awareness helps individuals generate intrinsic motivation and self-regulate in the pursuit of goals (Bandura, 1991).

Individuals who do not attend to how they perform and do not spend time reflecting on what influences their performance cannot improve on their actions and will not increase their motivation to achieve (Zimmerman, 2008).

In social cognitive theory, people are seen as having the ability to self-regulate but the extent to which individuals develop their self-regulation skills varies (Bandura 1991). With self-regulation, there is an interdependent relationship between environmental, behavioral, and cognitive factors, but in order to self-regulate, an individual must exert influence over his or her environment and behaviors (Bandura & Simon, 1977). Social cognitive theorists believe that individuals do not behave in ways that are based simply on external factors; people have the capability to reflect on and to a certain extent control their thoughts, and as a result, have the

ability to self-direct the outcome in achieving a goal (Bandura, 1991). According to research by social cognitive theorists, time management and planning for goal pursuit are important components of self-regulation skills and are also factors that are crucial to the completion of tasks. Individuals who cannot pay adequate attention to the timing of their actions cannot influence their actions (Bandura, 1977; Zimmerman, Bonner, & Kovach, 1996).

An important part of the social cognitive theory of self-regulation is the idea that in the pursuit of a goal, people need to consciously reflect on their thought patterns and actions in order to improve future performance (Bandura, 1986). Reflecting on prior performance allows the individual to gather needed information to determine what worked or did not work so that attaining their goal in the future is more likely. Besides paying attention to their thoughts and actions in attempting to achieve, individuals also need to examine various factors in the environment that either contributed to or inhibited achievement of goals. In order to make goal achievement more likely, people need to be honest with themselves concerning their performance; improvement will not occur without honest self-reflection (Bandura, 1977). Dwelling on failure does not lead to achieving future goals; what increases future performance is identifying the factors that led to either success or failure (Gottman & McFall, 1972).

According to social cognitive theory, the values people embrace and the standards people set for themselves are influenced by the significant people in their lives; individuals learn to take these external standards and derive their own values to determine what encompasses success and failure (Bandura, 1986). When individuals subsequently pursue goals that are in alignment with the derived values and standards, achievement can occur (Bandura & Cervone, 1983). In working toward shaping personal standards and behaviors, it is important how others react to the behaviors; positive reactions increase and enhance goal pursuit while negative reactions may

cause the individual to either change the goal or change the way the goal is pursued (Bandura & Jourden, 1991).

### **Self-Efficacy Theory**

Self-efficacy theory stands alone as a theory of motivation and achievement and is also a construct of social cognitive theory (Bandura, 1977). Self-efficacy is both the belief that one's own sense of agency and belief in the ability to succeed are necessary for accomplishing a task or achieving a goal (Bandura, 1991). Individuals develop a belief in their own self-efficacy and are motivated to achieve after setting personal standards, working to achieve, and then tailoring goals and actions based upon the success or failure of their actions; people who have a strong sense of self-efficacy are not easily dissuaded from striving to achieve despite setbacks or obstacles in their path to achievement. Those with a strong belief in their own capabilities use self-regulation to motivate themselves and persist until they achieve their goals; their motivation is intrinsic and not extrinsically generated (Bandura & Cervone, 1986).

Individuals with a strong sense of self-efficacy believe in their capacity to set their own course of action that achieves and accomplishes their goals, even if tasks are difficult. People who are self-efficacious view challenges and difficult tasks as things to be mastered versus threats or tasks to be avoided; they do not give up easily and do not look at setbacks as confirmation of inadequacy (Bandura, 1994). Bandura posits that it is an individual's self-efficacy belief rather than the individual's intelligence that is related to academic achievement (Bandura, 1977). A study concerning self-efficacy beliefs demonstrated that when students are matched by cognitive ability, students with higher self-efficacy beliefs achieve to a higher academic level than do students with lower self-efficacy beliefs (Bouffard-Bouchard, 1990).

Individuals with a strong sense of self-efficacy are intrinsically motivated and have a positive belief in their own capability to set and master goals; people who are efficacious are intrinsically motivated to achieve (Bandura, 1991). Intrinsic motivation is the internal or inherent motivation a student possesses for completing a task; intrinsic motivation is related to the student's implicit theory of intelligence (Dweck & Leggett, 1988). The amount of intrinsic motivation an individual possesses is related to the extent the individual believes his effort results in achievement.

Individuals who hold the self-theory that success takes effort and preparation have higher levels of intrinsic motivation than do individuals who believe that academic success should come without effort (Dweck, 1999). When students believe that hard work is necessary for success, that intelligence is malleable, and mistakes are inevitable for learning, their self-theory of intelligence is associated with high levels of intrinsic motivation. Students who believe that success should not take effort can become easily discouraged and lose motivation when they encounter difficult academic material that takes sustained or repeated efforts to master (Haimovitz, Wormington, & Corpus, 2011).

How well individuals regulate their own behavior is related to self-efficacy theory and outcome expectancies (Bandura, 1977). The level of effort people put toward achievement as well as how persistent they are in pursuit of success depend on whether the individuals believe they can affect their environment. Performance is predicted both by the beliefs that individuals hold concerning how they can affect their environment as well as to what extent they work to control their actions and behavior (i.e., self-regulation) (Ramdass & Zimmerman, 2011). Self-efficacy theory also encompasses expected outcomes, and students typically expect certain outcomes such as good grades based upon their efforts. If students do not receive the grades they

expect despite expending effort in completing homework, their motivation to work hard at academics can decrease (Schunk, 1991).

Possessing and employing self-regulatory skills in academic endeavors, including completing homework, may mean the difference between a student's academic success and failure, and possessing a high level of self-regulation predicts the completion of more hours of homework and studying (Kistner, Rakoczy & Otto, 2010; Duckworth & Seligman, 2005). Indeed, the process of completing homework not only requires the employment of self-regulatory strategies, it also actively supports the learning of self-regulatory skills (Eker, 2013; Ryan & Teller, 2011). Academic success is often measured through the student's grade point average (GPA), and high school GPA can predict a student's chances of completing college as well as college class ranking (Geiser & Santelices, 2007).

The current research project will examine how students both view homework and manage homework. Students may hold a specific belief concerning homework and the effect homework has on achievement yet not manage to complete homework. Additionally, students may manage and complete homework out of a sense of duty or obedience, yet they do not believe homework affects achievement. The present study will look to determine whether a combination of student beliefs concerning homework and management of homework is related to student achievement as measured by student grade point average (GPA).

### **Related Literature**

Homework has been a controversial part of education for well over the 100 years that it has been written about and debated (Cooper, Robinson, & Patall, 2006). Beliefs and feelings concerning homework have swung from the extremes of considering it essential to educational achievement to believing it has no effect on learning and is a burden to students and families on

the other (Cooper, Robinson, & Patall, 2006; Cooper & Valentine, 2001; Núñez, Suárez, Rosário, Vallejo, Valle, & Epstein, 2015). While many contemporary educators believe strongly that homework is necessary for student achievement, many others question the extent to which homework increases academic achievement and therefore its necessity in the modern classroom (Gustafsson, 2013).

Before the 20th century, homework was believed to be a way to help students develop a disciplined mind. In the late 19th century, elementary students were not given homework very often while older students would frequently receive as much as three hours per night (Gill & Schlossman, 2004; Reese, 1995). In the 1940s, a backlash against assigning homework occurred; many educators came to believe that homework needed to be more than just rote drills that students completed at home and began assigning homework in different ways (Cooper, Robinson, & Patall, 2006).

Homework and its effect on achievement has been the subject of popular debate for many decades and the subject of educational research for many years. The first major study of note regarding homework and its place in education was published in 1927 when an educator named Hagan looked at the effects that homework had on 11 and 12 year-old students when they did their homework at home versus worked on assignments done at school while being supervised (Hagan, 1927). A 1928 study of undergraduate students looked at whether the amount of time students reported they were studying was related to the students' grade point averages (Jones & Ruch, 1928). In the early 1900s, some educators began to view homework as intrusive on family life, and whether homework should be assigned became a matter of debate within the educational community (San Diego City Schools Research Department, 1936).



After the launch of the first space rocket, Sputnik, by the Russians in October 1957, the pendulum swung back in the educational community toward favoring assignment of homework (Kralovec & Buell, 2000). This change in favoring homework came about because American educators became concerned that there was a lack of rigor in the United States' educational system; assigning homework became one way for teachers to increase student knowledge and academic performance on local and international assessments, thus giving American students the skills and knowledge to compete academically with students from other developed nations (Gill & Schlossman, 2000). In 1958 in the National Defense Education Act, American teachers were urged by the United States government to emphasize student learning in math and science both in school and in homework assignments in order for students to be educated well enough to compete in a global economy (National Defense Education Act, 1958).

In the 1960s, the prevailing thoughts in the educational community concerning homework again became largely negative, and homework was popularly thought to be intrusive into students' leisure time as well as a source of too much pressure, which led to the belief that homework could have the effect of harming the mental health of students (Jones & Colvin, 1964; Kralovec & Buell, 2000). During the 1980s, attitudes toward homework changed once again so that numerous articles extolled the virtues of student homework, and more educators and researchers viewed homework as having a positive effect on students and their educational achievement (National Commission on Excellence in Education, 1983). Since the beginning of the 21st century, the issue of whether students should be assigned homework and the amount of time homework should take has become a matter of public debate with many families and educators once again viewing homework in a negative manner (Gill & Schlossman, 2004).

In the last 50 years, homework has been the subject of numerous research studies with several meta-analyses conducted on the research literature that is concerned with homework and its effect on students, families, and academic achievement (Cooper, Robinson, & Patall, 2006; Hattie, 2009). Several meta-analyses looked at different homework studies that examined the effect homework has on academic achievement. The majority of these studies concluded that with secondary and post-secondary school students, homework has a significant and positive effect on achievement (Cooper, Robinson, & Patall, 2006; Credé & Kuncel, 2008; Hattie, 2009).

For students in elementary school, in-class supervised work has a greater effect on achievement than does homework, possibly due to the direct instruction teachers may give concerning how students should work on assignments and the direct supervision teachers provide to keep students on task (Cooper, Robinson, & Patall, 2006). Another reason for the poor correlation of homework and academic achievement at the elementary and middle school level might be due to the subjectivity of student self-reporting (Busch, Uebelacker, Kalibatseva, & Miller, 2010). While the positive academic effect of homework has been documented to occur only at the high school and post-secondary level, some researchers posit that homework might actually have an indirect effect on achievement in elementary and middle school students because of the role homework may have in helping students develop academic behaviors such as self-regulation that are part of the non-cognitive student skills necessary for long-term academic success (Corno, 1993; Heckman & Kautz, 2013).

More recent studies of homework have demonstrated that homework does have a significant positive effect on academic achievement at the secondary school level (Hattie, 2009; Kitsantas, Cheema, & Ware, 2011). As students transition from middle school to high school, this effect increases; by high school, homework has a significant positive effect on academic

achievement in terms of both student grade point average (GPA) and achievement on standardized tests (Hattie, 2012; Xu, 2010). Homework completion, rather than time spent on homework, affects both students' GPAs as well as their achievement on state and national standardized tests; in a 2008 study, researchers found that students in secondary schools who completed their homework outperformed their peers on standardized tests by 69% (Dignath & Buttner, 2008). At the post-secondary school level, students who were required to complete homework in an introductory economics course achieved higher course grades than did students for whom homework completion was optional; additionally, the homework-required student group persisted in college to achieve a higher rate of graduation with a bachelor's degree than did the homework-optional student group (Grodner & Rupp, 2013).

### **Students' Homework Experiences**

Despite the belief many parents and educators hold that the amount of homework their children have is burdensome and has increased in recent years, data collected over several decades do not support this assertion. Researchers have found that in general, all students at various grade levels do not spend an inordinate amount of time on homework; college-bound high school seniors spend approximately one hour per night on average completing homework (Loveless, 2014). When the National Assessment of Educational Progress analyzed data collected from 1984 to 2012, it was determined that the amount of homework 13-year-olds complete each day appears to have decreased somewhat during last four decades while the amount of homework 17-year-olds complete appears to not have changed significantly (Aud, KewalRamani, & Frohlich, 2011). Thirty-eight percent of 17-year-old high school students surveyed in 2012 reported having no homework assigned for them to complete on a regular basis (Aud, KewalRamani, & Frohlich, 2011).

In surveys conducted annually since 1966 by The Higher Education Research Institute at UCLA, college freshmen are asked how much time they had spent on homework during their senior year of high school. In 1986, 49.5% of students reported spending six or more hours per week completing homework school (Pryor, Eagan, Palucki Blake, Hurtado, Berdan, & Case, 2012). In contrast, in 2012, only 33.4% of college freshman reported that they had spent more than six hours weekly completing homework as high school seniors while 40% reported working at least six hours per week, 66.2% reported spending at least six hours per week socializing with friends, and 53.0% of students reported spending at least six hours per week in sports activities or exercising during senior year of high school (Pryor, et al., 2012).

A problem with attempting to measure whether homework predicts academic achievement is determining how much time students actually spend completing homework versus the amount of time students believe they spend on their homework. In a study that looked at groups of undergraduate students in an engineering course (Rawson, Stahovich, & Mayer, 2016), one cohort self-reported the time they thought they had spent on homework while a second group used a smart-pen to complete the same assigned homework. The smart-pen recorded the actual time spent completing the same assignment. With the self-report cohort, there was no correlation found between the final course grades and the amount of time the group reported spending on homework. However, with the group that used the smart-pen, there was a significant positive correlation between the course grades and time spent on homework. The researchers posited that time spent on homework is positively correlated with the course grades, but self-reporting is problematic and not a reliable way of determining whether homework is correlated with academic achievement (Rawson, Stahovich, & Mayer, 2016).

The National Assessment of Educational Progress (NAEP) has tracked homework data since 1984 for students ages nine, 13, and 17; the NAEP collects the data by surveying teachers concerning the amount of time expected for students to spend on homework (Ginsburg & Chudowsky, 2012). In 2012, the NAEP concluded that the only group that had increased amounts of homework from 1984 to 2012 was the group of nine-year-old students, and that was due to the increase of teachers reporting they had assigned homework in 2012 versus teachers reporting not assigning homework to nine-year-olds in 1984. The percentage of thirteen-year-olds with one or more hours of assigned homework decreased from 38% to 27% between 1984 and 2012, and among the 17 year-old group, the percentage of students not assigned any homework rose from 22% in 1984 to 27% in 2012 (Ginsburg & Chudowsky, 2012).

A 2002 survey of college freshmen from different regions of the United States (encompassing students from rural, suburban, and urban communities) queried students about their homework experiences in secondary school; sixty-six percent reported that as high school seniors they had completed less than one hour per night on weeknights and completed none on the weekends (Sax, Lindholm, Astin, Kim, & Mahoney, 2002). Parents have complained for many decades about the amount of homework their children are expected to complete, but the amount of homework that is actually assigned to and completed by students at all different grade levels has either remained stable or declined; one hour per night is the average amount of homework high school students report completing regardless of the region of the United States in which the surveyed students lived (Loveless, 2014).

While the region of the United States in which students live does not appear to matter in terms of amount of homework high school students complete, family income and student socio-economic level does make a significant difference in the amount of homework secondary school

students complete. When data were collected concerning U.S. high school students' use of time outside of school through analysis of the American Time Use Survey (ATUS), a nationally representative survey instrument administered yearly since 2003 by the U.S. Census Bureau of Labor Statistics, it was determined that students from lower socio-economic groups (students residing in households with incomes below the federal poverty level) spent, on average, less time completing homework than did students living in households with higher incomes. Students from low socio-economic households completed, on average, 15 fewer minutes per day completing homework than did students who belonged to households with higher incomes (Gershenson & Holt, 2014).

Many families express resentment for the amount of homework their children are assigned and the time it takes to complete homework in various subject areas (Patall, Cooper, & Robinson, 2008). Some families have taken their belief that homework should be minimized or abolished so far as to petition schools for specific homework policies mandating the maximum and minimum time homework should take (Patall et al., 2008). There are parents who question whether they should assist with homework assignments while others argue for homework time policies, but in the last 30 years, parents have become increasingly involved with their students' homework completion (Patall et al., 2008).

While many families of younger children become involved in their children's homework, research has demonstrated that there is a trend of decreasing parental involvement in helping children with their homework along with a decreased involvement in their children's learning as children move from the elementary school years to high school (Hill, Castellino, Lansford, Nowlin, Dodge, Bates, & Petit, 2004). Even without becoming directly involved in helping children with homework, parents can play a significant role in helping their children develop the

study routines that lead to children learning the self-regulatory skills associated with academic success. Students who came from families that encouraged a disciplined attitude toward completing homework were better able to manage the increased demand of homework at the secondary school level than were students from backgrounds where self-regulation was not modeled or taught in regard to homework (Effeney, Carroll, & Bahr, 2013).

When parents become involved in their children's homework endeavors, however, academic success does not automatically follow. Parental over-involvement in children's homework can actually negatively affect children's sense of self-efficacy and independence (Cooper et al., 2006). In a 2008 meta-analysis of family involvement in homework, researchers determined that there was only a slight positive effect on student achievement when parents became more involved in their children's homework efforts (Patall, Cooper, & Robinson, 2008). Having parents become involved in the homework process does not assure academic achievement; a 2012 study found that for families of low socio-economic status, family involvement in the homework process did not make enough of a difference to decrease the achievement gap between their children and the children from higher socio-economic levels (Dumont, Trautwein, Ludtke, Neumann, Niggli, & Schnyder, 2012).

High school students are typically considered to be more responsible, mature, and autonomous than younger students when doing their homework, and parents of adolescent children may not even be aware of what assignments their children are expected to complete or whether the children actually do complete assigned homework (Nunez, Suarez, Rosario, Vallejo, Valle, & Epstein, 2015). Even though many parents are less involved in monitoring their children's homework once the children become high school students, in a 2011 survey by the National Center for Educational Statistics, 65% of the parents surveyed reported that they still

checked to make sure that their children completed their homework even though their children were high school students (Aud, KewalRamani, & Frohlich, 2011). Even though adolescents can be greatly influenced by peers, they still can be influenced by their families' academic expectations (Abar, Carter, & Winsler, 2009). While parents may expect adolescents to be independent in taking on academic tasks such as completing homework, family influence is important for students to develop self-regulatory skills and behavior (Purdie, Carroll, & Roche, 2004).

Currently, the issue of whether homework is worthwhile remains controversial in both the educational community and in families with school-age children, despite the research evidence concerning homework's positive effects on academic achievement in terms of grades, standardized tests, college persistence, and college completion (Grodner & Rupp, 2013; Hattie, 2009; Patall, Cooper, & Robinson, 2008). Many parents and students take issue with the amount of time homework takes away from leisure activities, family time, and work activities, and many students fail to understand the positive effect homework has on academic achievement. In addition, homework completion and the quality of the completed assignments can also become a source of friction between parents and children, particularly if parents are unsure of the role they should play in monitoring and correcting student homework (Ilgar, 2013; Goodman, 2007).

### **Teachers' Homework Perceptions**

In the educational community, educators disagree strongly about the purpose and worth of homework, what kind of homework to assign, how much homework is appropriate at different grade levels, and how to assess homework assignments. Some teachers believe homework should be turned in and graded, other teachers check only whether the homework has been completed, and a substantial number of teachers routinely fail to determine whether students have even



completed their homework assignments (Cooper, 2007). The reasons teachers report for assigning homework include giving students opportunities to deepen their learning, to practice self-regulation, and to learn to act with more autonomy (Bempechat, 2004). In addition, teachers may use homework to help increase achievement on standardized tests; research has demonstrated that there is a significant positive relationship between homework completion and standardized test achievement (Maltese, Tai, & Fan, 2012).

Teachers may not realize that homework has value beyond just deepening academic knowledge; homework has a part in fostering and deepening self-regulatory skills (Bembenutty, 2011). Self-regulation is a necessary component of academic success, and teachers play an important role in helping students develop the self-regulatory skills that can lead to academic achievement (Bakracevic, Vukman, & Licardo, 2010). When teachers work to foster autonomy by helping their students independently complete homework, these students report less negative emotions and a greater willingness to put forth effort into homework (Trautwein, Niggli, Schnyder, & Ludtke, 2009).

Homework may be assigned for different purposes depending on the individual teacher and the subject. Some reasons teachers report for giving homework that are related to academic learning are: to reinforce what has been taught in class, to give students practice in becoming proficient in skills for subjects such as math, to determine if students have understood what was taught, to transfer skills to competently handle new problems or situations, and to introduce new material that will be taught the next day (Cooper, 2007; National Education Association, 2008; Northwest Regional Educational Laboratory, 2005; Cooper et al., 2006). There are also non-academic reasons teachers may assign homework: to help students develop study habits, to motivate students, to determine students' knowledge and skills, and to develop critical thinking

(MetLife, 2007). The MetLife Survey of the American Teacher (2007) surveyed approximately 1,000 teachers and found that teachers with more experience, that is those with teaching experience of more than five years, were more likely to believe that homework was important than did the teachers with less experience. In addition, 91% of the surveyed teachers believed that homework was important in helping students with their learning (MetLife, 2007).

### **Homework and Achievement**

Possessing and employing self-regulatory skills in academic endeavors, including completing homework, may mean the difference between a student's academic success and failure, and possessing a high level of self-regulation predicts the completion of more hours of homework and studying (Kistner, Rakoczy & Otto, 2010; Duckworth & Seligman, 2005). Indeed, the process of completing homework not only requires the employment of self-regulatory strategies, it also actively supports the learning of self-regulatory skills (Eker, 2013; Ryan & Teller, 2011). Academic success is often measured through the student's grade point average (GPA), and high school GPA can predict a student's chances of completing college as well as college class ranking (Geiser & Santelices, 2007).

A student's GPA is not just important in high school; college GPA is important for maintaining eligibility for many academic scholarships such as the Life Scholarship in South Carolina and Georgia's Hope Scholarship (Mobley, Brawner, & Ohland, 2009; Georgia's Student Finance Commission, 2012). Additionally, many colleges and universities mandate that students maintain a GPA above a certain level, often 2.0 on a 4.0 scale, in order to remain as a student in good standing (Honken & Ralson, 2013). Beyond high school academic success and maintaining academic scholarships, self-regulation also is correlated with college completion; young students with a level of self-regulation one standard deviation above the mean have a 39%

greater chance of completing a post-secondary degree than do students with an average level of self-regulation (McClelland, Piccinin, Acock, & Stallings, 2013).

Some students may perform well in high school due to innate ability but do not necessarily develop self-regulatory behaviors such as completing homework (Wong & Csikszentmihalyi, 1991). If these students do well on standardized college admission tests such as the ACT and SAT, the students may be admitted into demanding college programs without possessing the self-regulatory skills necessary to succeed. When university engineering students' first semester GPAs were analyzed by researchers, a significant correlation was found between homework completion in high school and college GPA; there was no significant correlation between the students' ACT scores and self-control (Honken & Ralston, 2013). The researchers called for educators to spend time helping high school students develop the self-regulatory skills needed for college success. They cautioned teachers to keep in mind that a high-achieving student does not necessarily have the highly developed self-regulatory skills essential for college success (Honken & Ralston, 2013).

When looking at homework's correlation with academic achievement, it is important to distinguish between the amount of homework assigned by the teacher and academic achievement versus the amount of homework completed and academic achievement. The significantly higher correlation is between the amount of homework completed and achievement than between the amount of homework assigned and achievement (Cooper, Nye, & Greathouse, 1998). In general, students with a negative opinion concerning homework spend less time completing their homework and have lower grades than do students with a positive opinion about homework; students with a negative opinion about homework generally earn grades of "C" or lower resulting in a significantly lower GPA for students (MetLife, 2007).

The frequency with which homework is assigned is also positively correlated with achievement; when homework is assigned more frequently, academic achievement increases significantly (Trautwein, Köller, Schmitz, & Baumert, 2002). However, even though the frequency with which homework is assigned is positively correlated with achievement, the amount of time the student takes to complete the homework is negatively associated with achievement. In a 2002 study by Trautwein et al., the researchers found that the more time students spent on math homework, the lower the overall student achievement; the researchers posited that students who lack understanding of the homework topic are inefficient and put forth a disproportionate amount of effort towards the subject and thus take longer to finish their homework and do not gain any additional understanding of the subject matter. These researchers also questioned whether taking a great deal of time attempting to complete homework that is poorly understood will lead students to lose motivation in completing their homework, potentially setting themselves up for frustration and lack of overall motivation towards the subject (Trautwein et al., 2002).

Although homework is correlated with achievement at the secondary school level, which school a student attends matters significantly in terms of amount of homework assigned and academic achievement. Economically disadvantaged students from low-achieving schools with high teacher turnover may not receive instruction concerning how important homework is to academic achievement (Bempechat, et al. 2011). Additionally, students attending schools that perform poorly academically (in comparison to other district schools) do less homework than do students from higher performing schools (Easton & Bennett, 1989).

There is also a difference in academic achievement between economically disadvantaged and economically advantaged students depending on whether they attend a religious or public

school. A 2007 meta-analysis of 25 studies by the National Education Longitudinal Study (NELS) was conducted to determine whether religious schools had a smaller achievement gap between low socio-economic status students (low-SES) and higher socio-economic status students (higher-SES). Data analysis led the researcher to conclude that low-SES students in religious schools achieved academically to a higher level than did their public school counterparts (Jeynes, 2007). In a meta-analysis of over 90 studies, the researcher determined that there is a statistically significant decrease in the achievement gap between low-SES students and higher-SES students in faith-based private schools possibly due to the more rigorous self-disciplinary practices expected of students in faith based schools (Jeynes, 2012).

One of the factors thought to contribute to the higher achievement of the low-SES religious school students is the amount of homework students complete (Jeynes, 2012). In an analysis comparing religious schools with public schools and the amount of homework students are assigned at the different schools, it was determined that in general, White Catholic school students complete approximately one half hour more homework per week than do White students in public schools, and Black/African American religious school students complete approximately 1.5 more hours of homework per week than do African-American public school students (Sanders, 2000).

In another study, a data analysis of the results determined that the learning habits of the students in the religious schools had a significant effect on achievement; these learning habits include work habits, one of which is homework completion (Jeynes, 2007). There is also a difference in the amount of homework assigned between public and private school students. When public school students are compared with private and religious school students in terms of homework, students who attend private and religious schools have more homework assigned to

them than do students in public secondary schools (Council for American Private Education, 2008).

Completing homework is an activity that focuses on deliberate practice and takes self-regulation and academic perseverance, non-cognitive academic traits that are factors in students' academic achievement. Students must complete their homework using effort and self-regulation, a behavior that has a positive effect on academic performance (Cheng, 2011). Some students who complete homework may not do so because they believe the assignments have worth, but because they have a sense of obligation or desire to be obedient to their parents and comply with the rules of their school, or a desire to avoid being punished (Walker, Hoover-Dempsey, Whetselm, & Green, 2004).

When a student completes homework because he or she is seeking approval or avoiding punishment, the student is extrinsically motivated to complete the task and would likely not complete the task in the absence of external motivating factors. When students rely upon extrinsic motivation to succeed in school, these students achieve at lower levels than do students with higher levels of intrinsic motivation; additionally, students who rely upon extrinsic motivations to complete work exhibit decreased amounts of persistence with difficult tasks (Vallerand, Fortier & Guay, 1997). Students who rely on intrinsic motivation to complete tasks achieve higher grade point averages (GPAs) than do students who rely on extrinsic motivation to complete academic tasks (Lemos & Verissimo, 2014).

High-achieving students and low-achieving students may approach the task of completing homework and studying differently. A study that examined the differences between high and low-achieving students, as determined by grade point average, found that the high-achieving students used significantly more effective study strategies than did the low-achieving students

(Schutz, Gallagher, & Tepe, 2011). High-achieving students are much more likely to employ study strategies that are associated with achieving academically while low-achieving students may not plan and use any particular study technique when preparing for assessments (Gettinger & Seibert, 2002). In addition, low-achieving students use fewer study strategies than do high-achieving students and when they do employ study strategies, these strategies are of a lower quality (Hartwig & Dunlosky, 2012; Ley & Young, 1998).

In a 2011 study of high school students from low-socioeconomic backgrounds, the researchers looked at how the low-achieving and high-achieving students planned for, managed, and perceived the value of their homework (Bempechat, Li, Neier, Gillis, & Holloway, 2011). In the low-achieving group, only one-fifth of the students reported completing all of their homework, even though these students realized that not finishing homework had a negative effect on their grades; the students who did not complete homework did not have well-developed self-regulatory skills, nor a sense of academic obligation. In contrast, 75% of the high-achieving students reported completing all of their assigned homework; the majority of the non-completers in the high-achieving group reported that they did not finish because they needed help from their teachers. The researchers posited that the high-achieving students had intact self-regulatory skills that helped these students monitor, plan for, and approach their homework tasks with a mindset that focused on mastery of content. The study's authors, Bempechat, Li, Neier, Gillis, & Holloway, suggest that teachers need to help students develop self-regulatory skills that foster achievement by instructing students on how to manage their time, organize their assignments, and ask for help when needed (2011).

Students' perceptions and attitudes toward homework tend to become more negative as students move from elementary school to middle school and on to high school; older students

especially often find homework a useless activity that has no value, and not surprisingly these students exhibit little intrinsic motivation towards completing their homework (Bryan & Nelson, 1994). There are a number of students, though, who do understand the value homework has for academic achievement; such students who view homework positively and put forth the necessary effort for completing homework assignments do achieve to a higher level than do students who have a more negative perception of homework and expend less effort in completing their homework assignments (Hong & Lee, 2003; Xu, 2005). Teachers may not understand the students' attitudes toward and difficulties with homework and therefore may not spend time helping students overcome homework difficulties or directly teach the self-regulatory skills needed to successfully complete homework (Hong, Wan, & Peng, 2011). Understanding how students perceive the purpose of homework, manage their homework time and develop effective homework habits is essential for educators to help their students develop the skills and habits needed to succeed academically.

Even though homework positively affects academic achievement in high school (Trautwein, 2007; Hattie, 2012), homework can be difficult and time consuming, and students often have trouble remaining motivated when they do not immediately reap the rewards of their hard work. In order to achieve academically, students need to develop their ability to persevere in their learning even when success is not immediately achieved. Understanding students' perception of the purpose of homework, their homework management, as well as whether their habits differ in these aspects of homework, will help educators gain knowledge of how to help students develop the traits associated with academic success (Farrington, Allensworth, Nagaoka, Keyes, Johnson, & Beechum, 2012).



Helping students understand why homework is important and getting students to complete their homework are two of the most frustrating problems teachers report when surveyed about issues in teaching (Killoran, 2003). While some students acknowledge that homework is important for achievement, they still must manage their homework by arranging the environment in which they conduct their homework, manage their time for homework completion, and handle distractions from unrelated activities such as technology use (phone texts, video games, television viewing), and maintain their motivation to complete the homework (Xu, 2013). Managing homework takes both self-regulation and persistence, two non-cognitive traits that are associated with academic success (Farrington, Roderick, Allensworth, Nagaoka, Keyes, Johnson, & Beechum, 2012). Students need to use their intrinsic motivation, persistence, and self-regulation to complete tasks such as homework; unfortunately, the intrinsic motivation of students can decrease through the school year, so understanding the need for persistence is a critical component (Corpus, McClintic-Gilbert, & Hayenga, 2009).

When ninth grade students were surveyed concerning their motivation for completing homework, low-achieving students exhibited little persistence and were found to be non-compliant in completing homework. In addition they did not understand the importance of homework for learning (Bempechat, Li, Neier, Gillis, & Holloway, 2011). Increasing academic rigor within the classroom has been attempted to increase achievement for students, but simply expecting more of students both within and outside the classroom will not raise achievement, especially for students with weak academic skills, unless teachers educate students about the importance of homework in addition to explicitly teaching the skills needed to manage homework (Allensworth, 2011). Succeeding academically takes involvement of both cognitive and non-cognitive traits and behaviors. Teachers and researchers must work to understand these

different factors and promote and develop in students the behaviors that have a positive effect on achievement, including an increasing autonomy in completing academic tasks such as homework (Katz, Kaplan, & Gueta, 2010).

Multiple studies have been conducted on the effect homework has on achievement at the high school level, but far fewer have been conducted concerning how economically disadvantaged high school students view, understand, and manage homework (Bempechat, Li, Neier, Gillis, & Holloway, 2011). Although various research studies have shown that homework has a small effect on achievement in elementary school and a large, significant effect on achievement in high school (Hattie, 2012), more research is needed on how economically disadvantaged students' views and understanding of homework affects their academic achievement at each level. While many studies have been conducted concerning how homework affects achievement, very few studies have looked into students' perceptions of and attitude towards homework in relation to students' grade point average (GPA), especially among economically disadvantaged students (Letterman, 2013; Bempechat, Li, Neier, Gillis, & Holloway, 2011). Successful students manage their environment and their time so that they complete homework and assignments; they arrange their homework space to minimize distractions and allow them to concentrate on the tasks before them (Xu, 2013). To help economically disadvantaged students succeed in school, teachers must understand their students' perceptions of homework as well as help them put into place plans for managing homework, as it is significantly correlated with academic achievement at the secondary school level (Hattie, 2012).

Teachers must not only understand the non-cognitive factors correlated with success, they must also understand specific metacognitive and critical thinking strategies, skills, and behaviors

they need to promote in order to help their students, especially those who are economically disadvantaged, achieve (Abdellah, 2015). Succeeding academically takes involvement of both cognitive and non-cognitive traits and behaviors (Farrington, 2007). At the high school level, students and teachers need to work to help students identify why the students are not succeeding academically; teachers and students must cooperate to understand these different factors and promote and develop in students the behaviors that have a positive effect on achievement, including an increasing autonomy in completing academic tasks such as homework (Katz, Kaplan, & Gueta, 2010). Students who have not been held accountable in middle school for turning in assignments, completing homework, or studying for assessments may enter high school unprepared for the rigor, self-discipline, and pre-class preparation expected of a secondary school student.

### **Self-Regulation**

Teachers assign and assess their students' homework for many different purposes, both academic and non-academic: to reinforce learning, to enhance learning outcomes, to increase student responsibility for learning, and sometimes to prime students for what will be taught in upcoming classes. Homework completion compels students to manage both their time and their environment; students must balance their desire to spend time outside of school on pursuits that are social and pleasurable with their actions to complete assigned homework tasks that are often difficult and time-consuming (Kalenkoski & Pabilonia, 2012). While some homework critics do not believe that homework helps students develop self-discipline, other homework advocates believe that homework has a significantly positive effect on improving self-regulation, which involves managing time, setting goals, sustaining attention, managing the environment, and self-efficacy (Kohn, 2007; Trautwein & Koller, 2003).

Self-regulation has many synonymous terms such as self-control, self-discipline, and effortful control; all refer to a voluntary or volitional regulation of an individual's attention that is self-initiated (Duckworth, Gendler, & Gross, 2014). In education, self-regulation involves delaying immediate gratification or reward in order to complete or achieve an assignment or task. Looking at self-regulation in the educational setting is not a recent idea; in 1899, William James posited that sustained attention to school material that may be "dull and unexciting" (pp.104-105) is actually beneficial and that it provides an advantage to students who are able to remain attentive in the classroom (James, 1899).

Self-regulation allows students to control and manage their behaviors, thoughts, and emotions so that they are able to achieve academic success and employing self-regulation with academic tasks is fundamental to academic achievement (Dignath, Buttner, & Langfeldt, 2008). Students who have excellent self-regulation skills are able to remain cognitively aware of what influences their academic choices and use self-discipline to pay attention, complete homework, and study so that academic success can occur (Beishuizen & Steffens, 2011). In general, students who are more academically successful employ a greater range of self-regulatory strategies that are self-initiated and self-directed than do students who are less academically successful (Effeney, Carroll, & Bahr, 2013). Additionally, students with a high level of self-regulation do not rely on other individuals such as parents and teachers for guidance in developing self-regulatory skills while less-successful students may still need help and guidance in developing self-regulatory habits.

Self-regulation has been considered an important component in achievement. In a 2005 study, researchers found that students who exhibit great self-regulatory behavior achieve to a higher level than do students with less self-regulation; an increase in self-regulation is correlated

with a positive change in end-of-term grades (Duckworth & Seligman, 2005). Additionally, students with good self-regulation skills generally exhibit higher levels of intrinsic motivation when compared with students showing lower levels of self-regulation (Bembenutty, 2009). Self-regulated learners have the skills and behaviors necessary to succeed in school; these students ask for help and clarification when needed, physically place themselves in seats in the classroom where they can best see and hear the teacher, ask questions in class when confused, and carry out tasks outside of the classroom, such as completing homework, because they realize that these tasks will help lead them to academically achieve (Clarebout, Horz, & Schnotz, 2010; Labuhn, Zimmerman, & Hasselhorn, 2010).

Self-regulation is thought to develop over time, with younger students possessing fewer self-regulation skills than those possessed by older students (Bakracevic Vukman, & Licardo, 2010). Becoming skilled in self-regulation occurs over time with the locus of control shifting from parents and teachers to the student himself; some have likened this process to the process of a traditional apprentice learning from a master practitioner (Beishuizen & Steffens, 2011). With the model of student as apprentice, a teacher does not simply teach self-regulation skills and expect a student to immediately take on those self-regulation skills; instead, the educator actively works to help the student develop his self-regulation skills and strategies. With this model, control is slowly ceded to the student as the student exhibits greater levels of self-regulation over time.

Most students progress through stages of self-regulation with a teacher or parent initially guiding or overseeing the completion of academic tasks. As the student exhibits greater responsibility with completing homework and studying for assessments, guidance from an overseer becomes more limited until finally the student himself internalizes the need to manage

his own academic endeavors (Biemiller, Shany, Inglis, & Meichenbaum, 1998). Even at the secondary school level, teachers may need to discern which students are capable of employing self-regulatory strategies without help and which students still need guidance and scaffolding in order to develop appropriate and useful self-regulatory skills and strategies (Effeney, Carroll, & Bahr, 2013).

Many students, despite being in high school, may not have the self-regulatory skills to push through difficult academic tasks and monitor their own behaviors and responses to learning. These students may actively avoid academic tasks even when they understand that this avoidance will negatively affect their grades (Bembechat, Li, Neier, Gillis, & Holloway, 2011; Ramdass & Zimmerman, 2011). Students with a high-level of academic ability do not necessarily exhibit high levels of self-regulation and may not achieve high grades with a challenging curriculum when success requires completing homework and studying outside of school (Honken & Ralston, 2013). High-achieving students may not enjoy studying or working on homework assignments any more than do lower-achieving students, yet these high-achieving students appear to understand that succeeding academically requires giving up short-term enjoyments such as talking with friends or playing video games in order to study difficult course material (Bembenutty, 2011).

Students with high levels of self-regulation are able to set and achieve goals, choose specific strategies to enhance learning, monitor their own academic performance, and reflect on their successes and failures with their learning (Zimmerman, 2008). In other words, students who use self-regulation skills for learning are able to plan ahead, manage time, and reflect on their academic performance; these students use metacognitive strategies, a component of self-regulation, in order to achieve (Pintrick & Zusho, 2002; Zimmerman & Moylan, 2009;

Zimmerman, 2000). Students with high self-regulation skills manage their environment to help optimize learning, leading to increased academic achievement (Schunk & Zimmerman, 2007; Zimmerman, 2008; Kolovelonis, Goudas, & Dermitzaki, 2011). In contrast to low self-regulated learners, high self-regulated learners sit closer to the front of the classroom, volunteer to answer teacher questions more often, ask for help from different sources when it is needed, and seek additional resources for learning to improve their understanding of concepts (Labuhn, Zimmerman, & Hasselhorn, 2010; Elstad & Turmo, 2010; Clarebout, Horz, & Schnotz, 2010).

Students who are able to regulate their emotions and behavior achieve higher levels of education than do students with lower levels of skills for self-regulation of their emotions and behaviors (Duckworth, Gendler, & Gross, 2014; Blair, C. & Diamond, A. 2008). In academics, self-regulation refers to voluntary control of impulses, behaviors, and responses to achieve an academic goal (Farrington, Roderick, Allensworth, Nagaoka, Keyes, Johnson, & Beechum, 2012). Self-regulation, or self-control as it is also termed, is the greatest predictor of academic success; in fact, research has determined that self-regulation plays a larger role in achieving academically than does an individual's IQ (Duckworth & Carlson, 2013).

Students, especially as they get older, need to take on more responsibility for their homework; completing homework takes self-regulation and self-regulation is significantly correlated with academic success, and therefore it is important for teachers to understand how students value homework and manage their time effectively and efficiently in completing their homework (Kukliansky, Shosberger, & Eshach, 2016). In order for students to develop self-regulation, it is important for the students to have someone they can rely on for guidance in learning self-regulation strategies as well as to model self-regulated learning; typically in the school setting this expert is a teacher who works with students to develop their self-regulated

learning strategies within the classroom and to transfer them to their home environment when studying and completing homework (Dignath & Büttner, 2008). This is particularly important in economically disadvantaged environments, as students may already be starting with academic disadvantages and need to make up ground in regards to developing self-regulation (Evans & Rosenbaum, 2008).

Students who can control their impulses and behaviors in learning achieve higher course grades and graduate from high school at higher rates than do students who are less able to control their impulses, and over time, self-regulation, in tasks such as completing homework predicts academic course grades and GPA more reliably than does a student's IQ (Duckworth, Quinn, & Tsukayama, 2012; Duckworth, Tsukayama, & May, 2010; Vitaro, Brendgen, Larose, & Tremblay, 2005). In a longitudinal study using hierarchical linear modeling, self-regulation, as reported by middle school students, their parents, and teachers, predicted grade point average at the end of a marking period (Duckworth, Tsukayama, & May, 2010). Self-regulation appears to be a factor correlated with academic success in countries other than the United States; in a study looking at the factors in academic achievement with Chinese students, teacher and parent ratings of student self-regulation more accurately predicted the students' end of course grade point average than did other factors (Zhou, Main, & Wang, 2010).

High-achieving students are able to set goals for learning and work diligently to achieve their goals despite the obstacles they encounter (Zumbrunn, Tadlock, & Roberts, 2011). Unfortunately, many students, especially those from economically disadvantaged backgrounds, enter school unable to self-regulate their behavior; early childhood poverty appears to inhibit the development of self-regulation skills (Evans & Rosenbaum, 2008). Self-regulation is essential for academic success, yet in a 2000 study, kindergarten teachers reported that less than half of



their students had appropriate age-level self-regulation skills (Rimm-Kaufman, Pianta, & Cox, 2000). Students with well-developed self-regulation skills from economically disadvantaged backgrounds achieve to a higher degree than do their peers with poor self-regulation skills (Sektman, McClelland, Acock, & Morrison, 2008). Possessing and employing self-regulation skills is a necessary trait of successful students, and helping students develop these skills can help economically disadvantaged students mediate the disadvantages that may come from growing up in poverty.

In a meta-analysis that examined the relationship between academic achievement and self-regulation, researchers determined that there was an average effect size of 0.69, leading the researchers to conclude that there is a significant positive relationship between self-regulation and achievement; increased levels of student self-regulation lead to higher levels of academic achievement (Dignath & Buttner, 2008). When students are young, teachers help the students stay on task and manage their learning, but as students move to the secondary level, more teachers expect students to have self-regulatory skills in place and step back the level support significantly below what the students' elementary school teachers provide (Zimmerman, 2002). One area in which teachers expect students to function independently and use self-regulation skills, especially at the high school level, is managing and completing their assigned homework (Zimmerman, 2002).

Self-regulation skills may or may not be directly taught in elementary school, and too many students fail to develop self-regulatory skills on their own as they progress throughout the lower grades and middle school; students without appropriate self-regulation skills can arrive in high schools unable to make the academic choices that will lead to academic achievement (Bempechat, Li Neier, Gillis, & Holloway, 2011). Students who embrace responsibility, a major

(and crucial) component of self-regulation, achieve academically to a higher level than do students who do not take on responsibility for learning (Hagan & Weinstein, 1995). Ensuring that students in high school have high levels of self-regulatory skills is important because students with high levels of self-regulation manage their learning and their homework differently than do less successful students, and students with high self-regulatory skills complete more homework than do students with low levels of self-regulation (Bembenutty, 2009; Bembenutty, 2011). In general, older students perceive homework as less useful to their everyday lives and value homework less than do younger students; however, higher-achieving high school students indicate that they understand the correlation of homework with achievement significantly better than do their lower-achieving peers (Hong, Peng, & Rowell, 2009).

Some educators believe greater self-regulation in students increases naturally maturity with age, and that there is no way to accelerate the maturation process; other teachers believe that self-regulation skills can be taught (Dignath-van Ewijk & van der Werf, 2012; Dignath-van Ewijk, & van der Werf, 2012; Spruce & Bol, 2015). Research into self-regulation malleability has led to the conclusion that self-regulation is not immutable, and that self-regulation skills can be taught at any age, with the result that students exhibit greater levels of self-control than they did before the intervention (Diamond & Lee, 2011). In a study seeking to determine whether self-regulation skills could be taught to high school students, researchers found that the students who were taught self-regulatory skills exhibited higher levels of self-efficacy and performed to a higher level on assessments than did the students who were not taught self-regulatory skills (Labuhn, et al., 2010).

Metacognition processes along with self-regulation are considered to be pieces of self-regulated action; these components of cognition interact so that when employed well, they lead

disciplined students to academic success (Kaplan, 2008). Successful students take the time to consider deeply and engage with academic content; academically successful students consider where they are in the process of learning and studying and monitor and reflect on their school and study performance in order to improve future academic performance (Pintrich & Zusho, 2002). Employing self-regulation along with metacognitive strategies leads to deep learning and transferable skills (Zimmerman & Moylan, 2009; Bransford, Brown, & Cocking, 2004). Without using metacognitive and self-regulatory actions, students may not learn how to assess their own learning and acquire the transferable knowledge that is necessary for academic success; instructors, even at the post-secondary level, can positively affect student learning by taking the time to directly teach and model metacognitive learning strategies (Zhao, Wardeska, McGuire, & Cook, 2014).

Critical thinking skills are identified as those skills necessary for students to succeed in college that allow students to make inferences, analyze conflicting explanations, support arguments, interpret results, and solve complex problems (National Research Council, 2002). Critical thinking skills encompass analysis and evaluation of learning and are developed through the metacognitive process of thinking about one's learning; teachers are instrumental in helping students identify how the students can effectively learn and reflect on the learning process (Choy & Cheah, 2009). Without critical thinking skills, students may not perform well at the university level or even persist in college through to graduation; in a 2004 study, it was determined that critical thinking skills along with problem solving skills are the main areas where students are unprepared for university-level academic work (Conley, 2007; Lundell, Higbee, Hipp, & Copeland, 2004).

Students with high levels of self-regulation use metacognitive strategies, which help develop critical thinking skills, as they work to learn academic content, monitor their learning through an iterative process of reflection and adjustment of their learning process; developing key cognitive and self-regulation strategies and that lead to academic success is fundamental to preparing students to persist in college (Zhao, Wardska, McGuire, & Cook, 2014; Conley, 2007). In order to be ready to succeed in college, students need to progressively take more control and responsibility for their academic learning as they progress through high school; a college-ready student is able to complete work independently, employ effective study skills, and is able to think deeply and critically about his or her performance (Conley, 2007).

When students are able to put self-regulation strategies in place, there is an increase in self-efficacy with a resultant increase in achievement (Zimmerman, 2000). Putting in place the structures that teach students self-regulatory skills, monitor students' self-regulatory behaviors, and give feedback concerning how well students are doing with their self-regulation will help students remain on track academically until the students develop the self-efficacy to take control of their own learning (Hattie & Timperley, 2007). Because self-regulation is essential for academic success, educators who understand this necessity want to help their students develop the self-regulatory skills, behaviors, and responses needed to become successful independent learners. The issue becomes that they may not know how to accomplish this; they are unsure how to teach the self-regulatory skills, behaviors, and responses that are necessary to promote successful independent learning, including how to help students manage their time, both in and out of the classroom.

Time management is an important self-regulation skill that affects homework completion and has a significant effect on academic achievement (Jahanseyr, Salehzadeh, Vasaghi, &

Mousavifard, 2007). In classrooms, teachers plan and dictate the time students spend on different tasks, but it is when students are working on their own to complete their assigned homework that time management skills become crucial; students with poor time-management skills complete less homework than do students with well-developed time-management skills (Xu, 2005). Managing one's time is also associated with intrinsic motivation; students with greater time-management skills have increased levels of intrinsic motivation and higher levels of academic achievement when compared to students with poor time-management skills and lower levels of academic achievement (Kember, Jamieson, Pomfret, & Wong, 1995). Time-management skills can be taught to students along with other self-regulation skills, all of which can positively affect homework quality and completion (Xu, 2005).

All students from early elementary level to high school through post-secondary school may have difficulty regulating their behavior, especially in maintaining focus when carrying out academic tasks that students do not find interesting or enjoyable; when students do not work to complete academic tasks, the result may be that students do not achieve academic success. One self-regulation strategy that can be taught by educators is called mental contrasting with implementation intentions (MCII) (Duckworth, Grant, Loew, Oettingen, & Gollwitzer, 2010). While high achieving students may have the self-regulation to push through difficult or boring assignments, lower achieving students may avoid these tasks, even if this behavior results in lower grades (Bempecat, Li, Neier, Gillis, & Holloway, 2011). When adolescents and younger children are taught strategies using the MCII model which involve setting goals and planning in detail how the goals will be achieved as well what obstacles might keep the student from achieving their goals, there is a higher likelihood the students will complete the necessary academic tasks that lead to achieving their goals (Duckworth, et al., 2010).

As a key component of teaching students the mental contrasting with implementation intentions (MCII) techniques, students are coached to imagine the obstacles they will encounter on their way to achieving their goal and what actions they will take when an obstacle arises (Duckworth, Grant, Loew, Oettingen, & Gollwitzer, 2010). When economically disadvantaged students in fifth grade were taught to use MCII in order to improve their school grades and attendance, the students in the MCII group had significantly higher end of term grades than did students in the control group (Duckworth, Kirby, Gollwitzer, & Oettingen, 2013). A 2010 study of high school students preparing to take a college entrance exam was conducted with one group of students taught MCII skills in their entrance exam studies while a second group of students was instructed to write a practice essay for the entrance test; the students who were taught MCII techniques completed 60% more practice questions than did the students who practiced writing the entrance essay (Duckworth, Grant, Loew, Oettingen, & Gollwitzer, 2010). When students are taught how to use mental contrasting with implementation intentions in order to achieve an academic goal, the students are guided to develop specific strategies that can increase their level of self-regulation, leading to better completion of their goals and higher levels of achievement.

Students with high levels of self-regulation are able to sustain their attention; they spend more focused time on-task than do students with low levels of self-regulation (Kuhl, 1985). Homework is an out-of-school activity that requires focused and sustained attention, planning, and reflection to complete, and these are all tasks that require self-regulation. Homework is a way for students to achieve academically, and it is also a way for students to develop and enhance self-regulatory skills, which are major components of academic success (Cooper et al., 2006; Xu, Benson, Mudrey-Camino, & Steiner, 2010).

Homework is often computed as a part of a course grade, and course grades are averaged to form students' grade point average (GPA). Achieving a high GPA is accomplished over time through persistence, planning, managing time, and dealing with the lure of engaging in more enjoyable activities rather than studying and completing homework. In a longitudinal study that looked at whether a student's IQ or self-regulation was a better predictor of student GPA at the end of eleventh grade, it was determined that self-control in the ninth grade was superior to the student's IQ as a factor in determining a student's academic GPA at the end of the eleventh grade (Duckworth, Quinn, & Tsukayama, 2012).

In class, students must pay attention in order to take in the instruction teachers provide in each of the different academic subjects. While teachers may not consistently observe students who are off task, in general an aware teacher realizes when students are not paying attention and can put strategies in place, such as calling on the student for an answer or giving feedback on behavior, in order to help students regulate their attention. It is likely much more difficult for students with poor self-regulatory skills to complete assignments such as homework when no teacher is physically present to solicit attention in order to assist the student to get back on task. Studying the course material and homework completion, when students do not have the external controls of teachers monitoring their work, can be challenging for all students, and even the students with innate, high academic ability may not take pleasure in studying and completing homework (Wong & Csikszentmihalyi, 1991).

Even when students possess self-regulation skills and have goals to achieve academically, their desire to complete homework and to study may not be enough when students are tired, when tasks are cognitively demanding, or when students are stressed (Hagger, Wood, Stiff, & Chatzisarantis, 2010). Self-regulation can be depleted when students have been faced with too

many tasks requiring their energy for self-control. For example, if students work at paying attention in class rather than daydreaming or talking, their self-regulation stores may be depleted by the time they need to do homework (Duckworth, Gendler, & Gross, 2014).

One way students may still be able to achieve academically when self-regulation stores are low is by forming positive homework habits (Oluwatimilehin & Owoyele, 2012). Homework habits can involve completing homework at the same time every day, completing homework in a specific place, or allocating a specific amount of time for working on different subjects. In a 2015 study, the researchers posited that individuals with self-regulation skills form habits to help structure an environment that is conducive to achievement despite the presence of other factors, such as fatigue or mental distractions, that tend to derail success (Galla & Duckworth, 2015). The authors determined that possessing homework habits helped the students study and complete assignments despite the students' feelings of stress and fatigue, or when the homework was cognitively demanding. This research suggests that developing good homework habits is a positive way for students to achieve academically despite stresses in their lives that could derail their efforts.

### **Non-cognitive Factors**

Non-cognitive factors are directly related to student academic achievement. These factors are skills, strategies, behaviors, and attitudes that are separate from IQ and play a major role in student academic success (Heckman & Rubenstein, 2001). Non-cognitive factors include student motivation, perseverance, time-management, and self-regulation and are directly related to whether students achieve in school (Nagaoka, Farrington, Roderick, Allensworth, Keyes, Johnson, & Beechum, 2013). Non-cognitive factors play a role not only helping students succeed in high school, but also in helping students to become college-ready; a student is college-ready if



the student has a combination of content knowledge, cognitive skills, and learning skills required for success in their course work at the college level (Conley, 2013). In a review of the literature on non-cognitive skills, Nagaoka et al. (2013) classified the skills into a framework of five categories: academic behaviors, academic perseverance, learning strategies, academic mindsets, and social skills.

Academic behaviors include completing assignments such as homework and projects, participating in class, and studying for assessments. Students who understand course work yet fail to study and perform on assessments or fail to complete homework are demonstrating a deficit in academic behavior. The category of academic perseverance, the next in the non-cognitive framework, is related to how well a student is able to stay on task, push away distractions, and overcome failure. Academic perseverance in combination with working toward an academic goal has been termed grit (Duckworth & Seligman, 2005). Another term for academic perseverance is academic tenacity, a term used when students push through obstacles to succeed with an academic goal. Academic perseverance/academic tenacity also includes the mindsets students possess that lead to the beliefs that intelligence is fixed or that intelligence is malleable (Dweck, Walton, & Cohen, 2012). As students transition from elementary school to middle school to high school, where students are increasingly expected to assume more autonomy in their learning, time-management, and self-regulation skills, academic mindsets become increasingly important.

Another category of the non-cognitive framework correlated with academic success includes the learning strategies that students use (Farrington, Allensworth, Nagaoka, Keyes, Johnson, & Beechum, 2012). These include metacognitive skills and specific study strategies students use to master increasingly complex and difficult course material, i.e., the ability to think

about how they are learning. The fourth category of the noncognitive framework includes academic mindsets; these are the beliefs that students hold concerning their ability to succeed with difficult and new academic concepts. Self-efficacy is a part of academic mindsets and refers to the belief held by the student that he has the agency to succeed. Individuals tend to become more deeply engaged in tasks when believe they can succeed and avoid spending their energy on activities in which they are not confident of success (Bandura, 1986).

Also included in academic mindsets are the implicit theories of ability where students believe either that their ability to succeed is predetermined based upon whether one is smart or not, in contrast to the belief that ability grows through practice (Dweck & Leggett, 1988). The different areas of academic mindset all have a role in increasing academic perseverance and improving academic behaviors (Nagaoka, et al., 2013). The final category of social skills, such as responsibility and cooperation, are also part of the behaviors thought to be necessary for school success, but the extent they can improve academic achievement is unclear (Nagaoka, et al., 2013), although all of these factors interact to help students achieve in high school as well as help them prepare for the rigor that is inherent in a postsecondary education.

Student academic achievement is a result of the interplay between cognitive factors, such as a student's IQ, and the non-cognitive skills, traits, and behaviors students possess such as self-regulation and persistence. Researchers looking at non-cognitive factors in achievement used the term "grit" to describe a student's persistence and passion for long-term goals and developed the Grit Scale to measure the amount of grit individuals have (Duckworth, Peterson, Matthews, and Kelly, 2007). Grit research has demonstrated that students with higher scores on the Grit Scale achieve higher levels of education and higher grade point averages (GPAs) than do students with lower grit scores. Grit scores are more strongly correlated with GPA levels, a measure of effort

and perseverance, than with SAT scores (Duckworth & Seligman, 2005; Duckworth, et al., 2007). Promoting non-cognitive behaviors through educating students about the importance of these factors for school success can have long-term benefits on academic achievement. In addition, instituting school practices that incorporate expectations for behaviors such as homework completion, give students opportunities to practice behaviors that have a significant benefit for achieving academically (Hattie, 2009).

### **Summary**

Economically disadvantaged students especially may have attended elementary and middle schools with high teacher turnover or schools where teachers held low expectations for low-income students (Jeynes, 2009). While the majority of high school students declare that they have the intention of attending and graduating from college, only a bit over one in 10 students from a low-income family will obtain a bachelor's degree (Bailey & Dynarski, 2011b). In order for economically disadvantaged students to master a college preparatory curriculum and develop the skills that will make the student college-ready by the end of 12<sup>th</sup> grade, teachers must have an in-depth knowledge of the behaviors, skills, and strategies their students possess as well as those that they lack. Additionally, teachers must be prepared to help foster the growth of these behaviors and be prepared to support the students in their learning while slowly ceding responsibility for managing academics to their students (Corno & Xu, 2004).

## **CHAPTER THREE: METHODS**

### **Overview**

Homework management and completion is an area of academics rich with opportunity to help students employ the self-regulatory and non-cognitive skills necessary for academic success in high school, college, and beyond. Students from low socio-economic backgrounds do not achieve to the same level academically as do students from higher-income families. Homework has a statistically positive effect on academic achievement at the secondary school level, but the effect homework has on the achievement of economically disadvantaged high school students has not been examined. The current study's purpose is to investigate the relationship between a high school student's understanding of the purpose of homework as measured by the Homework Purpose Scale and management of homework as measured by the Homework Management Scale and his or her high school Grade Point Average (GPA), the criterion variable in the current study. An understanding of the relationship between an economically disadvantaged student's GPA and his or her management and understanding of homework may lead educators to new knowledge of ways to help close the achievement gap between students with higher and lower family incomes.

### **Design**

The current study was a non-experimental correlational design seeking to explore the relationship between student Grade Point Average (GPA) and student management of homework and understanding of homework purpose (as measured by the HPS and HMS (Xu, 2010; Xu, 2008)). The questionnaire will be comprised of two previously established valid and reliable scales, the Homework Purpose Scale (HPS) and the Homework Management Scale (HMS) (Xu, 2010; Xu, 2008). As the focus of this study is the predictive relationship between the linear

combination of variables (HMS, HPS, and GPA), a multiple regression correlational study will be conducted (Gall, Gall, & Borg, 2007). A multiple regression study is a type of analysis to investigate a correlation incorporating several variables and the relationships amongst them (Ary et al., 2010). Cohen and Cohen (1983) specify that a regression analysis is appropriate when the dependent variable is quantitative (as is Grade Point Average, the dependent variable in this study), and the study uses the dependent variable in determining if a relationship exists amongst the independent variables (understanding of homework purpose and approach to homework, as measured by the HPS and HMS). Leech et al. (2003) further discuss that a multiple regression data analysis is frequently applied method of data analysis when multiple independent variables are involved.

### **Research Question**

**RQ1:** Is there a significant predictive relationship between student Grade Point Average (GPA) and a linear combination of students' understanding of homework purpose as measured by the Homework Purpose Scale (HPS) and students' approach to homework management as measured by the Homework Management Scale (HMS) for economically disadvantaged parochial high school students?

### **Hypothesis**

The null hypothesis for this study is:

**H<sub>0</sub>1:** There will be no predictive relationship between student *Grade Point Average (GPA)* and a linear combination of students' understanding of homework purpose as measured by the *Homework Purpose Scale (HPS)* and students' approach to homework management as measured by the *Homework Management Scale (HMS)* for economically disadvantaged parochial high school students.

### **Participants and Setting**

The participants were a convenience sample of 452 ninth through twelfth grade high school students all of whom attend seven Alpha Omega Network high schools in Alabama, Georgia, Michigan, and New Jersey. A convenience sample was chosen due to the available seven schools having the desired demographics and an appropriately sized population from which to draw a representative sample group of students to participate in this study. A purposive sample, selecting judgmentally amongst the available schools, would unnecessarily have cut down on the available participants. Snowball and random sampling were considered but were deemed to have had the potential to introduce bias by having early participants seek out additional members and by risking lack of representation from smaller demographic groups. The eventual sample contained 206 males and 246 females, all of whom are from economically disadvantaged backgrounds as determined by their parents' income information; family financial information is required to be submitted to the school's admissions committee before a student may be considered for admission to the school.

Based on a summary of the demographic data provided by the principal of each school in the Alpha Omega Network used in this study, the sample population's race was 3.54% Asian, 2.87% American Indian/Alaskan Native, 38.72% Black/African American, 0.44% Native Hawaiian/Pacific Islander, 39.16% Other Race, and 15.27% White. The percentage of Hispanic/Latino students was 57.96% and 42.04% of the students were Not Hispanic/Latino. The students self-selected their gender, race, and ethnicity when they completed the survey. The students were between the ages of 13 and 17 years old. The schools were chosen to participate based on similarity of demographics and socio-economics of students, and students from ninth through twelfth grade in every school participated by taking all aspects of the instrument.

A minimum sample size of 300 was chosen to uphold the advice: “the general rule in quantitative research is to use the largest sample possible” (Warner, 2013). Ultimately, 452 students participated in the survey. This sample size exceeds the minimum necessary for multiple regression including two predictor variables of 106 (Warner, 2013); this sample size also exceeds the required 66 students to meet the minimum for a medium effect size with statistical power of 0.7 at the alpha level  $\alpha = 0.05$  (Gall, et al. 2007).

The setting is a weekday Catholic high school attended 5 days per week by each student. All schools follow the same curriculum and teach to the same standards, as set forth by Alpha Omega Network. The Alpha Omega Network consists of 32 high schools situated in both urban and suburban areas of cities and town with populations of at least 500,000. This study will use a convenience sample composed of sophomore students enrolled in various Alpha Omega Network high schools in Alabama, Georgia, Michigan, and New Jersey. The metropolitan areas of these cities in which the schools are located have populations from 1.1 million people to six million people. While some students reside within the city limits, other students live in surrounding metropolitan areas. In order to matriculate into an Alpha Omega school, a student’s family must be classified as low-income. Students completed the questionnaire within one class period.

### **Instrumentation**

The questionnaire used in this study is a combination (combined for ease of administration) of two previously established instruments: the Homework Purpose Scale (HPS) Questions (Xu, 2011) and Homework Management Scale (HMS) Questions (Xu, 2008) (see Appendix A for permission to use instrument and Appendix B for the instrument itself). Additionally, questions asking the student’s gender and race/ethnicity were included. This

questionnaire contains a total of 37 questions and takes approximately twenty minutes for each student to complete.

The Homework Purpose Scale (HPS) (see Appendix B) was developed to measure high school students' understanding of the purpose of homework since a student's view of homework's purpose may play a part in the homework behavior of the student (Xu, 2010). Previously, homework's purpose had been examined from the point of view of teachers, administrators, and parents; additionally, surveys of student view of homework versus parent and teacher views of homework have been conducted (Cooper, 2006; Cooper et al, 1998; Xu, 2005; Yazzie-Mintz, 2007). How elementary school students viewed the purpose of homework had been looked at in a qualitative study, but how secondary students themselves view homework's purpose had not been researched (Xu & Corno, 1998).

The Homework Purpose Scale (HPS) was developed by Xu to fill the gap in the literature concerning secondary students' views of the purpose of homework separate from the views of parents and teachers. In an attempt to determine construct reliability and validity, the HPS was employed with 306 urban and 681 rural secondary school students to determine the relationship between student scores on the HPS and the students' homework behaviors. Factor analysis of the HPS determined there were three factors, broken into subscales, as to why secondary students completed homework: Peer-Oriented Reasons, Adult-Oriented Reasons, and Learning-Oriented Reasons. The reliability estimates were determined to be in the adequate to good range; homogeneity was found to be good. The instrument was determined to be valid with both urban and rural secondary school students (Xu, 2010). The researcher suggested there is a need for additional research concerning the use of the instrument with students from different cultural backgrounds (Xu, 2010).



A researcher in Turkey used the Homework Purpose Scale for High School students to determine if the scale was both valid and reliable with students from different countries (Saban, 2013). In Turkey, the researcher used the scale with undergraduate students and performed confirmatory and exploratory analyses. The instrument was found to be a reliable measure for determining how students view the purpose of homework (Saban, 2013).

The Homework Purpose Scale (HPS; see Appendix B) consists of fifteen items dealing with students' understanding of why homework is assigned and should be completed. These fifteen items are categorized into three groups: Learning-Oriented Reasons (nine items relating to school learning), Adult-Oriented Reasons (three items relating to gaining approval from parents and teachers), and Peer-Oriented Reasons (three items relating to working with peers) (Xu, 2010). These items were developed based upon current literature regarding homework's academic and self-regulatory benefits, as well as based on recent research into students' views of and attitudes about homework (Katz, Eilat, & Nevo, 2013; Kitsantas, Cheema, & Ware, 2011; Hong, Peng, & Rowell, 2009).

The Homework Management Scale (HMS; see Appendix B) contains twenty-two questions dealing with how students approach homework completion once it has been assigned. These twenty-two items are broken down into five subscales: Arranging the Environment (five items), Managing Time (four items), Monitoring Motivation (four items), Controlling Emotion (four items), and Handling Distraction (five items) (Xu, 2008). These items were based on previous scales used for measuring student approaches to homework (Xu, 2006). See Appendix A for the instrument.

The Homework Purpose Scale (HPS) was found to be a valid measure of homework purpose in high school students (Xu, 2010), and was further validated for middle school students

using a study of 1,181 eighth graders (Saban, 2013; Xu, 2011). The Cronbach's Alpha reliability coefficients for scores on the three factors described for the HPS were .90, .79, and .79, respectively (Xu, 2010).

The Homework Management Scale (HMS) was validated using 681 rural and 306 urban high school students; the study's findings confirmed the five-factor model. Cronbach's Alpha reliability coefficients were: .748, .739, .831, .801, and .742 for each factor described above, respectively (Xu, 2008). The Homework Management Scale has also been used and validated for use with Chinese students completing mathematics homework, examined to determine whether the scale was valid to determine homework management for Chinese secondary students, and used in a study of secondary students examining how students of different racial backgrounds manage homework (Xu & Wu, 2013; Yang & Xu, 2015; Xu, Fan, & Du, 2015).

The aggregate scores on both the HPS and HMS question sections form the basis for the measure of student understanding of homework purpose and evaluation of student approach to homework management/homework management behavior. Possible aggregate scores range from 15 – 60 for the HPS questions and from 22 – 110 for the HMS questions. A score of 15 on the HPS would indicate that the student has very little Understanding of Homework Purpose, and a score of 60 would indicate nearly ideal Understanding. A score of 22 on the HMS would evidence poor Homework Management approaches/behaviors (stopping frequently to answer Instant Messages, paying little attention to arranging one's environment, failing to ask for help when needed, and similar), and a score of 110 would indicate that the student has exceptional approaches to behaviors in regards to Homework Management.

### **Procedures**

Prior to starting the study, approval was obtained from the Institutional Review Board

(IRB) at Liberty University (see Appendix C). Next, the researcher obtained permission from the superintendent, principals, and teachers at each school in the study (see Appendix D) as well as consent from the parents and students themselves. The parental consent form was sent home in English (see Appendix D).

The Superintendent and school principals were provided with a summary of the study's purpose and privacy protection assurances (see Appendix E). The superintendent and principals' signatures of approval were obtained prior to interacting with any of the teachers. Teachers (chosen to administer the questionnaire within their class period) were provided with a summary of the study purpose and privacy protection assurances plus a parental and student consent form to send home with each of their students (see Appendix D, and Appendix E) which was signed and returned before a student was allowed to participate in the study. Once the informed consent was obtained, the researcher arranged with the principals and teachers at each school the date and time for questionnaire administration. The date for administering the questionnaire was December 2017.

The researcher contacted each survey school to request from its principal a list of the students (both male & female) presently enrolled at their school and inform them of the blind study protocol. The student list was sent directly to an independent research assistant who was involved only for the purpose of assuring the privacy and confidentiality of the student's identity and GPA. The research assistant signed a confidentiality agreement (see Appendix G) for the scope of this study.

The independent research assistant assigned a random number to each student, with the females from each school. The research assistant sent back to the principal of each school a set of blank, numbered survey forms, along with a list of name/number correspondences.

The principal or a school delegate distributed the forms to the students during an assembly or similar gathering held for this purpose, ensuring that each student received the correctly numbered survey. A specific script was provided, much like the administration of standardized tests (see Appendix G).

Students were specifically instructed NOT to put names on papers. Within 24 hours of the completion of the survey, the principal or school delegate mailed the completed forms directly to the researcher (postage was be paid by the researcher).

Concurrently, the principal sent a list of student names and grade point averages (GPAs) to the research assistant. The research assistant compiled a list of previously assigned student numbers and GPAs and sent that to the researcher. At no time did the researcher see student names and GPAs together; the researcher only saw the student numbers, the survey results and the associated GPAs.

### **Data Analysis**

The focus of the study was to determine whether there is a significant predictive relationship between high school grade point average (GPA) and the linear combination of understanding of homework purpose (as measured by the HPS), and in approach to homework management and in homework behaviors (as measured by the HMS). To analyze this question, a multiple regression (pending the meeting of all assumptions discussed below) was conducted to explore the relationship within this linear combination of variables amongst economically disadvantaged parochial high school students.

All data analysis was run using SPSS<sup>®</sup>, a statistical analysis software application. As described in the Instrument section, composite scores were computed for each participant by adding their responses on each of the questionnaire's subscales. Upon calculating individual

scores, the researcher screened the data for potential outliers and problematic data. Both a modified boxplot and a histogram were created within each scale, which the researcher used to evaluate the raw scores for significant deviations from the mean (greater than three standard deviations). As the method for collecting data should not result in any deviant points due to researcher error, all collected data points were considered in the multiple regression analysis.

Once data screening was complete, the researcher used SPSS<sup>®</sup> to conduct a multiple regression to predict grade point average (GPA) based on understanding of both homework purpose (HPS) and in the approach to homework management and in homework behaviors (HMS). The resultant regression coefficients and coefficient of determination were evaluated to determine the predictive value of each independent variable in regards to high school GPA.

The use of Hierarchical Linear Modeling (HLM) (as suggested by Raudenbush and Bryk, 1986) was considered, as this method of analysis would further account for nesting within the model. However, multiple regression analysis was chosen because the smallest acceptable number of groups in organizational and school research necessary for valid HLM analysis is 30 (Kreft & de Leeuw, 1998; Maas & Hox, 2005); the current analysis only has seven. Given that this analysis only has seven groups (each school is considered a group), HLM should not be used. An analysis of understanding of homework purpose using HLM and a larger number of groups should be considered for future studies.

Inherent in multiple regressions are four assumptions that must be met: Linearity, Reliability of Measurement, Homoscedasticity, and Normality (Osborne & Waters, 2002). In order to determine whether a linear relationship between the predictor and criterion variables exists, a bivariate scatterplot of variables was constructed and evaluated for evidence of curvature of other deviation from linearity (Box, Hunter, & Hunter, 2005).

Reliability of Measurement: Lack of reliable measurement methods may cause relationships among variables to be under-estimated (thus increasing the risk of Type II errors). In multiple regressions, effect sizes of alternative variables may be over-estimated, in the instance that the co-variate is not reliably measured (Osborne and Waters, 2002). Therefore, it is paramount that variables can be accurately measured without error. To establish reliability, Cronbach's alphas were evaluated (using SPSS<sup>®</sup>), with the goal of achieving reliability estimates greater than 0.8 (Nunnally, 1978). Homoscedasticity: Homoscedasticity is the goal of having similar variability among errors (residuals) across all relationships. Lack of homoscedasticity increases the possibility of Type I errors (Osborne and Waters, 2002). This assumption was evaluated by examining a residual (error) plot (created with SPSS<sup>®</sup>). A favorable plot would include residuals randomly scattered around the horizontal axis (a point exactly on the horizontal axis would indicate an error of zero at that x-value) for each of the x-values. Normality: Normality indicates that the residuals (predicted values minus actually observed values) follow an approximately Normal distribution (that the results, when graphed, will be shaped approximately like a bell-curve). SPSS<sup>®</sup> was employed to graph both a histogram and a normal probability plot, to verify that there were no significant outliers or large gaps in the data. Independent Observations: The observations within each variable must be independent. Independence was ensured by only using ten percent of the possible sample available, thereby preventing tremendous overlap of responses (e.g. everyone from one particular class may answer a certain way). Level of Measurement: The criterion variable (GPA) was measured using an interval scale, as was the predictor variables (combined scores on the HMS and HPS).

Once initial assumptions/conditions were evaluated, each variable's regression coefficient, average residual score, and coefficient of determination ( $r^2$ ) were also evaluated to

determine model fit. The following values were reported as part of the multiple regression: Descriptive statistics ( $M$ ,  $SD$ ), Number ( $N$ ), Degrees of freedom ( $df$ ), Correlation Coefficient ( $r$ ), Coefficient of determination ( $r^2$ ),  $F$  value ( $F$ ),  $p$ -value ( $p$ ), Regression equation including predicted slope ( $\beta$ ) and Standard Error of slope ( $SE_B$ ), and Power. As stated previously, an  $\alpha = 0.05$  (meaning a  $p$ -value indicating a significant result would be  $p < .05$ ) was used as the significance level indicating whether the null hypothesis should be rejected (Gall, Gall, & Borg, 2007).

## CHAPTER FOUR: FINDINGS

### Overview

Several significant correlations were found amongst the variable combinations when using student results on the *HPS* and *HMS* to predict Grade Point Average (GPA). Student results indicated that understanding of homework purpose and management occurs in a large range of levels, and results were widely varied by gender and ethnicity.

### Research Question

**RQ1:** Is there a significant predictive relationship between student *Grade Point Average (GPA)* and a linear combination of students' understanding of homework purpose as measured by the *Homework Purpose Scale (HPS)* and students' approach to homework management as measured by the *Homework Management Scale (HMS)* for economically disadvantaged parochial high school students?

### Null Hypothesis

**H<sub>0</sub>1:** There will be no predictive relationship between student *Grade Point Average (GPA)* and a linear combination of students' understanding of homework purpose as measured by the *Homework Purpose Scale (HPS)* and students' approach to homework management as measured by the *Homework Management Scale (HMS)* for economically disadvantaged parochial high school students.

### Descriptive Statistics

The following tables and descriptive statistics overview the correlations found (and not found) amongst all variables studied. Significant correlations were found between ethnicity of Hispanic Latino (“HL”) and the HMS composite score, race of Other (“OR”) and HMS, gender of Female (“F”) and the HPS composite score, the combination of ethnicity of non-



Hispanic/Latino (“NH”) and gender of F and HPS, the combination of grade 9 and ethnicity of HL and HMS, the combination of grade 9 and race of White (“W”) and HMS, and finally the combination of grade 9 and gender of Male (“M”) and HMS.

Table 1 includes summary statistics (sample size and resulting percentage of overall sample), including the breakdown of each Gender, Race, Ethnicity, and Grade that was evaluated (all variables previously defined in the “Definitions” section above).

Table 1  
*Summary Statistics of Sample Used, n = 452*

	Gender		Race		Ethnicity		Grade				
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%			
M	206	45.58%	A	16	3.54%	HL	262	57.96%	9	138	30.53%
F	246	54.42%	AI/AN	13	2.87%	NH	190	42.04%	10	106	23.45%
			B/AA	175	38.72%				11	102	22.57%
			NH/PI	2	0.44%				12	106	23.45%
			OR	177	39.16%						
			W	69	15.27%						

Table 2 contains descriptive statistics regarding the homework understanding and management measures that were used (HMS and HPS, plus the composite score for them added together), as well as student grade point averages (GPA). Included in these descriptive statistics are confidence intervals for the mean scores as well as common measures of center and spread.

Table 2

*Descriptive Statistics, n = 452*

<b>Descriptives</b>			Statistic	Std. Error
GPA	Mean		84.1057	.29767
	95% Confidence Interval for Mean	Lower Bound	83.5207	
		Upper Bound	84.6907	
	5% Trimmed Mean		84.4272	
	Median		84.8600	
	Variance		40.052	
	Std. Deviation		6.32866	
	Minimum		46.13	
	Maximum		98.71	
	Range		52.58	
	Interquartile Range		7.98	
	Skewness		-.993	.115
	Kurtosis		2.952	.229
	HPS Sum	Mean		30.367
95% Confidence Interval for Mean		Lower Bound	29.676	
		Upper Bound	31.059	
5% Trimmed Mean			30.515	
Median			31.000	
Variance			55.927	
Std. Deviation			7.4784	
Minimum			5.0	
Maximum			49.0	
Range			44.0	
Interquartile Range			11.0	
Skewness			-.325	.115
Kurtosis			.002	.229

HMS Sum	Mean		42.739	.4833
	95% Confidence Interval for Mean	Lower Bound	41.789	
		Upper Bound	43.689	
	5% Trimmed Mean		42.933	
	Median		43.000	
	Variance		105.595	
	Std. Deviation		10.2759	
	Minimum		10.0	
	Maximum		70.0	
	Range		60.0	
	Interquartile Range		14.0	
	Skewness		-.286	.115
	Kurtosis		-.051	.229
Comp	Mean		73.106	.7223
	95% Confidence Interval for Mean	Lower Bound	71.687	
		Upper Bound	74.526	
	5% Trimmed Mean		73.519	
	Median		74.000	
	Variance		235.816	
	Std. Deviation		15.3563	
	Minimum		15.0	
	Maximum		110.0	
	Range		95.0	
	Interquartile Range		22.0	
	Skewness		-.419	.115
	Kurtosis		.407	.229

Table 3 contains the (non-significant) correlations obtained when the interrelationships between student GPA and the homework scales were computed.

Table 3

*Bivariate and Partial Correlations of the Predictors with GPA, n = 452*

		<b>Correlations</b>		
		HPS Sum	HMS Sum	Comp
GPA	Pearson Correlation	.055	.049	.060
	Sig. (2-tailed)	.240	.299	.205
	N	452	452	452

Tables 4-6 include Regression and ANOVA results, and Regression Coefficients respectively. The Regression and ANOVA results include further information regarding the interrelationships between the homework scales and student GPA, and the Regression Coefficients include the predictive linear models that were computed based on the relationships between the variables under study.

Table 4

*Regression Results, n = 452*

<b>Model Summary<sup>b</sup></b>				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.061 <sup>a</sup>	.004	-.001	6.33095

a. Predictors: (Constant), HMS Sum, HPS Sum

b. Dependent Variable: GPA

Table 5

*ANOVA Results, n = 452*

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	67.074	2	33.537	.837	.434 <sup>b</sup>
	Residual	17996.328	449	40.081		
	Total	18063.402	451			

a. Dependent Variable: GPA

b. Predictors: (Constant), HMS Sum, HPS Sum

Table 6

*Regression Coefficients, n = 452*

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	90.0% Confidence Interval for B		Correlations			Collinearity Statistics	
	B	Std. Error	Beta			Lower Bound	Upper Bound	Zero-order	Partial	Part	Tolerance	VIF
(Constant)	82.279	1.454		56.59	.000	79.883	84.675					
HPS Sum	.035	.046	.041	.769	.442	-.040	.110	.055	.036	.036	.766	1.305
HMS Sum	.018	.033	.029	.539	.590	-.037	.072	.049	.025	.025	.766	1.305

a. Dependent Variable: GPA

## Results

Multiple linear regression analysis was used to develop a model for predicting high school achievement for economically disadvantaged parochial high school students from a linear combination of their understanding of homework purpose and approach to homework management. The analysis was conducted to evaluate how well their understanding of homework purpose (as measured by the Homework Purpose Scale (HPS) and their approach to homework management (as measured by the Homework Management Scale (HMS)) measure and predict high school achievement, as quantified by Grade Point Average (GPA). Basic summary statistics

are shown in Table 1, basic descriptive statistics are shown in Table 2, and regression results are shown in Tables 3-6.

The HPS/HMS surveys (see Appendix B) were given in two parts, with Part 1 containing 15 questions and part 2 containing 22 questions. Each question was scored on a Likert Scale with five score possibilities ranging from “Strongly Disagree” (scored as 0) through “Strongly Agree” (scored as 4). The questions were all written such that higher scores would indicate stronger homework behaviors. Results were summarized into separate total scores on Part 1 and Part 2. All answers were quantified as 0 through 4 and summed to give both a Part 1 (HPS) and Part 2 (HMS) composite score, again with a higher score indicating stronger overall homework behavior (see the “Instrumentation” section for further descriptions of the scales). Minimum possible scores on Part 1 (HPS) was a 0 (Strongly Disagreed with all questions), maximum possible score was 60 (Strongly Agreed with all Questions), again with a higher overall score indicating higher overall Understanding of Homework Purpose.

Prior to statistical analysis, the conditions of Linearity, Reliability of Measurement, and Normality were checked (Osborne & Waters, 2002). Linearity was confirmed by viewing scatterplots of HPS scores vs. GPA, HMS scores vs. GPA, and Combined scores vs. GPA. All were confirmed to show a non-curved relationship (Figures 1 and 2). Reliability of Measurement was confirmed via evaluation of Cronbach’s alpha for each measure; all were sufficiently large ( $>0.8$ ). Normality was evaluated by evaluating histograms of each measure (Figures 3-7); only one outlier was noted but it was determined to be a non-influential observation, as the calculations did not change significantly when it was removed. All conditions were met.

Figure 1: Scatterplot showing relationship between HPS Summary Score and GPA

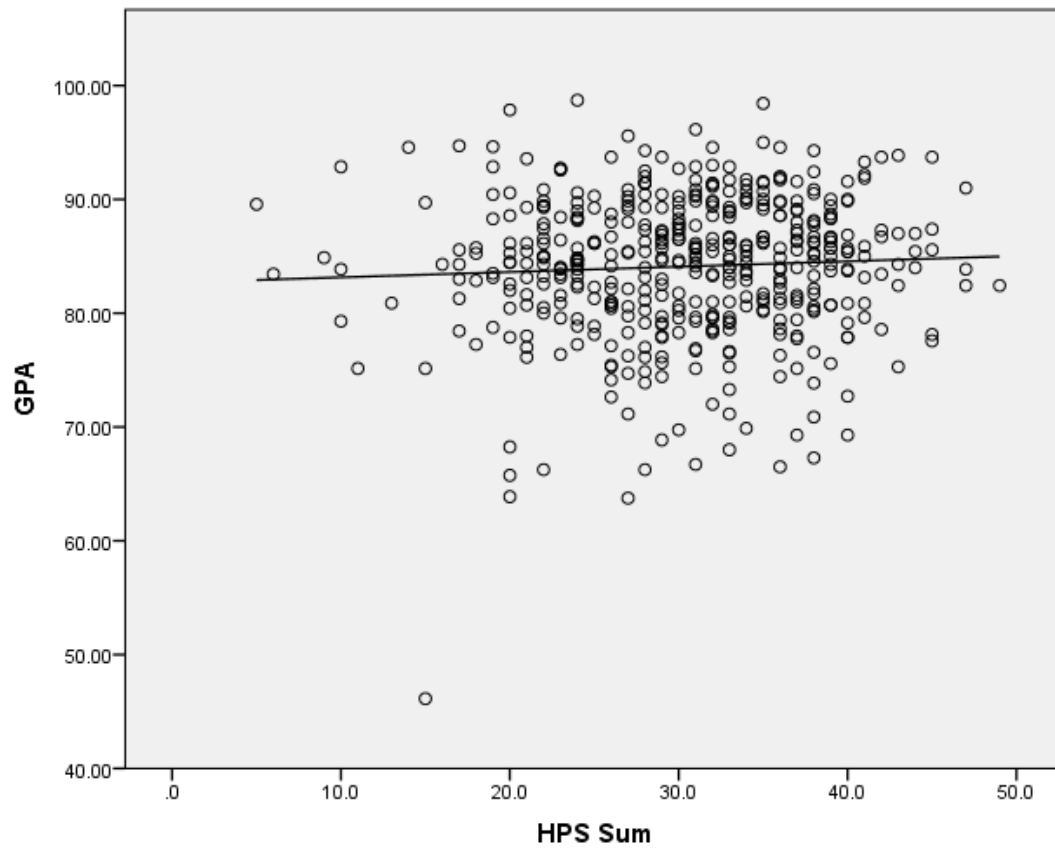


Figure 2: Scatterplot showing relationship between Composite Score and GPA

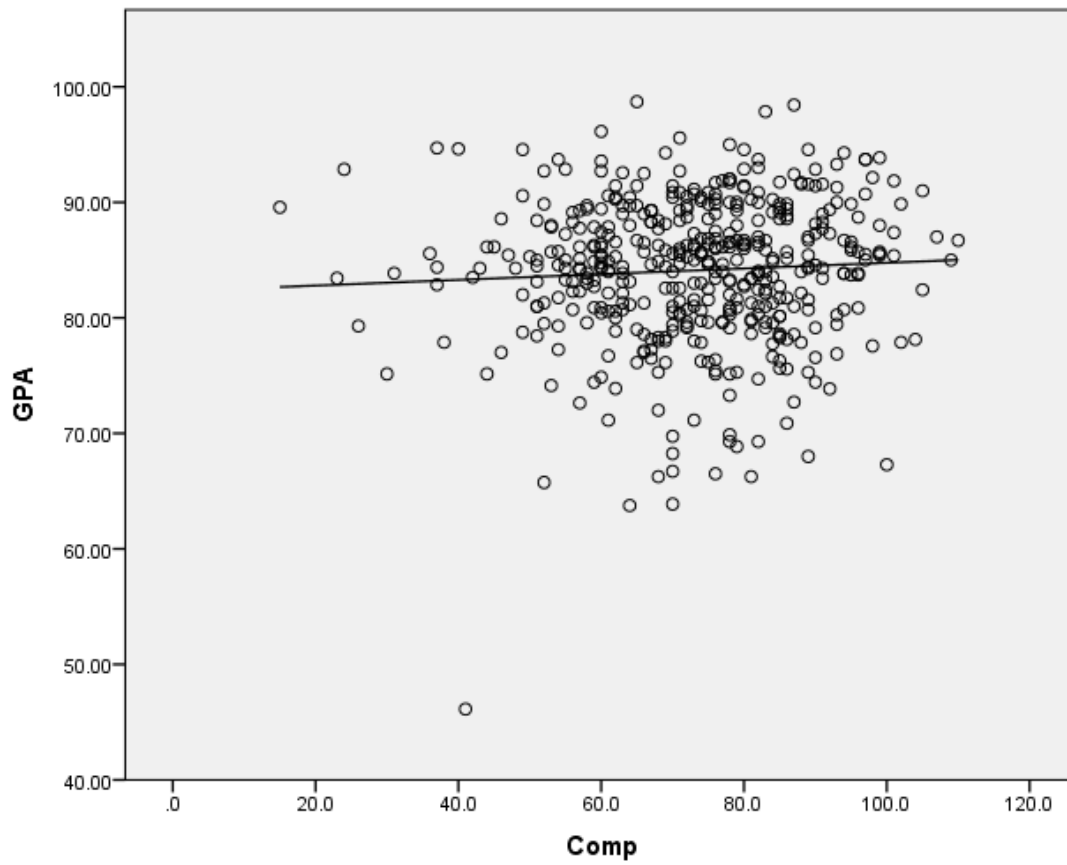




Figure 3: Histogram showing HPS Summary Score Frequency

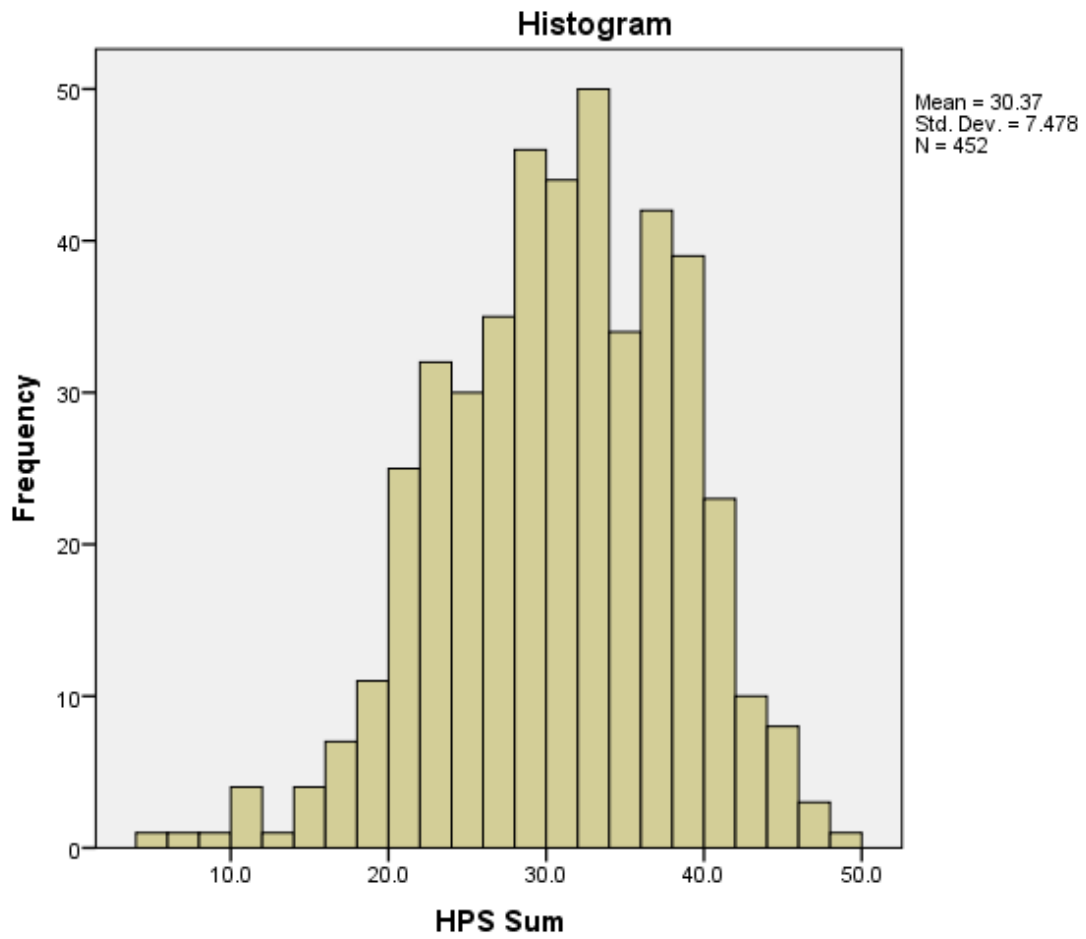


Figure 4: Histogram showing HMS Summary Score Frequency

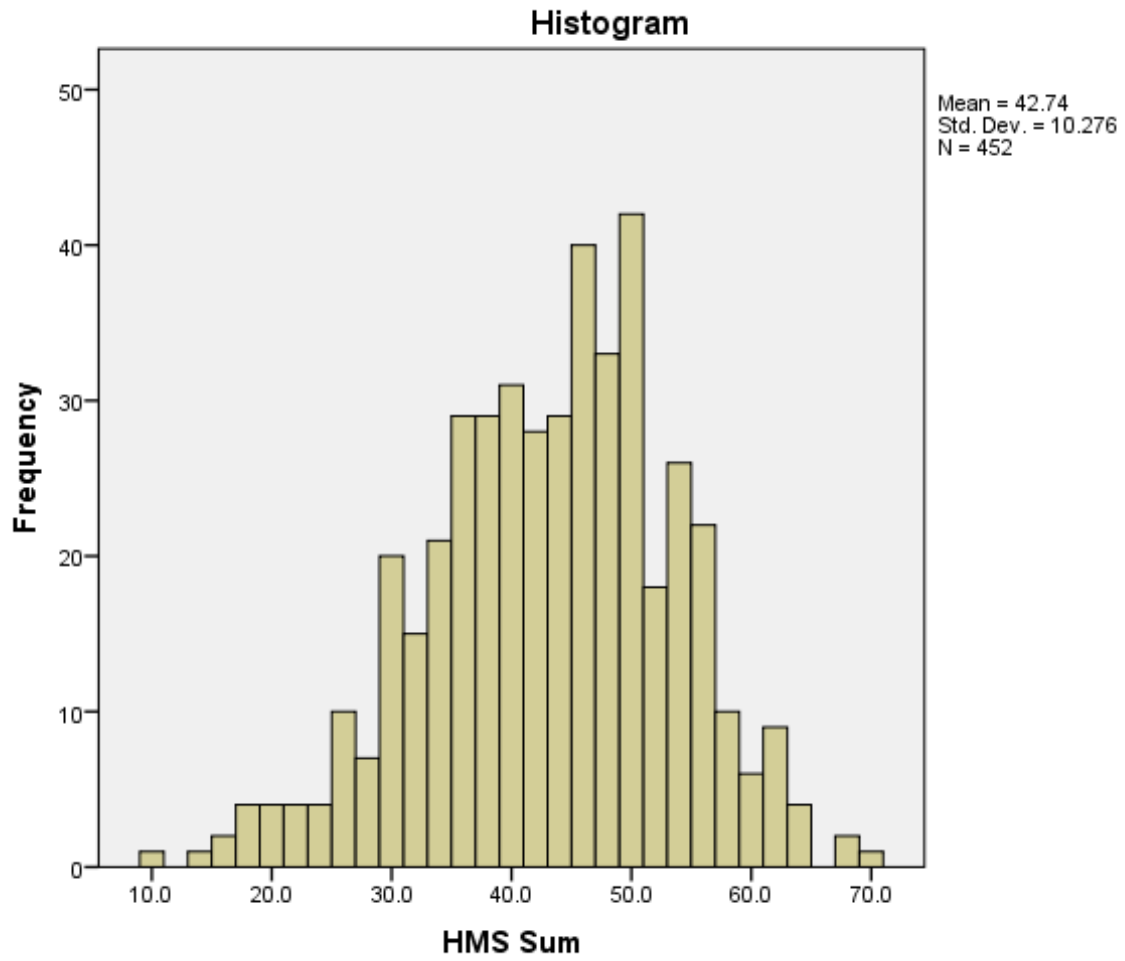


Figure 5: Histogram showing Composite Score Frequency

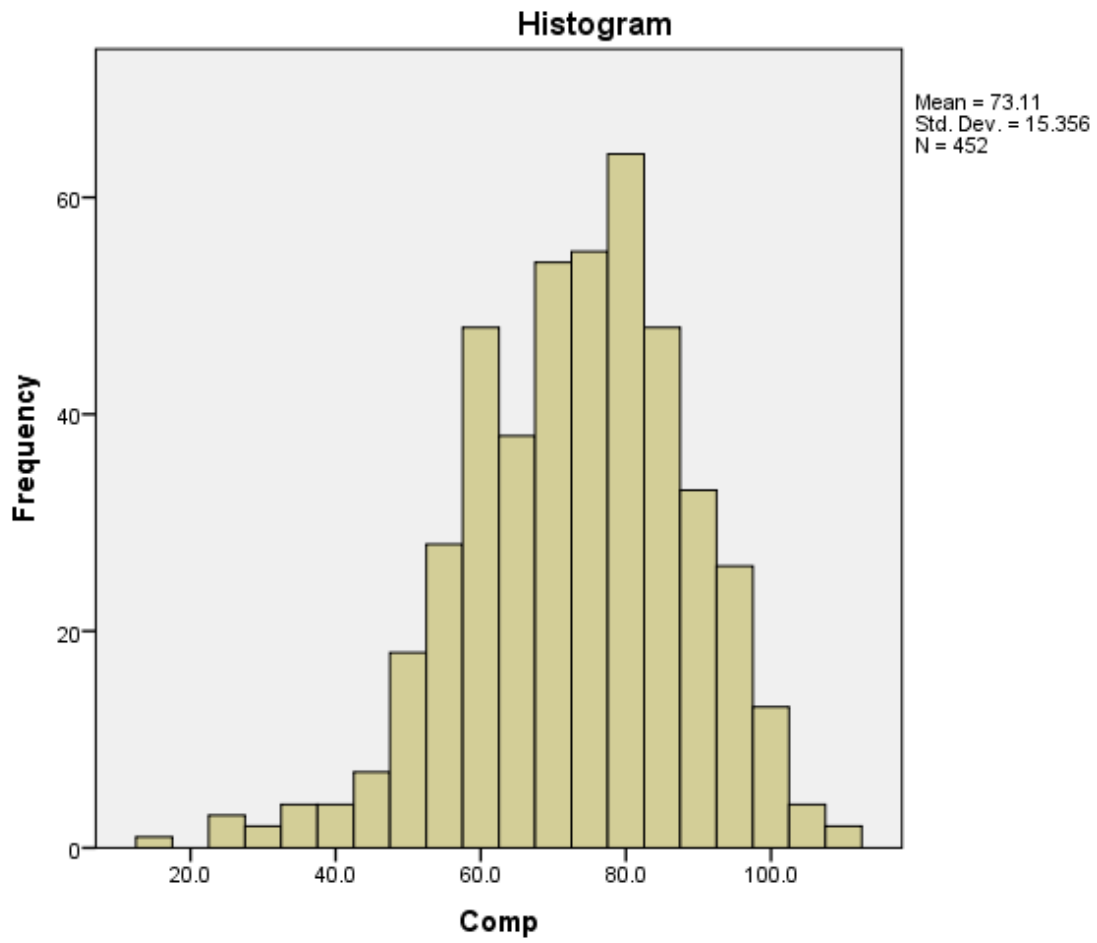


Figure 6: Regression Standardized Residual with GPA as Dependent Variable

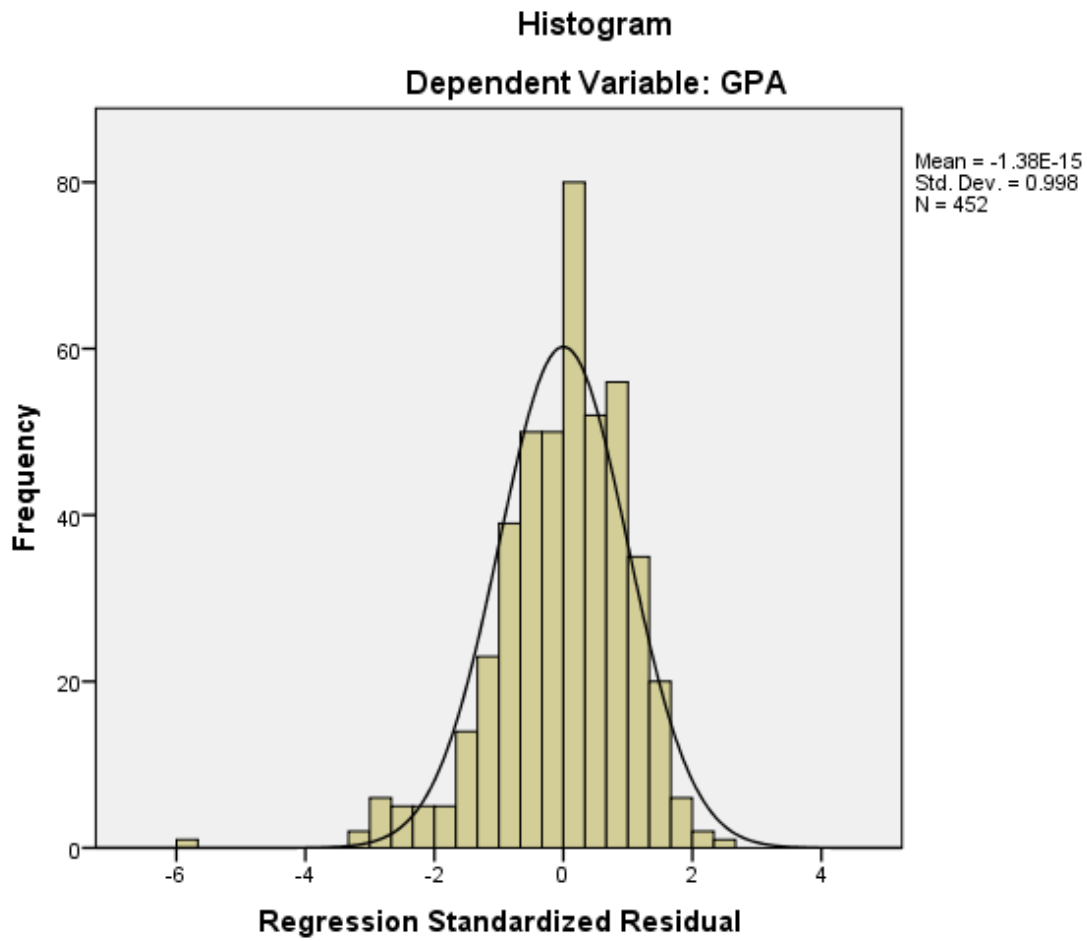
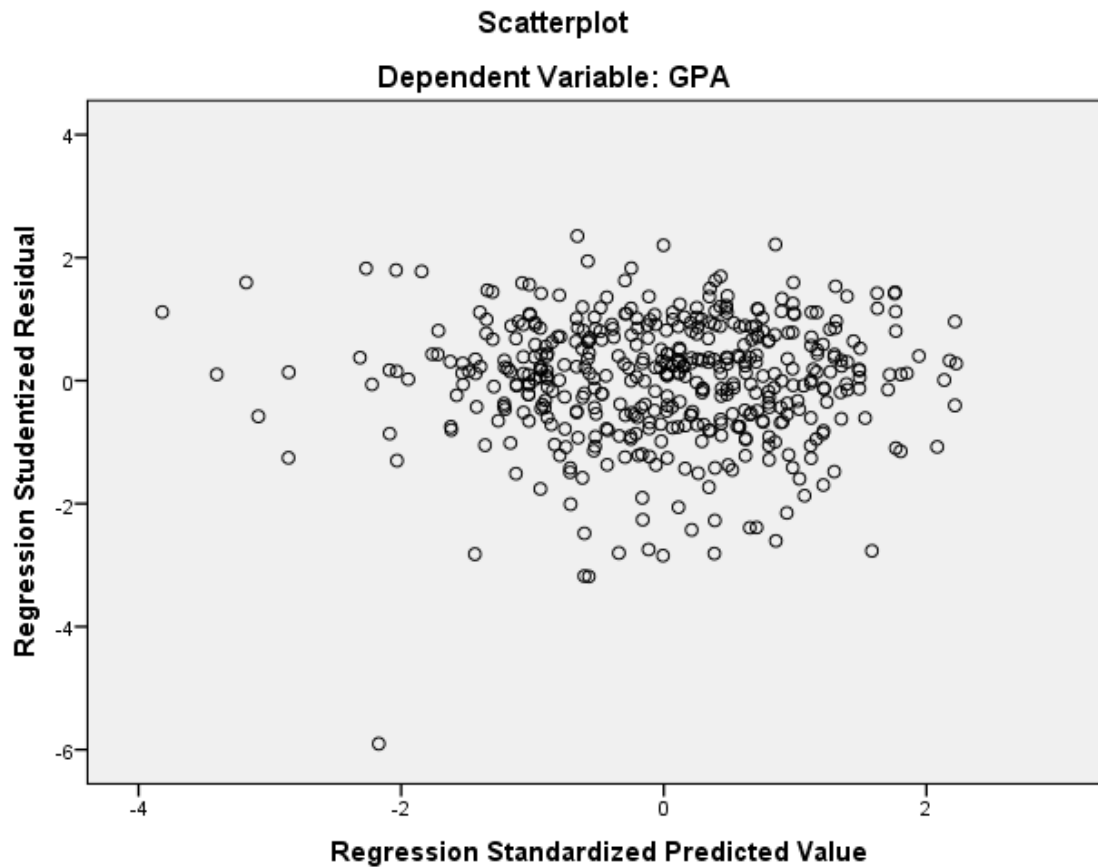


Figure 7: Residual Plot with GPA as Dependent Variable



The linear combination of HPS/HMS measures was not significantly related to achievement,  $F(2, 452) = .837, p = .434$  (not significant),  $r^2 = .004$  (full results in Table 4; regression results in Tables 5 and 6). The sample multiple correlation coefficient was .061, which indicates that approximately .4% of the variability in achievement from student to student can be accounted for by the linear combination of homework understanding/purpose measures.

The indices indicating the strength of each of the individual predictor variables are presented in Table 3; neither had a significant correlation with GPA when looked at as part of the full model. Based on this analysis, we fail to reject the null hypothesis (that there will be no predictive relationship between student GPA and a linear combination of students' understanding of homework purpose and approach to homework management).

Although the results were not significant when looked at as part of the model as a whole, when looked at sliced by the other variables collected (Ethnicity, Race, and Gender), several significant correlations were found. Significant correlations were found between ethnicity of Hispanic Latino (“HL”) and the HMS composite score, race of Other (“OR”) and HMS, gender of Female (“F”) and the HPS composite score, the combination of ethnicity of non-Hispanic/Latino (“NH”) and gender of F and HPS, the combination of grade 9 and ethnicity of HL and HMS, the combination of grade 9 and race of White (“W”) and HMS, and finally the combination of grade 9 and gender of Male (“M”) and HMS. Detailed analyses were not performed as part of evaluation of the results of this study; see the Ideas for Future Research section for additional discussion. (SPSS outputs included in Appendix H).

## **CHAPTER FIVE: CONCLUSIONS**

### **Overview**

The current study looked to determine whether there is a relationship between a student's understanding of and management of homework and the student's Grade Point Average (GPA) with a population of students from a low socio-economic background. The study sought to further the knowledge of factors that affect the achievement gap between students from higher and lower socioeconomic backgrounds. The results of the study suggest avenues for future research to continue the accumulation of knowledge concerning academic achievement with secondary school students from low socioeconomic backgrounds.

### **Discussion**

The purpose of this quantitative study was to determine whether high school Grade Point Average (GPA) could be predicted for economically disadvantaged high school students by a regression analysis of a combination of the predictor variables of a student's understanding of homework's purpose as measured by the Homework Purpose Scale (HPS) (Xu, 2011) and homework management behavior as measured by the Homework Management Scale (HMS) (Xu, 2008). This relationship was assessed to better understand the contradictory results in the literature regarding homework, in particular for students from a low socioeconomic background who have underachieved academically relative to other socioeconomic groups (Jeynes, 2009; Murnane, 2013).

Students from low socio-economic backgrounds face many academic and personal challenges in their lives, and economically disadvantaged students do not achieve academically to the level that students from families with higher incomes achieve; students from middle to

high-income families earn higher grades in high school than do their less economically well off peers, and there is an association between a student's socio-economic level and academic achievement (Berkowitz, Moore, Astor, & Benbenishty, 2017). Academic achievement at the secondary school level is important for college entrance, college persistence, and earnings beyond high school (French, Homer, Popovici, & Robins, 2014; Westrick, Le, Robbins, Radunzel, & Schmidt, 2015).

### **Research Question(s)**

**RQ1:** Is there a significant predictive relationship between student *Grade Point Average (GPA)* and a linear combination of students' understanding of homework purpose as measured by the *Homework Purpose Scale (HPS)* and students' approach to homework management as measured by the *Homework Management Scale (HMS)* for economically disadvantaged parochial high school students?

The current study sought to determine whether there is a relationship between a student from a low-socioeconomic background's Grade Point Average (GPA) is related to the student's understanding of homework's purpose and the student's management of homework. The relationship between understanding homework's purpose and homework management had been examined with urban and rural high school students, but had not been looked at with high school students from low socio-economic backgrounds.

The research question in this quantitative study was, Is there a significant predictive relationship between student Grade Point Average (GPA) and a linear combination of students' understanding of homework purpose as measured by the Homework Purpose Scale (HPS) and students' approach to homework management as measured by the Homework Management Scale (HMS) for economically disadvantaged parochial high school students?



Homework at the secondary level has been the subject of many studies with contradictory results concerning the effect homework has on academic achievement. In 2006, Cooper, Robinson, & Patall examined studies of homework conducted from 1987 to 2003 considering the effect of homework on achievement and concluded that the amount of homework students complete has a positive and statistically significant effect on achievement with the greatest effect occurring at the high school level (Cooper, Robinson, & Patall, 2006). Cooper et al. posited that one reason there is a stronger positive effect of homework on achievement at the secondary level versus elementary level is due to high school students' ability to selectively attend to distractions. Another reason the researchers suggest high school students' homework has a greater effect on achievement is due to the more mature and developed study strategies high school students possess in comparison to elementary school students.

Other researchers examined the general effect of homework on achievement on both grade point average and standardized tests in both 2009 and again in 2012 (Hattie, 2009; Kitsantas, Cheema, & Ware, 2011; Hattie, 2012). In Hattie's meta-analysis of homework studies, homework at the secondary level had a positive effect and concluded that homework is significantly tied to achievement at the high school level but is less associated with achievement at the elementary level. Kitsantas et al. examined high school students' achievement on an international test of mathematics administered to 15 year-old students. Their results demonstrated that homework had a positive effect on achievement when homework resources were available and when students had a sense of self-efficacy. Time spent completing homework did not significantly affect achievement.

A 2012 study by Maltese, Tai, and Fan sought to determine the effect homework has on achievement for 10<sup>th</sup> grade high school students, as determined by grades, versus the effect

homework has on standardized test achievement with the same population of students (Maltese, Tai, & Fan, 2012). Using data on achievement of 10<sup>th</sup> grade students between 1990 and 2002, the researchers looked at the amount of time students spent on homework and grade achievement in the subjects of science and math and the amount of time students spent on homework and achievement on standardized tests. Maltese et al. found no significant positive relationship between the amount of time students spent on homework and science and math achievement, as determined by grade point average. There was a strong positive relationship between the amount of time spent on homework and achievement on standardized tests.

Rønning, looked at whether students from higher or lower socio-economic levels benefited more from homework when looking at academic achievement in elementary school students (Rønning, 2011). The researcher determined that homework had a positive effect on academic achievement for students from high socio-economic levels, as determined by test scores, while the test scores of students from low socio-economic levels were unaffected whether or not homework was assigned. Significantly, the current research study looked only at the achievement of elementary school students; secondary school students were not a part of the study.

In a 2017 study, researchers examined homework's effect on school-wide achievement versus the achievement of individual students (Fernández-Alonso, Álvarez-Díaz, Suárez-Álvarez, & Múñez, 2017). A result of the study demonstrated that time spent completing homework has a positive effect on achievement at a school level but a negative effect on an individual level. In addition, schools that assign more homework have a wider variation in student achievement, possibly due to greater amounts of homework accentuating the differences

among students with home or academic challenges and students with greater home support and advantages.

There is a significant gap in the amount of time high school students from low socio-economic groups spend on homework versus the amount of time students from higher socio-economic groups spend completing homework; students from low socio-economic backgrounds spend less time completing homework than do their more economically advantaged peers (American Time Use Survey, 2016). Analysis of the data from the American Time Use Survey determined that while low-income students spent more time caring for family members and working than did their higher-income fellow students, the time spent working and/or caring for family members was not statistically significant in explaining the homework gap.

Students from low-income backgrounds spend less time on homework than do their higher-income peers (Fernandez-Alonzo & Suarez-Alvarez, 2015). In addition, students from low-socioeconomic backgrounds do not achieve to as high an academic level as do their peers from higher socio-economic backgrounds (Jeynes, 2009; Reardon, 2012; Murnane, 2013). The current study sought to determine whether students from low-socio-economic backgrounds understanding of homework's purpose and management of homework related to their achievement, as determined by their Grade Point Averages (GPAs).

### **Conclusions**

The relationship between student's understanding of and approach to homework and his or her high school Grade Point Average (GPA) was assessed in a population of 452 high school students from a low-socioeconomic background to determine the presence or absence of any statistical relationship. The results of the study determined that in this population there was no predictive relationship between student GPA and a linear combination of students' understanding

of homework purpose and approach to homework management. Neither variable had a significant correlation with GPA when looked at as part of the full model. Based on this analysis, we fail to reject the null hypothesis (that there will be no predictive relationship between student GPA and a linear combination of students' understanding of homework purpose and approach to homework management).

Few studies have investigated how well high school students, especially those who come from economically disadvantaged backgrounds, understand the purpose of homework or how well high school students manage homework and whether there is a relationship with these factors and academic performance (Bempechat, Li, Neier, Gillis, & Holloway, 2011). Beliefs and feelings concerning homework have swung from the extremes of considering it essential to educational achievement to believing it has no effect on learning and is a burden to students and families on the other (Cooper, Robinson, & Patall, 2006; Cooper & Valentine, 2001; Núñez, Suárez, Rosário, Vallejo, Valle, & Epstein, 2015).

With elementary students, Rønning (2011) looked at whether students from higher or lower socio-economic levels benefited more from homework when looking at academic achievement (Rønning, 2011). The researcher determined that homework had a positive effect on academic achievement for students from high socio-economic levels, as determined by test scores, while the test scores of students from low socio-economic levels were unaffected whether or not homework was assigned. Significantly, this research looked only at the achievement of elementary school students; secondary school students were not a part of the study. The failure to reject the null hypothesis for the current study appears to align with Rønning's results for the test population of students from low socioeconomic backgrounds.

## Implications

Homework management and completion is an area of academics rich with opportunity to help students increase the self-regulatory and non-cognitive skills necessary for academic success in high school, college, and beyond. High school GPA is a major factor in determining whether a college accepts or rejects a student applicant and is a predictor of college grade point average and college persistence (Belfield & Crosta, 2012). Despite fifty years of effort to close the achievement gap between low and high-income students, this gap is growing instead of shrinking (Huang, 2015). This gap is significant because students from a low-socioeconomic background perform more poorly on standardized tests, graduate from high school and college at lower rates, and earn less money over their lifetimes (Elias, White, & Stepney, 2014; Rouse & Barrow, 2016).

Social cognitive theorists believe that individuals do not behave in ways that are based simply on external factors; people have the capability to reflect on and to a certain extent control their thoughts, and as a result, have the ability to self-direct the outcome in achieving a goal (Bandura, 1991). According to research by social cognitive theorists, time management and planning for goal pursuit are important components of self-regulation skills and are also factors that are crucial to the completion of tasks. Individuals who cannot pay adequate attention to the timing of their actions cannot influence their actions (Bandura, 1977; Zimmerman, Bonner, & Kovach, 1996).

As students enter high school, they are expected to take more responsibility for their studying and learning, and ultimately their grades (Bandura, 1997). Students need to exercise self-regulation in order to plan for and carry out activities such as completing homework, so that they are prepared for tests and quizzes. A student's effectiveness in employing non-cognitive

skills and behaviors is directly related to the student's academic success (Farrington, Roderick, Allensworth, Nagaoka, Keyes, Johnson, & Beechum, 2012).

Many students, despite being in high school, may not have the self-regulatory skills to push through difficult academic tasks and monitor their own behaviors and responses to learning. These students may actively avoid academic tasks even when they understand that this avoidance will negatively affect their grades (Bembechat, Li, Neier, Gillis, & Holloway, 2011; Ramdass & Zimmerman, 2011). Students with a high-level of academic ability do not necessarily exhibit high levels of self-regulation and may not achieve high grades with a challenging curriculum when success requires completing homework and studying outside of school (Honken & Ralston, 2013).

While self-efficacy can be fostered and increased through academic achievement, research has demonstrated that self-efficacy is likely to be enhanced when students acquire knowledge and skills in the classroom, especially when teaching techniques such as explicit instruction are used (Martin, 2016). An in-school instructional approach that seeks to reduce the cognitive load for novice learners and reduce the chance of failure with difficult tasks can increase engagement and intrinsic motivation leading students, especially academically at-risk learners, to increased academic success (Martin, 2015). Homework is traditionally completed outside of school when the teacher is not available for questions or help when tasks are difficult. Additionally, parents may not have the expertise to help children who are struggling to complete academic tasks, especially at the secondary school level.

Students assigned homework to be completed, even when the purpose is clear and parents provide environments in which to do it, may not have the intrinsic motivation to complete the homework. Although students may possess self-regulation skills and have goals to achieve

academically, their desire to complete homework and to study may not be enough when students are tired, when tasks are cognitively demanding, or when students are stressed (Hagger, Wood, Stiff, & Chatzisarantis, 2010). Self-regulation can be depleted when students have been faced with too many tasks requiring their energy for self-control. For example, if students work at paying attention in class rather than daydreaming or talking, their self-regulation stores may be depleted by the time they need to do homework (Duckworth, Gendler, & Gross, 2014).

### **Limitations**

The HPS/HMS surveys were scored on a Likert Scale with five score possibilities ranging from “Strongly Disagree” through “Strongly Agree”. The measures were found to be valid with high school students (Xu, 2010), having acceptable Cronbach’s Alpha reliability coefficients (Xu, 2010). However, the survey answers were self-reported by each student which may produce results biased toward what the student believe about themselves or think is what is expected. For example, a study of how much time students actually spend completing homework versus the amount of time students believe they spend on their homework looked at groups of undergraduate students in an engineering course (Rawson, Stahovich, & Mayer, 2016).

One cohort self-reported the time they thought they had spent on homework while a second group used a smart-pen to complete the same assigned homework. The smart-pen recorded the actual time spent completing the same assignment. With the self-report cohort, there was no correlation found between the final course grades and the amount of time the group reported spending on homework. However, with the group that used the smart-pen there was a significant positive correlation between the course grades and time spent on homework. The researchers posited that time spent on homework is positively correlated with the course grades,

but self-reporting is problematic and not a reliable way of determining whether homework is correlated with academic achievement (Rawson, Stahovich, & Mayer, 2016).

The main conclusion looked at the population as a whole, finding that a linear combination of HPS/HMS measures was not significantly related to achievement,  $F(2, 452) = .837, p = .434$  (not significant),  $r^2 = .004$  (full results in Table 4; regression results in Tables 5 and 6). The sample multiple correlation coefficient was .061, which indicates that approximately .4% of the variability in achievement from student to student can be accounted for by the linear combination of the homework understanding/homework purpose measures. Other population data were gathered (Ethnicity, Race, and Gender), but outside the scope of the study. The correlations found will be discussed in the Recommendations for Future Research section.

### **Recommendations for Future Research**

Although the results were not significant when looked at as part of the model as a whole, when looked at sliced by the other variables collected (Ethnicity, Race, and Gender), several significant relationships were found. Associations were found between ethnicity of Hispanic Latino (“HL”) and the HMS composite score, race of Other (“OR”) and HMS, gender of Female (“F”) and the HPS composite score, the combination of ethnicity of non-Hispanic/Latino (“NH”) and gender of F and HPS, the combination of grade 9 and ethnicity of HL and HMS, the combination of grade 9 and race of White (“W”) and HMS, and finally the combination of grade 9 and gender of Male (“M”) and HMS. Detailed analyses were not performed as part of evaluation of the results of this study, but are areas of potential interest for future research.

Additionally, other factors that have been found to have an effect on academic performance should be studied in the population of students from a low-socioeconomic background. For example, it is important for the students to have someone they can rely on for



guidance in learning self-regulation strategies as well as to model self-regulated learning; typically in the school setting this expert is a teacher who works with students to develop their self-regulated learning strategies within the classroom and to transfer them to their home environment when studying and completing homework (Dignath & Büttner, 2008). This is particularly important in economically disadvantaged environments, as students may already be starting with academic disadvantages and need to make up ground in regards to developing self-regulation (Evans & Rosenbaum, 2008). Self-regulation skills may or may not be directly taught in elementary school, and too many students fail to develop self-regulatory skills on their own as they progress throughout the lower grades and middle school; students without appropriate self-regulation skills can arrive in high schools unable to make the academic choices that will lead to academic achievement (Bempechat, Li Neier, Gillis, & Holloway, 2011).

## REFERENCES

- Abar, B., Carter, K. L., & Winsler, A. (2009). The effects of maternal parenting style and religious commitment on self-regulation, academic achievement, and risk behavior amount African-American parochial college students. *Journal of Adolescence*, *32*(2), 259-273. doi:10.1016/j.adolescence.2008.03.008
- Abdellah, R. (2015) Metacognitive awareness and its relation to academic achievement an teaching performance of pre-service female teachers in Ajman University in UAE. *Procedia – Social and Behavioral Sciences*, *174*(12), 560-567.  
doi:10.1016/j.sbspro.2015.01.707
- Aldous, J. (2006). Family, ethnicity, and immigrant youths' educational achievements. *Journal of Family Issues*, *27*, 1633-1667. doi: 10.1177/0192513X06292419
- Allensworth, E. M. (2013). The use of ninth-grade early warning indicators to improve Chicago schools. *Journal of Education for Students Placed at Risk (JESPAR)*, *18*(1), 68-83. doi: 10.1080/10824669.2013.745181
- Allensworth, E. M. (2011). *The costs of academic rigor: Supports for improving student achievement*. Chicago, IL: University of Chicago, Consortium on Chicago School Research. Retrieved from <http://www.consortium.uchicago.edu>
- Allensworth, E.M., & Easton, J. Q. (2007). *What matters for staying on-track and graduating in Chicago Public High Schools: A close look at course grades, failures, and attendance in the freshman year*. Chicago, IL: University of Chicago, Consortium on Chicago School Research. Retrieved from <http://files.eric.ed.gov/fulltext/ED498350.pdf>
- Ary, D., Jacobs L. C., & Sorenson, C. (2010). *Introduction to research in education* (8th ed.). Belmont, CA: Wadsworth.

- Aud, S., Hussar, W., Johnson, F., Kena, G., Roth, E., Manning, E., & Zhang, J. (2012). *The Condition of Education 2012*. (NCES 2012-045). Washington, DC: National Center for Education Statistics. Retrieved from <http://nces.ed.gov/pubsearch>
- Aud, S. KewalRamani, A., & Frohlich, L. (2011). *Youth indicators 2011; America's Youth: Transitions to Adulthood*. (NCES 2012-026). U.S. Department of Education, National Center for Education Statistics. Washington, DC: U.S. Government Printing Office.
- Bakracevic Vukman, K., & Kucardim N, (2010). How cognitive, metacognitive, motivational, and emotional self-regulation influence school performance in adolescence and early adulthood. *Educational Studies*, 36(3), 259-268. doi: 10.1080/03055690903180376
- Bailey, M. J., & Dynarski, S. M. (2011a). *Gains and gaps: Changing inequality in U.S. college entry and completion*. NBER Working Paper No. 17633. doi: 10.3386/w17633
- Bailey, M. J., & Dynarski, S. M. (2011b). Inequality in postsecondary attainment. In G. Duncan and R. Murnane (Eds.), *Whither Opportunity: Rising Inequality, Schools, and Children's Life Chances*. (pp. 117-132). New York: Russell Sage Foundation
- Balfanz, R. (2009). Putting middle grades students on the graduation path: A policy and practice brief. Westerville, OH: National Middle School Association.
- Bandura, A. (1977). Self-efficacy: Toward a unifying theory of behavioral change. *Psychological Review*, 84(2), 191-215. Retrieved from <http://dx.doi.org/10.1037/0033-295X.84.2.191>
- Bandura, A. (1986). *Social foundations of thought and action: A social cognitive theory*. Englewood cliffs, NJ: Prentice Hall.
- Bandura, A. (1991). Social cognitive theory of self-regulation. *Organizational Behavior and Human Decision Processes*, 50, 248-287. doi: doi:10.1016/0749-5978(91)90022-L

- Bandura, A. (1994). Self-efficacy. In V. S. Ramauchadran (Ed.), *Encyclopedia of human behavior* ( Vol. 4, pp.71-81). New York: Academic Press. Retrieved from <http://www.des.emory.edu/mfp/BanEncy.html>
- Bandura, A., & Cervone, D. (1983). Differential engagement of self-reactive influences in cognitive motivation. *Organizational Behavior and Human Decision Processes*, 38(1), 92-113. doi:10.1016/0749-5978(86)90028-2
- Bandura, A., & Jourden, F. J. (1991). Self-regulatory mechanisms governing social-comparison effects on complex decision making. *Journal of Personality and Social Psychology*, 60(6), 941-951. Retrieved from <http://dx.doi.org/10.1037/0022-3514.60.6.941>
- Bandura, A., & Simon, K. M. (1977). The role of proximal intentions in self-regulations of refractory behavior. *Cognitive Theory and Research*, 1, 177-193. doi: 0.1007/BF01186792
- Beishuizen, J., & Steffens, K. (2011). A conceptual framework for research of self-regulated learning. In R. Carneiro, P. Lefrere, K. Steffens, K. & J. Underwood (Eds.), *Self-regulated Learning in Technology Enhanced Learning Environments: A European Perspective*. Rotterdam: Sense Publishers.
- Belfield, C. R., & Crosta, P. M. (2012). *Predicting success in college: The importance of placement tests and high school transcripts*. (CCRC Working Paper No. 42). New York, NY: Columbia University, Teachers College, Community College Research Center.
- Bembenutty, H. (2009). Self-regulation of homework completion. *Psychology Journal*, 6(4), 138-153.
- Bembenutty, H. (2011). Meaningful and maladaptive homework practices: The role of self-efficacy and self-regulation. *Journal of Advanced Academics*, 29(3), 448-473. doi:

10.1177/1932202X1102200304

Bembenuddy, H. (2011). The last word: An interview with Harris Cooper – Research, policies, tips, and current perspectives on homework. *Journal of Advanced Academics*, 22, 342-351. doi: 10.1177/1932202X1102200207

Bempechat, J. (2004). The motivational benefits of homework: A social-cognitive perspective. *Theory into Practice*, 43(3), 189-196. doi: 10.1207/s15430421tip4303\_4

Bempechat, J, Li, H., Neier, S. M., Gillis, C. A., & Holloway, S. D. (2011). The homework experience: Perceptions of low-income youth. *Journal of Advanced Academics*, 22(2), 250-278. doi: 10.1177/1932202X1102200204

Berkowitz, R., Moore, H., Astor, R. A., & Benbenishty, R. (2017). A research synthesis of the associations between socioeconomic background, inequality, school climate, and academic achievement. *Review of Educational Research*, 87(2), 425-469. doi: 10.3102/0034654316669821

Biemiller, A., Shany, M., Inglis, A., & Meichenbaum, D. (1998). Factors influencing children's acquisition and demonstration of self-regulation on academic tasks. In D. Schunk, & B. Zimmerman (Eds.), *Self-regulated learning* (pp. 203-224). London: The Guilford Press.

Blackwell, L., Trzesniewski, K. H., & Dweck, C. S. (2007). Implicit theories of intelligence predict achievement across an adolescent transition: A longitudinal study and an intervention. *Child Development*, 78(1), 246-263. doi: 10.1111/j.1467-8624.2007.00995.x

Blair, C. & Diamond, A. (2008). Biological processes in prevention and intervention: The promotion of self-regulation as a means of preventing school failure. *Development and Psychopathology*, 20, 899-911. doi: 10.1017/S0954579408000436

- Bottoms, G. (2008). Redesigning the ninth-grade experience: *Reduce failure, improve achievement, and increase high school graduation rates*. Atlanta, GA: Southern Regional Education Board. Retrieved from [publications.sreb.org/2008/08v06\\_9th-grade\\_redesign.pdf](http://publications.sreb.org/2008/08v06_9th-grade_redesign.pdf)
- Bouffard-Bouchard, T. (1990). Influence of self-efficacy on performance in a cognitive task. *Journal of Social psychology, 130*(3), 353-363. doi: 10.1080/00224545.1990.9924591
- Bowen, W. G., Chingos, M. M., & McPherson, M. S. (2009). Test scores and high school grades as predictors. *Crossing the finish line: Completing college at America's public universities*, 112-122. Princeton, NJ: Princeton University Press.
- Box, G., Hunter, W., & Hunter, J. S. (2005). *Statistics for experimenters: Design, innovation, and discovery* (2<sup>nd</sup> ed.). Hoboken, NJ: John Wiley & Sons, Inc.
- Bransford, J. D., Brown, A. L., & Cocking, R. R. (2004). *How people learn: Brain, mind, experience, and school*. Committee on Learning Research and Educational Practice. Washington D.C.: National Academy Press.
- Bryan, T. & Nelson, C. (1994). Doing homework: Perspectives of elementary and middle school students. *Journal of Learning Disabilities, 27*. 488-499. doi: 10.1177/002221949402700804
- Bureau of Labor Statistics. (2015). *Earnings projections*. Retrieved from [http://www.bls.gov/emp/ep\\_chart\\_001](http://www.bls.gov/emp/ep_chart_001)
- Bureau of Labor Statistics. (2017). American time use survey – 2016 results. Retrieved from <https://www.bls.gov/news.release/pdf/atus.pdf>
- Busch, A. M., Uebelacker, L. A., Kalibatseva, Z., & Miller, I. W. (2010). Measuring homework completion in behavioral activation. *Behavior Modification, 34*(4), 310-329. doi:

10.1177/0145445510373384

- Chetty, R., Stepner, M., & Abraham, M. (2016). The association between income and life expectancy in the United States. *Journal of the American Medical Association, 315*(16), 1750-1756. doi: 10.1001/jama.4226
- Clarebout, G., Horz, H., & Schnotz, W. (2010). The relations between self-regulation and the embedding of support in learning environments. *Educational Technology Research and Development, 58*(5), 573-587. doi: 10.1007/s11423-009-9147-4
- Council for American Private Education (2008). *Cape outlook: Voice of America's private schools, 339*. Retrieved from <http://www.capenet.org>.
- Carnavale, A. P., Rose, S. J. & Cheah, B. (2011). *The college payoff: Education, occupations, lifetime earnings*. Washington, DC: Georgetown University Center on Education and the Workforce. Retrieved from [www.9.georgetown.edu/grad/ggpi/hpi/cew/pdfs/collegepayoff-complete.pdf](http://www9.georgetown.edu/grad/ggpi/hpi/cew/pdfs/collegepayoff-complete.pdf)
- Chapman, C., Laird, J., Ifill, N., & KewallRamani, A. (2011). *Trends in high school dropout and completion rates in the United States: 1972-2009* (NCES 2012-006). U.S. Department of Education. Washington, DC: National Center for Education Statistics. Retrieved from <http://nces.ed.gov/pubsearch>.
- Cheng, E. (2011). The role of self-regulated learning in enhancing learning performance. *The International Journal of Research and Review, 6*(1), 1-16.
- Choy, S. C., & Cheah, P. K. (2009). Teacher perceptions of critical thinking among students and its influence on higher education. *International Journal of Teaching and Learning in Higher Education, 20*(2), 198-206.
- Clarebout, G., Horz, H., & Schnotz, W. (2010). The relations between self-regulation and the

- embedding of support in learning environments. *Educational Technology Research and Development* 58(5), 573-587.
- Cohen, J., & Cohen, P. (1983). *Applied multiple regression/correlation analysis for the behavioral sciences*. Hillsdale, NJ: Lawrence Erlbaum Associates, Inc.
- Cohen, J. S., & Smerdon, B. A. (2009). Tightening the dropout tourniquet: Easing the transition from middle to high school. *Preventing School Failure*, 53(3), 177-184.
- Conley, D. (2013). *College and career ready and the common core: What everyone needs to know*. Portland, OR: Educational Policy Improvement Center.
- Conley, D. (2007). *Redefining college readiness*. Eugene, OR: Educational Policy Improvement Center.
- Cooper, H. (1989). Synthesis of research on homework. *Educational Leadership*, 47(3), 85-91.
- Cooper, H. (2007). *The battle over homework: Common ground for administrators, teachers, and parents*. Thousand Oaks, CA: Corwin Press.
- Cooper, H. (2009). *Research synthesis and meta-analysis: step by step approach* (4<sup>th</sup> ed.). Thousand Oaks, CA: Sage.
- Cooper, H. Lindsey, J., Nye, B., & Greathouse, S. (1998). Relationships among attitudes about homework, amount of homework assigned and completed, and student achievement. *Journal of Educational Psychology*, 90,(1) 70-83. Retrieved from <http://dx.doi.org/10.1037/0022-0663.90.1.70>
- Cooper, H., Robinson, J. C., & Patall, E. A. (2006). Does homework improve academic achievement: A synthesis of research, 1987-2003. *Review of Educational Research*, 76(1), 1-62. doi: 10.3102/00346543076001001



- Cooper, H. M. & Valentine, J. C. (2001). Using research to answer practical questions about homework. *Educational Psychologist*, 36(3), 143-153. doi: 10.1207/S15326985EP3603\_1
- Corpus, J. H., McClintic-Gilbert, M. S., & Hayenga, A. O. (2009). Within-year changes in children's intrinsic and extrinsic motivational orientations: Contextual predictors and academic outcomes. *Contemporary Educational Psychology*, 34(2), 154-166. doi: doi:10.1016/j.cedpsych.2009.01.001
- Credé, M., & Kuncel, N. R. (2008). Study habits, skills, and attitudes: The third pillar supporting collegiate academic performance. *Perspective on Psychological Science*, 3, 425-453. Retrieved from <http://dx.doi.org/10.1111/j.1745-6924.2008.0089.x>
- Dettmers, S., Trautwein, U., Ludtke, O., Kunter, M., & Baumert, J., (2010). Homework works if homework quality is high: Using multilevel modeling to predict the development of achievement in mathematics. *Journal of Educational Psychology*, 102, 467-482. doi: 10.1037/a0018453
- Diamond, A., & Lee, K. (2011). Interventions shown to aid executive function development in children 4 to 12 years old. *Science*, 333(6045), 959-964. doi: 10.1126/science.1204529
- Dignath, C. & Büttner, G. (2008). Components of fostering self-regulation learning among students. A meta-analysis on intervention studies at primary and secondary school level. *Metacognition and Learning*, 3, 231-264. doi: 10.1007/s11409-008-9020-x
- Dignath-van Ewijk, C., & van der Werf, G. (2012). What teachers think about self-regulated learning: investigating teacher beliefs and teacher behavior of enhancing students' self-regulation. *Education Research International*, 2012. doi: 10.1155/2012/741713.
- Duckworth, A. L., & Carlson, S. M. (2013). Self-regulation and school success. In B. W. Sokol,

- F. M. E. Grouzet, & U. Muller (Eds.). *Self-regulation and autonomy: Social and developmental dimensions of human conduct* (pp. 208-230). New York: Cambridge University Press.
- Duckworth, A. L., Gendler, T. S., & Gross, J. J. (2014). Self-control in school-age children. *Educational Psychologist, 49*(3), 199-217. doi: 10.1080/00461520.2014.926225
- Duckworth, A. L., Grant, H., Loew, B., Oettingen, G., & Gollwitzer, P. M. (2010). Self-regulation strategies improve self-discipline in adolescents: Benefits of mental contrasting and implementation intentions. *Educational Psychology, 31*(1), 17-26. doi: 10.1080/01443410.2010.506003
- Duckworth, A. L., Kirby, T. A., Gollwitzer, A., & Oettingen, G. (2013). From fantasy to action: Mental contrasting with implementation intentions (MCII) improves academic performance in children. *Social Psychological and Personality Science, 0*(0), 1-9. doi: 10.1177/1948550613476307
- Duckworth, A. L., Peterson, C., Matthews, M. D., & Kelly, D. R. (2007). Grit: Perseverance and passion for long-term goals. *Journal of Personality and Social Psychology, 92*(6), 1087-1101. doi: 10.1037/0022-3514.92.6.1087
- Duckworth, A. L., Quinn, P. D., & Tsukayama, E. (2012). What *No Child Left Behind* leaves behind: The roles of IQ and self-control in predicting standardized achievement test scores and report card grades. *Journal of Educational Psychology, 104*(2), 439-451. doi: 10.1037/a0026280
- Duckworth, A. L. & Seligman, M. E. P. (2005). Self-discipline outdoes IQ in predicting academic performance of adolescents. *Psychological Science 16*(2), 939-944. doi: 10.1111/j.1467-9280.2005.01641.x

- Duckworth, A. L., Tsukayama, E., & May, H. (2013). Establishing causality using longitudinal hierarchical linear modeling: An illustration predicting achievement from self-control. *Social Psychological and Personality Science*, *1*, 311-317. doi: 10.1177/1948550609359707
- Dumont, H., Trautwein, U, Ludtke, O., Neumann, M., Niggli, A., & Schnyder, I. (2012). Does parental homework involvement mediate the relationship between family background and educational outcomes? *Contemporary Educational Psychology*, *37*, 55-69. doi: 10.1016/j.cedpsych.2011.09.004
- Dweck, C. S. (1999). *Self-theories: Their role in motivation, personality, and development*. Philadelphia, PA: Psychology Press.
- Dweck, C. S. & Leggett, E. L. (1988). A social-cognitive approach to motivation and personality. *Psychological Review*, *95*(2), 256-273. Retrieved from <http://dx.doi.org/10.1037/0033-295X.95.2.256>
- Dweck, C., Walton, G. M., & Cohen, G. L. (2011). *Academic tenacity: Mindsets and skills that promote long-term learning*. Gates Foundation. Seattle, WA: Bill and Melinda Gates Foundation.
- Easton, J. Q., & Bennett, A. (1989). *Homework in different types of schools*. Paper presented at the annual meeting of the Educational Research Association, San Francisco, CA. (ERIC Document Reproduction Service No. ED398256).
- Eker, C. (2013). The effect of given homework upon the instruction of self-regulation strategies that were directed to develop self-regulation strategies. *Educational Research and Reviews*, *8*(19), 1804-1809. doi: 10.589/ERR2013.1570

- Elias, M. J., White, G., & Stepney, C. (2014). Surmounting the challenges of improving academic performance: Closing the achievement gap through social-emotional and character development. *Journal of Urban Learning, Teaching, and Research, 10*, 14–24. Retrieved from <https://files.eric.ed.gov/fulltext/EJ1044191.pdf>.
- Elstad, E., & Turmo, A. (2010). Students' self-regulation and teacher's influence in science: Interplay between ethnicity and gender. *Research in Science & Technological Education, 28*(3), 249-260. doi: 10.1080/02635143.2010.501751
- Engle, J. (2007). Post-secondary access and success for first-generation college students. *American Academic, 3*(1), 25-48. Retrieved from <http://hdl.voced.edu.au/10707/328327>.
- Epstein, J. L. & Van Voorhis, F. L. (2001). More than minutes: Teachers' roles in designing homework. *Educational Psychologist, 36*(3), 181-193. doi: 10.1207/S15326985EP3603\_4
- Espenshade, T. J. & Chung, C. Y. (2010). *Standardized admission tests, college performance, and campus diversity*. Office of Population Research, Princeton University.
- Evans, G. W., & Rosenbaum, J. (2008). Self-regulations and the income-achievement gap. *Early Childhood Research Quarterly, 23*, 504-514. doi:10.1016/j.ecresq.2008.07.002
- Farrington, M. R., Allensworth, E., Nagaoka, J., Keyes, T. S., Johnson, D., & Beechum, N. (2012). Teaching adolescents to become learners: The role of non-cognitive factors in shaping school performance: A critical literature review. Chicago, IL: University of Chicago Consortium on Chicago School Research.
- Fernández-Alonso, R., & Suárez-Álvarez, J. (2015). Adolescents' homework performance in mathematics and science: Personal factors and teaching practices. *Journal of Educational Psychology, 107*(4), 1075-1085. Retrieved from <http://dx.doi.org/10.1037/edu0000032>

- Fernández-Alonso, R., Álvarez-Díaz, M., Suárez-Álvarez, J., Múniz, J. (2017). Students' achievement and homework assignment strategies. *Frontiers in Psychology*, 8, 266. doi: 10.3389/fpsyg.2017.00286
- French, M. T., Homer, J. F., Popovici, I., & Robins, P. K. (2014). What you do in high school matters: High school GPA, educational attainment, and labor market earnings as a young adult. *Eastern Economic Journal*. doi: 10.1057/ej.2014.22
- Gall, M. D., Gall, J. P., & Borg, W. R. (2007). *Educational research: An introduction*. Boston, MA: Allyn & Bacon.
- Galla, B. M., & Duckworth, A. L. (2015). More than resisting temptation: Beneficial habits mediate the relationship between self-control and positive life outcomes. *Journal of Personality and Social Psychology*. Advance online publication. <http://dx.doi.org/10.1037/pspp0000026>
- Geiser, S. & Santelices, M. V. (2007). *Validity of high-school grades in predicting student success beyond the freshman year: High-school record vs. standardized tests as indicators of four-year college outcomes*. Center for Studies in Higher Education. Research & Occasional Paper Series: CSHE.6.07
- Georgia's Student Finance Commission. (2012). FIOPE Scholarship Program at public institutions: Regulations-100. 2012-2013 Award year. Retrieved from <http://www.gsfc.org/Main/publishing/pdf2012/2013-HOPE-PUBLIC.pdf>
- Gershenson, S., & Holt, S. (2014). Demographic and socioeconomic difference in high school students' non-school study time. Department of Public Administration and Policy School of Public Affairs, American University. Washington D.C.
- Gettinger, M., & Seibert, J. K. (2002). Contributions of study skills to academic competence.

- School Psychology Review*, 31(30), 350-365. Retrieved from <http://www.citeseerx.ist.psu.edu>
- Gill, B. P., & Schlossman, S. L. (2000). The lost cause of homework reform. *American Journal of Education*, 109, 27-62. Retrieved from <http://www.jstor.org/stable/1085422>
- Gill, B. P., & Schlossman, S. L. (2004). Villain or savior? The American discourse on homework, 1850-2003. *Theory into Practice*, 43, 174-181. doi:10.1207/s15430421tip4303\_2
- Ginsburg, A., & Chudowsky, N. (2012). Time for learning: An exploratory analysis of NAEP data. *Digest of Education Statistics*. Retrieved from <https://nces.ed.gov/nationsreportcard/naepdata/>
- Goodman, V. (2007). *Simply too much homework! What can we do?* Calgary, Alberta, Canada: Reading Wings Inc.
- Gottman, J. M., & McFall, R. M. (1972). Self-monitoring effects in a program for potential high school dropouts: A time-series analysis. *Journal of Consulting and Clinical Psychology*, 39(2), 273-81. Retrieved from <http://dx.doi.org/10.1037/h0033437>
- Grodner, A., & Rupp, N. G. (2013). The role of homework in student learning outcomes: Evidence from a field experiment. *Research in Economic Education*, 44(2), 93-109. doi: 10.1080/00220485.2013.770334
- Gustaffson, J. (2013). Causal inference in educational effectiveness research: A comparison of three methods to investigate effects of homework on student achievement. *School Effectiveness and School Improvement: An International Journal of Research, Policy and Practice*, 24(3), 275-295. doi: 10.1080/09243453.2013.806334

- Hagan, H. (1927). The value of homework as compared with supervised study. *Second Yearbook, Chicago Principal's Club*, 147-149.
- Hagan, A. S., & Weinstein, C. E. (1995). Achievement goals, self-regulated learning, and the role of classroom context. In P. R. Pintrich (Ed.), *New directions for teaching and learning*, 63, 43-56. San Francisco: Jossey-Bass.
- Haggar, M. S., Wood, C. Stiff, C., & Chatzisarantis, N. L. D. (2010). Ego depletion and the strength model of self-control: A meta-analysis. *Psychological Bulletin*, 136, 495-525. doi: 10.1037/a0019486
- Haimovitz, K., Wormington, S. V., & Corpus, J. H. (2011). Dangerous mindsets: How beliefs about intelligence predict motivational change. *Learning and Individual Differences*, 21(6), 747-752. doi:10.1016/j.lindif.2011.09.002
- Hartwig, M. K., & Dunlosky, J. (2012). Study strategies of college students: Are self-testing and scheduling related to achievement? *Psychonomic Bulletin & Review* 19(1), 126-143. doi: 10.3758/s13423-011-0181-y
- Hattie, J. (2012). *Visible learning for teachers: Maximizing impact on learning*. New York, NY: Routledge.
- Hattie, J. & Timperley, H. (2007). The power of feedback. *Review of Educational Research*, 77(1), 81-112. doi: 10.3102/003465430298487
- Hauser, R. M. & Palloni, A. (2011). Adolescent IQ and survival in the Wisconsin longitudinal study. *The Journals of Gerontology, Series B: Psychological Sciences and Social Sciences*, 66B(S1), i91-i1101. doi: 10.1093/geronb/gbr037
- Heckman, J. J., & Kautz, T. (2013). Fostering and measuring skills: Interventions that improve character and cognition (No. w19656). National Bureau of Economic Research. doi:

10.3386/w19656

- Heckman, J. J., & Rubinstein, Y. (2001). The importance of noncognitive skills: Lessons from the GED testing program. *American Economic Review*, *91*(2), 145-149. Retrieved from <http://www.jstor.org/stable/2677749>
- Hemphill, F. C., & Vanneman, A. (2011). *Achievement gaps: How Hispanic and White students in public schools perform in mathematics and reading on the National Assessment of Education Progress* (NCES 2011-459). National Center for Education Statistics, Institute of Education Sciences. U.S. Department of Education, Washington, DC.
- Herd, P. (2010). *Education and health in late-life among high school graduates: Cognitive versus psychological aspects of human capital*. La Follette School Working Paper No. 2010-024. La Follette School of Public Affairs, University of Wisconsin-Madison.
- Hill, N. E., Castellino, D. R., Lansford, J. R., Nowlin, P., Dodge, K. A., Bates, J. E., & Petit, G., (2004). Parent academic involvement as related to school behaviour, achievement, achievement, and aspirations: Demographic variations across adolescence. *Child Development*, *75*, 1491-1509. doi: 10.1111/j.1467-8624.2004.00753.x
- Hiss, W. C. & Franks, V. W. (2014). *Defining promise: optional standardized testing policies in American college and university admissions*. IACAC Conference. Itsca, IL. Retrieved from [www.nacacnet.org/research/research-data/nacacresearch/Documents/DefiningPromise.pdf](http://www.nacacnet.org/research/research-data/nacacresearch/Documents/DefiningPromise.pdf)
- Hong, E., Peng, Y., & Rowell, L. L. (2009). Homework self-regulation: Grade, gender, and achievement-level differences. *Learning and Individual Differences*, *19*(2), 269-276. doi: 10.1016/j.lindif. 2008.11.009
- Honken, N. B., & Ralson, P. A. (2013). High-achieving high school students and not so high-



- achieving college students: A look at lack of self-control, academic ability, and performance in college. *Journal of Advanced Academics*, 24(2), 108-124. doi: 10.1177/1932202X13482466
- Huang, H. (2015). Can students themselves narrow the socioeconomic-status-based achievement gap through their own persistence and learning time? *Education Policy Analysis Archives* 23(108), 1-37. doi: <http://dx.doi.org/10.14507/epaa.v23.1977>
- Ilgar, S. (2013). Parental tendency towards taking responsibility: The case of homework. *International Journal of Social Science & Education*, 3(4), 942-952.
- Jacob, B. A. (2002). Where the boys aren't: Non-cognitive skills, returns to school, and the gender gap in higher education. *Economics of Education Review*, 21(6), 589-598.
- Jahanseyr, K., Salehzadeh, K., Vasaghi, H., & Mousavifard, E. (2007). A study of the effect of time management on academic achievement of students of Islamic Azad University, Maragheh Branch. *Research in Curriculum Planning*, 4(16), 97-114.
- James, W. (1899). *Talks to teachers on psychology and to students on some of life's ideals*. New York, NY: Holt.
- Jeynes, W. H. (2012). A meta-analysis on the effects and contributions of public, public charter, and religious schools on student outcomes. *Peabody Journal of Education*, 87(3), 305-335. doi: 10.1080/0161956X.2012.679542
- Jeynes, W. H. (2007). Religion, intact families, and the achievement gap. *Interdisciplinary Journal on Religion*, 3(3), 1-24. Retrieved from <http://www.religjournal.com>.
- Jones, L. & Ruch, G. M. (1928). The twenty-seventh yearbook of the national society for the

- study of education: Nature and nurture, part ii-their influence upon achievement. In G. M. Whipple (Ed.), *Achievement as affected by amount of time spent in study* (pp. 131–134). Bloomington, IL: Public School Publishing Co.
- Jones, R. D., & Colvin, R. (1964). Abolish homework: Let supervised schoolwork take its place. *Clearing House*, 39(4), 206-209. doi: 10.1080/00098655.1964.11476676
- Kalencoski, C. M., & Pabilonia, S. W. (2012). Time to work or time to play: The effect of student employment on homework, sleep, and screen time. *Labour Economics*, 19(2), 211-221.
- Kaplan, A. (2008). Clarifying metacognition, self-regulation, and self-regulated learning: What's the purpose? *Educational Psychology Review*, 20, 477-484.
- Karabenick, S. A., & Dembo, M. H. (2011). Understanding and facilitating self-regulated help seeking. *New Directions for Teaching and Learning*, 126, 33-43. doi: 10.1002/tl.442
- Katz, I., Eilat, K., & Nevo, N. (2013). "I'll do it later": Type of motivation, self-efficacy, and homework procrastination. *Motivation and Emotion*, 38(1), 111-119. doi: 10.1007/s11031-013-9366-1
- Katz, I., Kaplan, A., & Gueta, G. (2010). Students' needs, teachers' support, and motivation for doing homework: A cross-sectional study. *The Journal of Experimental Education*, 78(2), 246-267. doi: 10.1080/00220970903292868
- Kena, G., Aud, S., Johnson, F., Wang, X., Zhang, J., Rathbun, A., Wilkinson-Flicker, S., & Kristapovich, P., (2014). *The condition of education 2014* (NCES 2014-083). U.S. Department of Education, National Center for Education Statistics. Washington, DC. Retrieved from <http://nces.ed.gov/pubsearch>
- Kena, G., Musa-Gillette, L., Robinson, J., Wang, X., Rathbun, A., Zhang, J., Wilkinson-Flicker, S., Barmer, A., & Dunlop Velez, E. *The condition of education 2015* (NCES 2015-144).

- U.S. Department of Education, National Center for Education Statistics. Washington, DC. Retrieved from <http://nces.ed.gov/pubsearch>.
- Killoran, I. (2003). Why is your homework not done? How theories of development affect your approach in the classroom. *Journal of Instructional Psychology, 30*, 309-315.
- Kitsantas, A., Cheema, J., & Ware, H. W. (2011). Mathematics achievement: The role of homework and self-efficacy beliefs. *Journal of Advanced Academics, 22*(2), 310-339.
- Kitsantas, A. & Zimmerman, B. J. (2009). College students' homework and academic achievement: The mediating role of self-regulatory beliefs. *Metacognition and Learning, 4*(2), 97-110. doi: 10.1007/s11409-008-9028-y
- Kistner, S., Rakoczy, K., & Otto, B. (2010). Promotion of self-regulated learning in classrooms: Investigating frequency, quality, and consequences for student performance. *Metacognition and Learning, 5*(2), 157-171.
- Kohn, A. (2007). Changing the homework default. *Independent School, 66*, 58-65. Retrieved from [www.alfiekohn.org/article/changing-homework-default/](http://www.alfiekohn.org/article/changing-homework-default/)
- Kolovelonis, A., Goudas, M., & Dermitzaki, I. (2011). The effect of different goals and self-recording on self-regulation of learning a motor skill in a physical education setting. *Learning & Instruction, 21*(3), 355-364.
- Kralovec, E., & Buell, J. (2000). *The end of homework: How homework disrupts families, overburdens families, and limits learning*. Boston, MA: Beacon Press.
- Kreft, I., & de Leeuw, J. (2002). *Introducing Multilevel Modeling*. (pp. 10, 54-56). London, UK: SAGE Publications Ltd.
- Kruskal, W. (2008). Miracles and statistics: The causal assumption of independence (ASA presidential address). *Journal of American Statistical Association, 83*(404), 929-940.

- Kuhl, J. (1985). Volitional mediators of cognition-behavior consistency: Self-regulatory processes and action versus state orientation. In J. Kuhl and J. Beckman (eds.) *Action Control: From Cognition to Behavior* (pp. 101-128). New York: Springer.
- Kukliansky, I., Shosberger I., & Eshach, H. (2016). Science teachers' voice on homework: beliefs, attitudes, and behaviors. *International Journal of Science and Mathematics Education 14*(1), 229-250.
- Labuhn, A. S., Zimmerman, B. J., & Hasselhorn, M. (2010). Enhancing students' self-regulation and mathematics performance: The influence of feedback and self-evaluative standards. *Metacognition and Learning, 5*(2), 173-194. doi:10.1007/s11409-010-9056-2
- Lee, S. (2009). Follow-up students after 6 years of participation in Project EXCITE. *Gifted Children Quarterly, 53*, 137-156.
- Leech, N. L., Gliner, J. A., Morgan, G. A., & Harmon, R. J. (2003). Use and interpretation of multiple regression. *Journal of the American Academy of Child and Adolescent Psychiatry, 42*(6), 738-740. doi: 10.1097/01/CHI.0000046845.56865.22
- Ley, K., & Young, D. B. (1998). Self-regulation behaviors in underprepared (developmental) and regular admission college students. *Contemporary Educational Psychology, 2*(1)3, 42-64. Retrieved from <http://www.ncbi.nlm.nih.gov/9514688>
- Lemos, M. S., & Verissimo, L. (2014). The relationships between intrinsic motivation, extrinsic motivation, and achievement, along elementary school. *Procedia – Social and Behavioral Sciences*. International Conference on Education & Psychology, 112, 930-938. doi: 10.1016/j.sbspro.2014.01.1251
- Letterman, D. (2013). Students' perception of homework assignments and what influences their ideas. *Journal of College Teaching and Learning, 10*(2), 113-122.

- Loveless, T. (2014). *The 2014 Brown Center report on American education: How well are American students learning?* Washington, DC: The Brookings Institute.
- Lundell, D. B., Higbee, J. L., Hipp, S., & Copeland, R. E. (2004). *Building bridges for access and success from high school to college: Proceedings of the metropolitan higher education consortium's developmental education initiative*. Minneapolis: MN: Center for Research on Developmental Education and Urban Literacy, University of Minnesota.
- McCallumore, K. M., & Sparapani, E. F. (2010). The importance of the ninth grade on high school graduation rates and student success in high school. *The Education Digest*, 76(2), 60-64. Retrieved from <http://ezproxy.liberty.edu:2048/login?url=http://search.proquest.com/docview/763168385?accountid=12085>
- Maas, C. J. M., & Hox, J. J. (2005). Sufficient Sample Sizes for Multilevel Modeling. *Methodology*, 1(3), 86-92. doi:10.1027/1614-2241.1.3.86.
- Maltese, A. V., Tai, R. H., & Fan, X. (2012). When is homework worth the time? Evaluating the association between homework and achievement in high school science and math. *The High School Journal*, 96(1), 52-72. doi: 10.1353/hsj.2012.001
- Martin, A. J., (2015). Teaching academically at-risk students in middle school: The roles of explicit instruction and guided discovery learning. In S Groundwater-Smith & N. Mockler (Eds). *Big fish, little fish: Teaching and learning in the middle years*. Cambridge: Cambridge University Press.
- Martin, A. J. (2016). Using Load Reduction Instruction (LRI) to boost motivation and engagement. Leicester: British Psychological Society.
- McClelland, M. M., Piccinin, A., Acock, A. C., & Stallings, M. C. (2013). Relations between

- preschool attention and later school achievement and educational outcomes. *Early Childhood Research Quarterly*, 28(2), 314-324. doi:10.1016/j.ecresq.2012.07.008
- MetLife. (2007). The MetLife survey of the American teacher: The homework experience. Retrieved from <http://www.metlife.com/WPSAssets/10124301191202765628V1FTeacherSurveyHomework.Final.pdf>
- Miller, S. R. (1998). Shortcut: High school grades as a signal of human capital. *Educational Evaluation and Policy Analysis*, 20, 299-311. doi: 10.3102/01623737020004299
- Mobley, C. Brawner, C., & Ohland, W. (2009). The South Carolina merit scholarship: Strategies used by engineering students to keep their scholarship. *International Journal of Engineering Education*, 25(6), 1249-1256. Retrieved from <http://hdl.cqu.edu.au/10018/1024640>
- Motagh, S. E., Amrai, K., Yazdeni M. J., Abderahim, H., & Souri, H. (2011). The relationship between self-efficacy and academic achievement in high school students. *Procedia – Social and Behavioral Sciences*, 15, 765-768. doi: 10.1016/jsbspro.2011.03.180
- Murnane, R. J. (2013). U. S. high school graduation rates: Patterns and explanations. *Journal of Economic Literature*, 51(2), 370-422. doi: <http://dx.doi.org/10.1257/jel.51.2.370>
- National Center for Education for Education Statistics. (2011). *National Center for Educational Progress (NAEP). NAEP High School Transcript: How is grade point average calculated?* High School Transcript Study. <http://nces.ed.gov/hsts/howgpa.aspx>
- Nagaoka, J., Farrington, C. A., Roderick, M., Allensworth, E. Keyes, T. S., Johnson, D. W., &

- Beechum, N. (2013). Readiness for college: The role of non-cognitive factors and context. *Voices in Urban Education*, 38, 45-52. Providence, RI: Annenberg Institute for School Reform at Brown University.
- National Center for Education Statistics, U.S. Department of Education. (2016). *Status dropout rates*. Retrieved May 31, 2016, from the National Center for Education Statistics Web Site: [http://nces.ed.gov/programs/coe/indicator\\_coj.asp](http://nces.ed.gov/programs/coe/indicator_coj.asp)
- National Commission on Excellence in Education. (1983). *A nation at risk: The imperative for educational reform*. Washington DC: U.S. Department of Education.
- National Defense Education Act of 1958, (1958). P.L. No. 85-864. *United States Statutes at Large*, 72, 1580-1605. Retrieved from <http://www.edu.oulu.fi/tohtorikoulutus/jarjestettava>
- National Education Association. (2008). *Help your student get the most out of homework*. Retrieved from <http://www.nea.org/parents/homework.html>.
- National KIDS COUNT. (2013). *Children living in low-income families (below 200 percent of the poverty threshold) by family nativity*. The Annie E. Casey Foundation.
- National Research Council (2002). *Learning and understanding: Improving advanced study of mathematics and science in US high schools*. Washington, DC: National Academy Press.
- Nelid, R. (2009). Falling off track during the transition to high school: What we know and what can be done. *The Future of Children*, 19(1), 53-56. doi: 10.1353/foc.0.0020
- No Child Left Behind (NCLB) Act of 2001, Pub. L. No. 107-110, §115, Stat.1425 (2002).
- Norman, D. A. (2002). Emotion & design: Attractive things work better. *Interactions Magazine*, 9(4), 36-42. doi: 10.1145/543434.543435
- Northwest Regional Educational Laboratory. (2005). *Research-based strategies: Homework and*

- practice*. Retrieved from <http://www.netc.org/focus/strategies/home.php>
- Núñez, J. C., Suárez, N., Rosário, P., Vallejo, G., Valle, A., & Epstein, J. L. (2015). Relationships between perceived parental involvement in homework, student homework behaviors, and academic achievement: Differences among elementary, junior high, and high school students. *Metacognition and Learning*, 1-32. doi: 10.1007/s11409-015-9135-5
- OECD. (2014). Does homework perpetuate inequities in education? *PISA in Focus*, 46. OECD Publishing, Paris, France. doi: <http://dx.doi.org/10.1787/5jxrhqhtx2xt-en>
- OECD. (2013). Educational attainment. In *OECD Factbook 2013: Economic, Environmental, and Social Statistics*, OECD Publishing, <http://dx.doi.org/10.1787/factbook-2013-77-en>
- Office of Management and Budget (1997). *Revisions to the standards for the classification of federal data on race and ethnicity*. Retrieved from [https://www.whitehouse.gov/omb/fedreg\\_1997standards](https://www.whitehouse.gov/omb/fedreg_1997standards)
- Oluwatimilehin, J. T. B., & Owoyele, J. W. (2012). Study habits and academic achievement in core subjects among junior secondary school students in ondo state, Nigeria. *Bulgarian Journal of Science and Education Policy*, 6(1), 155-169.
- Patall, E. A., Cooper, H., & Robinson, J. C. (2008). Parent involvement in homework: A research synthesis. *Review of Educational Research*, 78, 1039-1101. doi: 10.3102/0034654308325185
- Peterson, P. E., Woessmann, L., Hanushek, E. A., & Lastra-Anadon, C. X. (2011). *Globally challenged: Are U. S. students ready to compete? The latest on each state's international standing in math and reading*. Harvard's Program on Education Policy and governance & Education Next. Retrieved from <http://www.hks.harvard.edu/pepg>



- Pharris-Ciurej, N., Hirschman, C., & Wilhoft, J. (2012). The 9<sup>th</sup> grade shock and the high school dropout crisis. *Social Science Research, 41*(3), 709-730. doi: 10.1016/j.ssresearch.2011.11.014
- Pintrick, P. R., & Zusho, A. (2002). The development of academic self-regulation: The role of cognitive and motivational factors. In A. Wigfield & J. Eccles (eds.), *Development of Achievement Motivation* (pp. 249-284). San Diego, CA: Academic Press.
- Purdie, N., Carroll, A., & Roche, L. (2004). Parenting and adolescent self-regulation. *Journal of Adolescence, 27*(6), 663-676. doi: 10.1016/j.adolescence.2004.01.002
- Pryor, J. H., Eagan, K., Palucki Blake, L., Hurtado, S., Berdan, J., & Case, M. (2012). *The American freshman: National norms Fall 2012*. Los Angeles, CA: Higher Education Research Institute, UCLA.
- Ramdass, D., & Zimmerman, B. (2011). Developing self-regulation skills: The important role of homework. *Journal of Advanced Academics, 22*(2), 194-218. doi: 10.1177/1932202X1102200202
- Raudenbush, S., & Bryk, A. S. (1986). A Hierarchical Model for Studying School Effects. *Sociology of Education, 59*(1), 1-17. doi: 10.307/2112482
- Rawson, K., Stahovich, T. F., & Mayer, R. E. (2016). Homework and achievement: Using smartpen technology to find the connection. *Journal of Educational Psychology*. Advance online publication. Retrieved from <http://dx.doi.org/10.1037/edu0000130>
- Reardon, S.F., Kalogrides, D., & Shores, K. (2018). *The Geography of Racial/Ethnic Test Score Gaps* (CEPA Working Paper No.16-10). Retrieved from Stanford Center for Education Policy Analysis: <http://cepa.stanford.edu/wp16-10>

- Reardon, S. F. (2012). The widening academic achievement gap between the rich and the poor. *Community Investments: Summer 2012*, 24(2), 19-39.
- Reardon, S. F. (2011). Whither Opportunity? Rising Inequality, Schools, and Children's Life Chances. In R. Murnane & G. Duncan (Eds.). *The widening academic achievement gap between the rich and the poor: New evidence and possible explanations* (pp. 91-116). New York, NY: Russell Sage Foundation Press.
- Rimm-Kaufman, S. E., Pianta, R. C., & Cox, J. J. (2000). Teachers' judgments of problems in the transition to kindergarten. *Early Childhood Research Quarterly*, 15(2), 147-166. doi: 10.1016/S0885-2006(00)00049-1
- Rønner, M (2011). Who benefits from homework assignments? *Economics of Education Review*, 30(1), 55-64. .doi./10.1016/j.econedurev.2010.07.001
- Rouse, C. E., & Barrow, L. (2006). U.S. elementary and secondary schools: Equalizing opportunity or replicating the status quo? *Future of Children*, 16(2), 99–123. doi: 10.1353/foc.2006.0018
- Ryan, T. G., & Telfer, L. (2011). A review of (elementary) school self-assessment processes: Ontario and beyond. *International Electronic Journal of Elementary Education*, 3(3), 171-191. Retrieved from <https://files.eric.ed.gov/fulltext/EJ1053176.pdf>
- Saban, A. (2013). A study of the validity and reliability study of the homework purpose scale: A validation. *Measurement*, 46(10), 4306-4312. doi: 10.1016/j.measurement.2013.08.027
- Sackett, P. R., Kuncel, N. R., Arneson, J. J., Cooper, S. R., & Waters, S. D. (2009). Does economic status explain the relationship between admission tests and post-secondary academic performance? *Psychological Bulletin*, 135(1), 1-22. doi: 10.1037/a0013978
- San Diego City Schools Research Department (1936). *Home study priorities and opinions*. San Diego, CA: San Diego Board of Education.

- Sander, W. (2000). Catholic schools and homework. *Education Evaluation and Policy Analysis*, 22(3), 299-311. doi: 10.3102/01623737022003299
- Sax, L., Lindholm, J., Astin, A., Kim, W., & Mahoney, K. (2002). *The American freshman: National norms for fall 2002*. Higher Education Institute, University of California, Los Angeles, CA.
- Schunk, D. H. (1991). Self-efficacy and academic motivation. *Educational Psychologist*, 26(3-4), 207-231. doi: 10.1080/00461520.1991.9653133
- Schunk, D. H., & Zimmerman, B. (2007). Influencing children's self-efficacy and self-regulation of reading and writing through modeling. *Reading & Writing Quarterly*, 23(1), 7-25. doi: 10.1080/10573560600837578
- Schutz, C. M., Gallagher, M. L., & Tepe, R. E. (2011). Differences in learning and study strategies inventory scores between chiropractic students with lower and higher grade point averages. *The Journal of Chiropractic Education*, 25(1), 5-10. Retrieved from <http://www.ncbi.nlm.nih.gov/>.
- Sektnan, M., McClelland, M., Acock, A., & Morrison, F. J. (2010). Relations between early family risk, children's behavior regulation, and academic achievement. *Early Childhood Research Quarterly*, 24(4), 464-479. doi: 10.1016/j.ecresq/2010.02.005
- Siahi, E. A., & Maiyo, J. K. (2015). Study of the relationship between study habits and academic achievement of students: A case of Spicer Higher Secondary School, India. *International Journal of Educational Administration and Policy Studies*, 7(7), 134-131. doi: 10.5897/IJEAPS2015.0404
- Southern Regional Educational Board (2006). *Opening doors to the future: Preparing low-achieving middle school students to succeed in high school*.

- Spera, C. (2005). A review of the relationship among parenting practices, parenting styles and adolescent school achievement. *Educational Psychology Review*, 17(2), 125-146. doi: 10.1007/s10648-005-3950-1
- Spruce, R., & Bol, L. (2015). Teacher beliefs, knowledge, and practice of self-regulated learning. *Metacognition and Learning*, 10(2), 245-277. doi: 10.1007/s11409-014-9124-0
- Sum, A., Khatiwada, I., & McLaughlin, J. (2009). The consequences of dropping out high school: Joblessness and jailing for high school dropouts and the high cost for taxpayers. Center for Labor Market Studies Publications. Retrieved from <http://hd.handle.net/2047/d20000596>
- The Belmont Report. (1979). *Ethical Principles and Guidelines for the Protection of Human Subjects of Research* <http://www.hhs.gov/ohrp/humansubjects/guidance/belmont.html>
- Trautwein, U. (2007). The homework-achievement relation reconsidered: Differentiating homework time, homework frequency, and homework effort. *Learning and Instruction*, 17(3), 372-388. doi: 10.1016/j.learninstruc.2007.02.009
- Trautwein, U. & Köller, O. (2003). The relationship between homework and achievement – Still much of a mystery. *Educational Psychology Review*, 15(2), 115-145. doi: 10.1023/A:1023460414243
- Trautwein, U. Köller, O., Schmitz, B., & Baumert, J. (2002). Do homework assignments enhance achievement? A multilevel analysis in 7<sup>th</sup> –grade mathematics. *Contemporary Educational Psychology*, 27, 26-50. doi: 10.1006/ceps.2001.1084
- Trautwein, U. Niggli, A., Schnyder, I. & Lüdtke, O. (2009). Between-teacher differences in homework assignments and the development of students' homework effort, homework emotions, and achievement. *Journal of Educational Psychology*, 10(1), 176-189.

Retrieved from <http://dx.doi.org/10.1037/0022-0663.101.1.176>

- Trost, S. & Salehi-Isfahani, D. (2012). The effect of homework on exam performance: Experimental results from principles of economics. *Southern Economic Journal*, 79(1), 224-242. doi: 10.4284/0038-79.1.224
- U.S. Census Bureau. (2012). *Statistical abstract of the United States: 2012*. Retrieved from: <http://www.census.gov/library/publications/2011>
- U.S. Census Bureau (2010). *Overview of race and Hispanic origin: 2010*. Retrieved from: <http://www.census.gov/prod/cen2010/briefs/c2010br-02.pdf>
- U. S. Department of Education, National Center for Education Statistics (2013). *The condition of education 2013* (NCES 2013-037), International Assessments. Retrieved from: <https://nces.ed.gov>
- U. S. Department of Education, National Center for Education Statistics (2016). *Federal TRIO Programs current-year low-income levels*. (NCES 2012-045), Washington, DC: NCES. Retrieved from <http://www2.ed.gov>.
- U.S. Department of Labor, Bureau of Labor Statistics. (2009). *Education pays*. Retrieved from <http://www.bls.gov/emp/emptab7.htm>
- Vallerand, R. J., Fortier, M. F., & Guay, F. (1997). Self-determination and persistence in a real-life setting: Toward a motivational model of high school dropout. *Journal of Personality and Social Psychology*, 72(5), 1161-1176. doi: 10.1037//0022-3514.72.5.1161
- Westrick, P. A., Le, H., Robbins, S. B., Radunzel, J. M. R., & Schmidt, F. L. (2015). College performance and retention: A meta-analysis of the predictive validities of ACT scores, high school grades, and ses. *Educational Assessment*, 20(1), 23-45. doi: 10.1080/10627197.2015.997614

- Williams, E., & Richman, S. (2007, May). *The first year of high school: A quick stats fact sheet*. Washington, DC: National High School Center. Retrieved from [http://www.betterhighschools.org/docs/NHSC\\_TransitionsReport.pdf](http://www.betterhighschools.org/docs/NHSC_TransitionsReport.pdf).
- Vitaro, F. Brendgen, M., Larose, S., & Tremblay, R. E. (2005). Kindergarten disruptive behaviors, disruptive factors, and educational achievement by early adulthood. *Journal of Educational Psychology, 97*(4), 617-629. doi: 10.1037/0022-0663.97.4.617
- Walker, J. M. T., Hoover-Dempsey, K. V., Whetsel, D. R., & Green, C. L. (2004). Parental involvement in homework: A review of current research and its implications for teacher, after school program staff, and parent leaders. Cambridge, MA: *Harvard Family Research Project*. Retrieved from <http://www.hfrp.org>
- Westrick, P. A., Le, H., Robbins, S. B., Radunzel, J. M. R., & Schmidt, F. L. (2015). College performance and retention: A Meta-analysis of the predictive validities of ACT Scores, high school grades, and SES. *Educational Assessment, 20*(1), 23-45. doi: 10.1080/10627197.2015.997614
- Wong, M. M., & Csikszentmihalyi, M. (1991). Motivation and academic achievement: The effects of personality traits and the duality of experience. *Journal of Personality, 59*(3), 539-574. doi: <http://dx.doi.org/10.1111/j.1467-6494.1991.tb00259.x>
- Xu, J., Fan, X., & Du, J. (2015). Homework management scale: Confirming the factor structure with middle school students in China. *Psychology in the Schools, 52*(4), 419-429. doi: 10.1002/pits.21826
- Xu, J. & Wu, H. (2013). Self-regulation of homework behavior: Homework management at the secondary school level. *The Journal of Educational Research, 106*, 1-13. doi: 10.1080/00220671.2012.658457

- Xu, J. (2011). Homework purpose scale for middle school students: A validation study. *Middle Grades Research Journal*, 6(1), 1-13. doi: 10.1086/592368
- Xu, J. (2010). Homework purpose scale for high school students: A validation study. *Educational and Psychological Measurement*, 70(3), 459-476. doi: 10.1177/0013164409344517
- Xu, J. (2008). Validation of scores on the homework management scale for high school students. *Education and Psychological Measurement*, 68(2), 304-324. doi: 10.1177/0013164407301531
- Xu, J. (2005). Purposes for doing homework reported by middle and high school students. *The Journal of Educational Research*, 99(1), 46-55. Retrieved from <http://dx.doi.org/10.3200/JOER.99.1.46-55>
- Xu, M., Benson, S. N. K., Mudrey-Camino, R., & Steiner, R. P. (2010). The relationship between parental involvement, self-regulated learning, and reading achievement of fifth graders: A path analysis using the ECLS-K database. *Social Psychological Education*, 13, 237-269. doi: 10.1007/s11218-009-9104-4
- Yang, F. & Xu, J. (2015). Examining the psychometric properties of the Homework Management Scale for high school students in China. *Journal of Psychoeducational Assessment*, 33(3), 268-277. doi: 10.1177/0734282914548326
- Yazzie-Mintz, E. (2007). Voices of students on engagement: A report on the 2006 high school survey of student engagement. Bloomington, IN: Center for Evaluation and Education Policy, Indiana University. Retrieved from [files.eric.ed.gov/fulltext/ED495758.pdf](http://files.eric.ed.gov/fulltext/ED495758.pdf)
- Zhao, N, Wardeska, J. G., McGuire, S. Y., & Cook. E. (2014). Metacognition: An effective tool to promote success in college science learning. *Journal of College Science Teaching*,

- 43(4), 48-54. Retrieved from <http://www.jstor.org/stable/43632012>
- Zhou, Q., Main, A., & Wang, Y. (2010). The relations of temperamental effortful control and anger/frustration to Chinese children's academic achievement and social adjustment: A longitudinal study. *Journal of Educational Psychology*, 102, 180-196. doi: 10.1037/a0015908
- Zimmerman, B. J. (1990). Self-regulated learning and academic achievement: An overview. *Educational Psychologist*, 25, 3-17. doi:10.1207/s15326985ep2501\_2
- Zimmerman, B. J. (2000). Self-regulation: A social cognitive perspective. In M. Boekaerts, P. R. Pintrich, & M. Zeidner (Eds.), *Handbook of self-regulation*. San Diego, CA: Academic Press.
- Zimmerman, B. J. (2008). Investigating self-regulation and motivation: Historical background, methodological developments, and future prospects. *American Education Research Journal*, 45, 166-183. doi: 10.3102/0002831207312909
- Zimmerman, B. J., Bonner, S., & Kovach, R. (1996). *Developing self-regulated learners: Beyond achievement to self-efficacy*. New York: American Psychological Association.
- Zimmerman, B. J., & Moylan, A. R. (2009). Self-regulation: Where metacognition and motivation intersect. In D. J. Hacker, J. Dunlosky & A. C. Graesser (Eds.), *Handbook of Metacognition in Education* (pp. 299-315). New York: Routledge.
- Zumbrunn, S., Tadlock, J., & Roberts, E. D. (2011). *Encouraging self-regulated learning in the classroom: A review of the literature*. Richmond, VA: Virginia Commonwealth University.







## APPENDICES

## Appendix A: Instrument Permission

**Xu, Jianzhong** Yesterday at 12:13 AM XJ

To: Diane Bush  
RE: HPS, HMS

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Dear Ms. Bush,

Yes, you have my permission to use HPS and HMS in your doctoral research. Let me know how it goes, and good luck with your work.


Best,

Jianzhong Xu

[See More from Cristo Rey Atlanta](#)

**Diane Bush** June 8, 2017 at 5:33 PM M

To: jx18@colled.msstate.edu  
HPS, HMS

Sent - Exchange 

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Dear Dr. Xu,





I am writing to seek permission to use your Homework Purpose Scale for High School Students and Homework Management Scale for High School Students. I am a doctoral student at Liberty University, and I would like to use both scales in examining how secondary students' from low socio-economic backgrounds view the purpose of and manage homework, as well as how the scores on the scales relate to the students' grade point average. Please let me know if you have any questions about mu proposed study. Thank you in advance for your permission.

Diane K. Bush  
Liberty University

**Xu, Jianzhong** Today at 8:40 PM XJ

To: Diane Bush  
RE: HPS, HMS

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Yes and good luck! Xu

[See More from Cristo Rey Atlanta](#)

**Diane Bush** Today at 8:38 PM M

To: Xu, Jianzhong  
Re: HPS, HMS

Sent - Exchange 

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Dear Dr. Xu,

May I also have your permission to include the instrument in my dissertation? Thank you for your assistance.

Diane Bush

### Appendix B: Student Survey Questions

Student # \_\_\_\_\_ Date \_\_\_\_\_

Student Gender:  Female  Male

Student Race:  Asian  Black/African American  American Indian/Alaskan Native  
 Native Hawaiian or Pacific Islander  White  Other Race

Student Ethnicity:  Hispanic/Latino  Not Hispanic/Latino

#### Student Survey on Homework – Part 1

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1. Doing homework helps you understand what's going on in class.					
2. Doing homework helps you learn how to manage your time.					
3. Doing homework gives you opportunities to practice skills from class lessons.					
4. Doing homework helps you develop a sense of responsibility.					
5. Doing homework helps you learn to work independently.					
6. Doing homework helps you develop good discipline.					
7. Doing homework helps you learn study skills.					
8. Doing homework helps you get a good grade.					
9. Doing homework helps you prepare for the next lesson.					
10. Doing homework makes your family more aware of your learning at school.					
11. Doing homework brings you family approval.					
12. Doing homework brings you teacher approval.					
13. Doing homework brings you approval from classmates.					
14. Doing homework gives you opportunities to work with classmates.					
15. Doing homework gives you opportunities to learn from classmates.					

### Student Survey on Homework – Part 2

When I work on my homework, I...	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1. Locate the materials I need for my homework					
2. Find a quiet area					
3. Remove things from the table					
4. Make enough space for me to work					
5. Turn off the TV					
6. Set priority and plan ahead					
7. Keep track of what remains to be done					
8. Remind myself of the available remaining time					
9. Tell myself to work more quickly when I lag behind					
10. Find ways to make homework more interesting					
11. Praise myself for good effort					
12. Praise myself for good work					
13. Reassure myself that I am able to do homework when I feel it is too hard					
14. Tell myself not to be bothered with previous mistakes					
15. Tell myself to pay attention to what needs to be done					
16. Tell myself to calm down					
17. Cheer myself up by telling myself that I can do it					
18. Daydream during a homework session					
19. Start conversations unrelated to what I'm doing					
20. Play around with other things while doing my homework					
21. Stop homework repeatedly to find something to eat or drink					
22. Stop homework to send or receive instant messages					

### **Appendix C: Study's Purpose and Privacy Protection**

Dear Dr./Ms./Mr. \_\_\_\_\_

My name is Diane Bush, a fellow Alpha Omega Network principal at XX High School, and I am a doctoral student at Liberty University in Lynchburg, Virginia. This project will be conducted under the supervision of Dr. Sharon Michael-Chadwell of Liberty University.

The research I wish to conduct for my doctoral dissertation involves investigating the relationship between grade point average and student understanding of homework's purpose and management in economically disadvantaged high school students. The study consists of a paper and pencil survey with 22 questions that students will answer about their homework habits. Additional information such as student GPA and economic status will be provided by the school itself and will not identify individual students to the researcher.

I am hereby seeking your consent to administer a survey to freshman students at your school. I have provided you with a copy of my dissertation proposal, which includes copies of the measure and consent and assent forms to be used in the research process, as well as a copy of the approval letter, which I received from the Institutional Review Board of Liberty University.

All personal identifiers, including student name and grade point average, will be coded and de-identified to maintain student confidentiality.

Upon completion of the study, I will provide the Cristo Rey Network with a bound copy of the full research report. If you require any further information, please do not hesitate to contact me at \_\_\_\_\_. Thank you for your time and consideration in this matter.

Yours sincerely,

Diane K. Bush

## Appendix D: Parent Permission, English

The Liberty University Institutional  
Review Board has approved  
this document for use from  
9/29/2017 to 9/28/2018  
Protocol # 2968.092917

### PARENT/GUARDIAN CONSENT FORM

The Relationship between Grade Point Average and Understanding of Homework's Purpose and Management in Economically Disadvantaged High School Students

Diane K. Bush  
Liberty University  
School of Education

Your child is invited to be in a research study of their understanding and management of homework in their high school education. Your child was selected as a possible participant because he or she is between 13 and 16 years of age and comes from an economically disadvantaged background. Please read this form and ask any questions you may have before agreeing to allow your child to be in the study.

Diane K. Bush, a doctoral candidate in the School of Education at Liberty University, is conducting this study.

**Background Information:** The purpose of this study is to determine whether the level of understanding and management of homework helps to predict a student's high school GPA. Findings from the proposed study may help educators develop and promote the self-regulation traits in students that lead to academic success.

**Procedures:** If you agree to allow your child to be in this study, I would ask him or her to do the following:

- During a regular class period, students will be asked to complete a questionnaire with 39 questions, taking approximately 20-30 minutes.
- To assure their privacy from the researcher, the students will not put their name on the questionnaire. It will have a number known only to the school counselor.
- The school counselor will create a list with the GPAs of each student linked to the number that has been assigned to them.
- The researcher will receive the questionnaire results and linked GPAs, but only the school counselor will have the GPAs and student names.)

**Risks and Benefits of being in the Study:**

- The risks involved in this study are minimal as the results will be anonymous and the student's identity will not be known to the researcher.
- Student participants shall not receive any direct benefit from the study.
- Benefits to society align with the mission of Cristo Rey schools. The economic and social impact of unemployment, expected earnings and incarceration rates has a direct link to academic achievement and high school GPA. If there is a correlation of homework understanding and management of homework to GPA, teachers may be able to modify what they do to overcome at least one of the barriers to academic achievement and the lifelong social and economic status for their students. The compound value to society would be significant for individual students and compounded hugely for a community.

**Compensation:** Your child will not be compensated for participating in this study.

The Liberty University Institutional  
Review Board has approved  
this document for use from  
9/29/2017 to 9/28/2018  
Protocol # 2968.092917

**Confidentiality:** The records of this study will be kept private. In any sort of report that may be published, no information that will make it possible to identify a subject will be included. The results of your child's questionnaire will be anonymous to the researcher, and will be handled by the school counselor. Their survey will be numbered so that the student's privacy is protected. They will be asked to not put their name on the form. Research records will be stored securely in a password-protected computer file. Data will be retained for three years to comply with regulations, and then the electronic records will be deleted.

**Voluntary Nature of the Study:** Participation in this study is voluntary. Your decision whether or not to allow your child to participate will not affect his or her current or future relations with Liberty University or Cristo Rey High School. If you decide to allow your child to participate, he or she will be free to not answer any question or withdraw at any time without affecting those relationships.

**How to Withdraw from the Study:** If your child chooses to withdraw from the study, your child should inform the researcher that he or she wishes to discontinue participation prior to submitting the study materials. If your child chooses to withdraw, your child's responses will not be recorded or included in the study.

**Contacts and Questions:** The researcher conducting this study is Diane K. Bush. You may ask any questions you have now. If you have questions later, **you are encouraged** to contact Mrs. Bush at [dbush@cristoreyatlanta.org](mailto:dbush@cristoreyatlanta.org). You may also contact her Liberty University faculty advisor, Sharon Michael-Chadwell, at [sdmichaelchadwell@liberty.edu](mailto:sdmichaelchadwell@liberty.edu).

If you have any questions or concerns regarding this study and would like to talk to someone other than the researcher, **you are encouraged** to contact the Institutional Review Board, 1971 University Blvd, Green Hall 1887, Lynchburg, VA 24515 or email at [irb@liberty.edu](mailto:irb@liberty.edu).

*Please notify the researcher if you would like a copy of this information for your records.*

**Statement of Consent:** I have read and understood the above information. I have asked questions and have received answers. I consent to allow my child to participate in the study.

---

Signature of Minor

Date

---

Signature of Parent

Date

---

Signature of Investigator

Date

### Appendix E: Research Assistant Confidentiality Agreement

I, \_\_\_\_\_ [name of research assistant], agree to assist Diane Bush, the primary investigator, by \_\_\_\_\_ [list research tasks]. I agree to maintain full confidentiality when performing these tasks.

Specifically, I agree to:

1. Keep all research information shared with me confidential by not discussing or sharing the information in any form or format with anyone other than the primary investigator, Diane Bush.
2. Hold in strictest confidence the identification of any individual that may be revealed during the course of performing the research tasks.
3. Not make copies of any raw data in any form or format specifically requested to do so by the primary investigator.
4. Keep all raw data that contains identifying information in any form or format secure while it is in my possession. This includes:
  - Keeping all digitized raw data in computer password-protected files and other raw data in a locked file.
  - Closing any computer programs and documents of the raw data when temporarily away from the computer.
5. Permanently deleting any e-mail communication containing the data.
6. Give all raw data in any form or format to Diane Bush when I have completed the research tasks.
7. Destroy all research information in any form or format that is not returnable to Diane Bush (e.g., information stored on my computer hard drive) upon completion of the research tasks.

Printed name of research assistant \_\_\_\_\_

Address: \_\_\_\_\_

Telephone number: \_\_\_\_\_

Signature of research assistant \_\_\_\_\_

Date \_\_\_\_\_

Printed Name of primary investigator (Diane Bush) \_\_\_\_\_

Signature of primary investigator (Diane Bush) \_\_\_\_\_

Date \_\_\_\_\_

## **Appendix F: Script for Administration of Survey**

Students,

Today you will be completing a survey on how you view the purpose of homework and how you manage your homework. Both you and your parents have agreed that we may ask you about the subject of homework, and you and your parents have signed a permission form agreeing to participate in the survey. If you have changed your mind and decided you would rather not complete the survey, raise your hand and you may return to your classroom without filling out the survey. Are there any questions?

I will now hand you a survey with a number on the front. The survey I hand you is specific for you; do not trade papers with any other student.

Do not put your name anywhere on the survey.

On the front side of the survey, put today's date, and check the boxes for your gender, race, and ethnicity. The survey is on both the front and back of the paper I handed you. Please complete both sides.

On the front side of the Student Survey on Homework (Part 1), there are fifteen statements about homework's purpose. Read each statement carefully, and for each statement, check whether you strongly disagree, disagree, feel neutral about the statement, agree, or strongly agree with the statement. Only check one box for each statement.

The back side of the paper (Student Survey on Homework Part 2) has 22 statements about what you do when you complete your homework. Please read each statement carefully, and for each statement, check whether you strongly disagree, disagree, feel neutral about the statement, agree, or strongly agree with the statement. Only check one box for each statement.

After you have completed both sides of the Homework Survey, place the survey in the box placed at the front of the room marked "Surveys."

After you complete both sides of your survey and placed the paper in the box at the front of the room, you may return to your classroom.

Are there any questions?



**Appendix G: IRB Permission Letter****LIBERTY UNIVERSITY.**  
INSTITUTIONAL REVIEW BOARD

September 29, 2017

Diane K. Bush

IRB Approval 2968.092917: The Relationship between Grade Point Average and Understanding of Homework's Purpose and Management in Economically Disadvantaged High School Students

Dear Diane K. Bush,

We are pleased to inform you that your study has been approved by the Liberty University IRB. This approval is extended to you for one year from the date provided above with your protocol number. If data collection proceeds past one year, or if you make changes in the methodology as it pertains to human subjects, you must submit an appropriate update form to the IRB. The forms for these cases were attached to your approval email.

Thank you for your cooperation with the IRB, and we wish you well with your research project.

Sincerely,

**G. Michele Baker, MA, CIP**

*Administrative Chair of Institutional Research*

**The Graduate School**

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UNIVERSITY.

*Liberty University | Training Champions for Christ since 1971*

## Appendix H: SPSS Outputs Related to Future Research Suggestions

*Ethnicity of "NH" n = 190*

### Correlations

		HPS Sum	HMS Sum	Comp
GPA	Pearson Correlation	.062	-.063	-.012
	Sig. (2-tailed)	.392	.390	.872
	N	190	190	190

*Ethnicity of "HL" n = 262*

### Correlations

		HPS Sum	HMS Sum	Comp
GPA	Pearson Correlation	.054	.136*	.118
	Sig. (2-tailed)	.381	.028	.056
	N	262	262	262

\*. Correlation is significant at the 0.05 level (2-tailed).

*Race of "A" n = 16*

### Correlations

		HPS Sum	HMS Sum	Comp
GPA	Pearson Correlation	.136	-.017	.069
	Sig. (2-tailed)	.615	.951	.801
	N	16	16	16

*Race of "AI/AN" n = 13*

### Correlations

		HPS Sum	HMS Sum	Comp
GPA	Pearson Correlation	.532	.384	.523
	Sig. (2-tailed)	.061	.195	.066
	N	13	13	13

*Race of "B" n = 175*

**Correlations**

		HPS Sum	HMS Sum	Comp
GPA	Pearson Correlation	.055	-.064	-.018
	Sig. (2-tailed)	.472	.399	.817
	N	175	175	175

*Race of "OR" n = 177*

**Correlations**

		HPS Sum	HMS Sum	Comp
GPA	Pearson Correlation	.033	.151*	.121
	Sig. (2-tailed)	.660	.045	.109
	N	177	177	177

\*. Correlation is significant at the 0.05 level (2-tailed).

*Race of "W" n = 69*

**Correlations**

		HPS Sum	HMS Sum	Comp
GPA	Pearson Correlation	-.035	-.006	-.021
	Sig. (2-tailed)	.777	.962	.863
	N	69	69	69

*Gender of "M" n = 206*

**Correlations**

		HPS Sum	HMS Sum	Comp
GPA	Pearson Correlation	-.033	.114	.060
	Sig. (2-tailed)	.640	.102	.394
	N	206	206	206

Gender of "F" n = 246

**Correlations**

		HPS Sum	HMS Sum	Comp
GPA	Pearson Correlation	.142*	-.029	.049
	Sig. (2-tailed)	.026	.649	.440
	N	246	246	246

\*. Correlation is significant at the 0.05 level (2-tailed).

Ethnicity = "NH" AND Gender = "M" n = 78

**Correlations**

		HPS Sum	HMS Sum	Comp
GPA	Pearson Correlation	-.129	.010	-.056
	Sig. (2-tailed)	.262	.929	.629
	N	78	78	78

Ethnicity = "HL" AND Gender = "M" n = 128

**Correlations**

		HPS Sum	HMS Sum	Comp
GPA	Pearson Correlation	.020	.167	.122
	Sig. (2-tailed)	.819	.059	.169
	N	128	128	128

Ethnicity = "NH" AND Gender = "F" n = 112

**Correlations**

		HPS Sum	HMS Sum	Comp
GPA	Pearson Correlation	.205*	-.080	.044
	Sig. (2-tailed)	.030	.399	.647
	N	112	112	112

\*. Correlation is significant at the 0.05 level (2-tailed).

Ethnicity = "HL" AND Gender = "F" n = 134

**Correlations**

		HPS Sum	HMS Sum	Comp
GPA	Pearson Correlation	.078	.021	.053
	Sig. (2-tailed)	.371	.808	.540
	N	134	134	134

*Race = "B" AND Gender = "M" n = 70*

**Correlations**

		HPS Sum	HMS Sum	Comp
GPA	Pearson Correlation	-.074	.073	.012
	Sig. (2-tailed)	.541	.546	.922
	N	70	70	70

*Race = "OR" AND Gender = "M" n = 91*

**Correlations**

		HPS Sum	HMS Sum	Comp
GPA	Pearson Correlation	.014	.145	.107
	Sig. (2-tailed)	.895	.170	.312
	N	91	91	91

*Race = "W" AND Gender = "M" n = 32*

**Correlations**

		HPS Sum	HMS Sum	Comp
GPA	Pearson Correlation	-.058	.161	.070
	Sig. (2-tailed)	.752	.378	.702
	N	32	32	32

*Race = "B" AND Gender = "F" n = 105*

**Correlations**

		HPS Sum	HMS Sum	Comp
GPA	Pearson Correlation	.162	-.123	-.011
	Sig. (2-tailed)	.100	.210	.909
	N	105	105	105

*Race = "OR" AND Gender = "F" n = 86*

**Correlations**

		HPS Sum	HMS Sum	Comp
GPA	Pearson Correlation	.081	.087	.098
	Sig. (2-tailed)	.458	.428	.369
	N	86	86	86

*Race = "W" AND Gender = "F" n = 37*

**Correlations**

		HPS Sum	HMS Sum	Comp
GPA	Pearson Correlation	-.028	-.175	-.126
	Sig. (2-tailed)	.871	.299	.459
	N	37	37	37

*Grade = 9.0, n = 138*

**Correlations**

		HPS Sum	HMS Sum	Comp
GPA	Pearson Correlation	-.034	.165	.088
	Sig. (2-tailed)	.694	.053	.302
	N	138	138	138

*Grade = 10.0, n = 106*

**Correlations**

		HPS Sum	HMS Sum	Comp
GPA	Pearson Correlation	.054	.155	.133
	Sig. (2-tailed)	.582	.113	.174
	N	106	106	106

*Grade = 11.0, n = 102*

**Correlations**

		HPS Sum	HMS Sum	Comp
GPA	Pearson Correlation	-.030	-.185	-.134
	Sig. (2-tailed)	.764	.063	.180
	N	102	102	102

*Grade = 12.0, n = 106*

**Correlations**

		HPS Sum	HMS Sum	Comp
GPA	Pearson Correlation	.127	-.027	.039
	Sig. (2-tailed)	.196	.782	.688
	N	106	106	106

*Grade = 9.0 AND Ethnicity = "NH" n = 67*

**Correlations**

		HPS Sum	HMS Sum	Comp
GPA	Pearson Correlation	-.066	.035	-.009
	Sig. (2-tailed)	.598	.780	.941
	N	67	67	67

*Grade = 10.0 AND Ethnicity = "NH" n = 37*

**Correlations**

		HPS Sum	HMS Sum	Comp
GPA	Pearson Correlation	.088	.054	.080
	Sig. (2-tailed)	.604	.752	.639
	N	37	37	37

*Grade = 11.0 AND Ethnicity = "NH" n = 29*

**Correlations**

		HPS Sum	HMS Sum	Comp
GPA	Pearson Correlation	.088	-.190	-.079
	Sig. (2-tailed)	.651	.324	.683
	N	29	29	29

*Grade = 12.0 AND Ethnicity = "NH" n = 57*

**Correlations**

		HPS Sum	HMS Sum	Comp
GPA	Pearson Correlation	.198	-.153	-.025
	Sig. (2-tailed)	.139	.256	.855
	N	57	57	57

*Grade = 9.0 AND Ethnicity = "HL" n = 71*

**Correlations**

		HPS Sum	HMS Sum	Comp
GPA	Pearson Correlation	-.015	.287*	.179
	Sig. (2-tailed)	.900	.015	.136
	N	71	71	71

\*. Correlation is significant at the 0.05 level (2-tailed).

*Grade = 10.0 AND Ethnicity = "HL" n = 69*

**Correlations**

		HPS Sum	HMS Sum	Comp
GPA	Pearson Correlation	.028	.222	.170
	Sig. (2-tailed)	.822	.067	.162
	N	69	69	69

*Grade = 11.0 AND Ethnicity = "HL" n = 73*

**Correlations**

		HPS Sum	HMS Sum	Comp
GPA	Pearson Correlation	-.054	-.177	-.140
	Sig. (2-tailed)	.652	.133	.239
	N	73	73	73

*Grade = 12.0 AND Ethnicity = "HL" n = 49*

**Correlations**

		HPS Sum	HMS Sum	Comp
GPA	Pearson Correlation	.051	.111	.111
	Sig. (2-tailed)	.730	.447	.450
	N	49	49	49

*Grade = 9.0 AND Race = "B" n = 56*

**Correlations**

		HPS Sum	HMS Sum	Comp
GPA	Pearson Correlation	-.103	-.055	-.083
	Sig. (2-tailed)	.449	.685	.542
	N	56	56	56

*Grade = 10.0 AND Race = "B" n = 35*

**Correlations**

		HPS Sum	HMS Sum	Comp
GPA	Pearson Correlation	.140	.121	.141
	Sig. (2-tailed)	.423	.490	.418
	N	35	35	35



*Grade = 11.0 AND Race = "B" n = 29*

**Correlations**

		HPS Sum	HMS Sum	Comp
GPA	Pearson Correlation	.112	-.207	-.084
	Sig. (2-tailed)	.561	.280	.667
	N	29	29	29

*Grade = 12.0 AND Race = "B" n = 55*

**Correlations**

		HPS Sum	HMS Sum	Comp
GPA	Pearson Correlation	.173	-.106	-.003
	Sig. (2-tailed)	.208	.443	.984
	N	55	55	55

*Grade = 9.0 AND Race = "OR" n = 53*

**Correlations**

		HPS Sum	HMS Sum	Comp
GPA	Pearson Correlation	-.133	.157	.037
	Sig. (2-tailed)	.342	.262	.795
	N	53	53	53

*Grade = 10.0 AND Race = "OR" n = 57*

**Correlations**

		HPS Sum	HMS Sum	Comp
GPA	Pearson Correlation	.042	.166	.135
	Sig. (2-tailed)	.756	.218	.316
	N	57	57	57

*Grade = 11.0 AND Race = "OR" n = 36*

**Correlations**

		HPS Sum	HMS Sum	Comp
GPA	Pearson Correlation	-.237	-.168	-.234
	Sig. (2-tailed)	.165	.328	.169
	N	36	36	36

Grade = 12.0 AND Race = "OR" n = 31

**Correlations**

		HPS Sum	HMS Sum	Comp
GPA	Pearson Correlation	.159	.235	.265
	Sig. (2-tailed)	.393	.204	.150
	N	31	31	31

Grade = 9.0 AND Race = "W" n = 16

**Correlations**

		HPS Sum	HMS Sum	Comp
GPA	Pearson Correlation	.035	.502*	.348
	Sig. (2-tailed)	.896	.048	.187
	N	16	16	16

\*. Correlation is significant at the 0.05 level (2-tailed).

Grade = 10.0 AND Race = "W" n = 9

**Correlations**

		HPS Sum	HMS Sum	Comp
GPA	Pearson Correlation	-.091	.383	.235
	Sig. (2-tailed)	.816	.309	.543
	N	9	9	9

Grade = 11.0 AND Race = "W" n = 28

**Correlations**

		HPS Sum	HMS Sum	Comp
GPA	Pearson Correlation	-.034	-.232	-.142
	Sig. (2-tailed)	.862	.235	.472
	N	28	28	28

Grade = 12.0 AND Race = "W" n = 16

**Correlations**

		HPS Sum	HMS Sum	Comp
GPA	Pearson Correlation	-.398	-.402	-.478
	Sig. (2-tailed)	.127	.122	.061
	N	16	16	16

*Grade = 9.0 AND Gender = "M" n = 68*

**Correlations**

		HPS Sum	HMS Sum	Comp
GPA	Pearson Correlation	-.051	.312**	.176
	Sig. (2-tailed)	.679	.010	.151
	N	68	68	68

\*\* . Correlation is significant at the 0.01 level (2-tailed).

*Grade = 10.0 AND Gender = "M" n = 48*

**Correlations**

		HPS Sum	HMS Sum	Comp
GPA	Pearson Correlation	-.042	.083	.039
	Sig. (2-tailed)	.775	.575	.793
	N	48	48	48

*Grade = 11.0 AND Gender = "M" n = 51*

**Correlations**

		HPS Sum	HMS Sum	Comp
GPA	Pearson Correlation	-.185	-.222	-.231
	Sig. (2-tailed)	.194	.117	.103
	N	51	51	51

*Grade = 12.0 AND Gender = "M" n = 39*

**Correlations**

		HPS Sum	HMS Sum	Comp
GPA	Pearson Correlation	.102	.163	.158
	Sig. (2-tailed)	.536	.321	.336
	N	39	39	39

*Grade = 9.0 AND Gender = "F" n = 70*

**Correlations**

		HPS Sum	HMS Sum	Comp
GPA	Pearson Correlation	-.045	.012	-.013
	Sig. (2-tailed)	.713	.922	.918
	N	70	70	70

*Grade = 10.0 AND Gender = "F" n = 58*

**Correlations**

		HPS Sum	HMS Sum	Comp
GPA	Pearson Correlation	.116	.183	.180
	Sig. (2-tailed)	.386	.169	.176
	N	58	58	58

*Grade = 11.0 AND Gender = "F" n = 51*

**Correlations**

		HPS Sum	HMS Sum	Comp
GPA	Pearson Correlation	.141	-.132	-.019
	Sig. (2-tailed)	.324	.354	.892
	N	51	51	51

*Grade = 12.0 AND Gender = "F" n = 67*

**Correlations**

		HPS Sum	HMS Sum	Comp
GPA	Pearson Correlation	.190	-.173	-.041
	Sig. (2-tailed)	.124	.162	.744
	N	67	67	67