HIGH SCHOOL GPA AND ENGLISH GRADUATION EXAMINATIONS:
PREDICTING COLLEGE ENGLISH PLACEMENT
AND ENGLISH 101 FINAL COURSE GRADES

by

Elizabeth Ann Vinaja
Liberty University

A Dissertation Presented in Partial Fulfillment
Of the Requirements for the Degree
Doctor of Education

Liberty University
2016
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ABSTRACT

This multiple regression study examined the various signals that high school students typically receive from grades and assessments, indicating whether they are prepared for high school graduation and for the academic challenges of introductory college-level courses. This study used archival data collected from two community colleges in the State University of New York (SUNY) system that met the criteria for the study. High school grade point average (GPA) and New York State Comprehensive English Regents Examination scores were examined to see if they predict student placement into college-level English and eventual English 101 final course grades. College English placement was determined by the College Board’s ACCUPLACER English placement test score, a placement test required by many New York state community colleges. Archival data from the 2014-2015 freshman class were collected and examined using multiple regression analysis. The results indicated that both high school GPA and Regents English examination scores do predict college English placement and eventual English 101 final grades.

keywords: college readiness, high school grade point average (HSGPA), New York State Comprehensive English Regents Examinations, ACCUPLACER English placement test, college English placement
Dedication

This dissertation is dedicated to my husband Sean. Thank you for your hours of tutoring me in statistics and explaining the mysteries of SPSS to me! And thank you for always having complete confidence whenever I doubted that this day would come. I never would have made it without you.

This dissertation was also made possible because of my wonderful, supportive family. A special thank you to my dad and mom who faithfully prayed me through the doctoral program, and to my sister and grandma who always encouraged me along the way. You all are just like family to me! Thank you for believing in me!
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Dr. Duryea, Dr. Lowhorn, and Dr. Adams, I knew that I could always count on excellent advice from you all as I wrote, rewrote, and edited. I have sincerely appreciated your consistent guidance. Thank you for investing your time in me as I worked my way through this project.

And to my many friends who encouraged me along the way, thank you for all of your prayers and support. I certainly could not have done this without the Lord’s strength. May this dissertation be a testimony of I Thessalonians 5:24: “Faithful is he that calleth you, who also will do it.”
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CHAPTER ONE: INTRODUCTION

High school graduates across the nation eagerly await their first year of college. With high school diploma in hand, they believe that they are ready for the academic challenges that await them as they enter college. However, as a Strong American Schools (2008) report states, “A hoax is being played on America. The public believes that a high school diploma shows that a student is ready for college-level academics. Parents believe it too. So do students” (p. 3). Those high school graduates quickly discover that a clear gap exists between the level of knowledge they had when they graduated from high school and the level of knowledge that they actually need when they enroll in college. Many people now consider a high school diploma to be nothing more than a “broken promise”—a document which “falls far short” of its intended purpose (American Diploma Project, 2004, p. 1). State assessments, graduation tests, college preparation courses—all of these attempt to signal a student’s preparedness level for college entrance; however, more and more students are placing into remedial courses before they can begin their college-level work (Conley, 2003; National Conference of State Legislatures, 2011; Strong American Schools, 2008). Although many high school students take more advanced courses in high school to prepare for introductory college-level work, a large number of them still need remediation (Fulton, 2010; Klopfenstein & Thomas, 2009; Strong American Schools, 2008). Strong American Schools (2008) found that about 80% of students taking remedial courses in college had attained a GPA of 3.0 or higher in high school. More research is needed to understand why so many students are insufficiently prepared for college, and to help discover ways for these graduates to successfully transition from high school to college. Specifically, in the area of English, more research is needed to help high school graduates better prepare for entry-level college English requirements that will be expected of them on their college English
placement tests and that will allow successful completion of their first-year college English courses.

The purpose of this multiple regression study is to examine high school grade point average (GPA) and the New York State Comprehensive English Regents Examination scores as predictors of college English placement (based on ACT’s ACCUPLACER English placement test) and college English 101 final course grades. After introducing the background to this study, this chapter will discuss the problem, state the purpose and significance of this study, list research questions and hypotheses, identify variables and definitions, and briefly examine the design used for this study.

**Background**

Although colleges and universities have administered entrance tests because the early 1900s, standardized admissions tests did not gain popularity until the mid-twentieth century when the College Board and the American College Testing (ACT) program began developing tests that could be used nationwide (ACT, 2015; SAT, 2015). Today, these two major standardized college admissions tests, the SAT and the ACT, continue to grow in popularity. However, because the results of these tests are often too general for actual placement within particular college courses, colleges and universities also rely on internal placement tests to determine exactly where that student will best fit in his entry-level courses (ACT, 2008a, 2008b, 2012; Belfield & Crosta, 2012; Scott-Clayton, 2012). While many colleges and universities nationwide have developed their own in-house placement tests, the College Board and the ACT also provide standardized placement tests that colleges and universities are welcome to adapt to their individual needs. ACCUPLACER is the computer-adaptive entrance test provided by the College Board, and the Computerized-Adaptive Placement Assessment and Support System
(COMPASS) is the entrance test provided by the ACT. Although both placement tests are popular nationwide, the placement test evaluated for this study is the ACCUPLACER. Specifically, the English placement portion of the ACCUPLACER test will be evaluated for its ability to determine whether incoming freshmen are properly prepared for college-level English (ACT 2008a, 2008b, 2012).

What these placement tests reveal is that a large percentage of American high school graduates are not prepared for college-level English courses. Nearly one million incoming college freshmen fail to place into college-level English (Strong American Schools, 2008); over one third of all students attending public colleges and universities must enroll in remedial education courses, particularly in math and English. Even more staggering is the concern that in community college settings, nearly 90% of all students spend at least one semester in remedial courses such as remedial English (Goldrick-Rab, 2010), and as many as 50% of those students drop out of college without earning any college credits (D’Agostino & Bonner, 2009; National Conference of State Legislatures, 2011).

Because of the obvious gap between high school and college, several studies have been conducted to determine how to predict or ensure general college success (Brown & Niemi, 2009; Nack & Townsend, 2007; Noble & Sawyer, 2004), but results are inconclusive. Nack and Townsend (2007) found high school GPA to be one effective factor to predict college success, while Noble and Sawyer (2004) and Laskey and Hetzel (2011) found high school GPA to be inadequate as a predictor of college success. Belfield and Crosta (2012) indicated that a student’s high school GPA and high school transcripts are the best predictors of college GPA. Brown and Conley (2007) examined content alignment using the comprehensive standards found in Knowledge and Skills for University Success (KSUS) developed by Conley in 2003 for the
Standards for Success project; Brown and Conley’s study suggested that high school exams cannot predict college placement because they do not adequately indicate the academic standards that college freshmen are expected to have. However, Brown and Niemi (2009) found that, in California, high school assessments and community college content were aligned; they concluded that additional research should be conducted to examine specific placement tests and actual knowledge tested in college-level classrooms. A few studies have focused on individual courses; for example, some studies examine high school math scores as predictors of college math success (Foley-Peres & Poirier, 2008; Peng, Li, & Milburn, 2011), and other studies mention the fact that college students are not being successful in college English (Behr, 2010; Brown & Conley, 2007; Strong American Schools, 2008).

However, the results of these studies are inconclusive for several reasons. First, although these studies attempt to generally bridge the gap between high school and college, they do not specifically address how college students can best read the signals that they receive in high school to help them prepare for college English. Because English is a foundational course upon which many other courses are built, students need to know how to properly prepare so that they do not get behind in their program before they even start (Dumbauld, 2013; SUNY, 2014; NYU 2014a; NYU 2014b). Because many colleges require successful completion of college-level English before the student is allowed to graduate (Dumbauld, 2013; SUNY, 2014; NYU 2014a; NYU 2014b), information on how to better prepare incoming freshmen for this course is vital. While some studies do address math scores as predictors of college math success (Foley-Peres & Poirier, 2008; Peng, Li, & Milburn, 2011), and other studies mention the fact that college students are not being successful in college English (Behr, 2010; Brown & Conley, 2007; Strong
American Schools, 2008), those studies do not specifically address how to correct this growing problem as it relates to English.

Another reason why previous studies are inconclusive is that they do not specifically address scores, such as high school exit exam scores or college placement test scores (D’Agostino & Bonner, 2009), scores which act as signals that should indicate a student’s actual preparedness for college (Kirst & Venezia, 2004). Without examining how those scores act as signals, directing students to further study in college, previous research is inconclusive. Much more research is needed to help educators reach specific conclusions regarding this transition from high school to college, a gap which this study will aim to fill by examining how well achievement tests and exit exams properly signal students to their actual level of college readiness.

This study will aim to fill these gaps in the literature by specifically examining high school GPA, high school English/language arts GPA (if available), and comprehensive English graduation examinations (particularly the New York State Regents Examination) to see if they can predict college English placement (based on ACCUPLACER English placement test scores) and English 101 final course grades. The theoretical framework that will ground this study is Kirst and Venezia’s (2004) signal theory which generally states that high school test scores and exit exam scores act as signals to students; if those signals are misleading, the students will erroneously think that they are prepared for college. Brown and Conley (2007) further theorized that inconsistent signals from high school exams will cause problems for educators who work to create college-readiness programs. Clear and consistent signals are needed to adequately prepare students for the rigors of college-level academics. If students receive signals which indicate that they are on track for academic success, students will attempt to live up to that success; however,
a miscue can lead a student down a path toward academic failure. Students need to receive accurate signals in order to adequately prepare for their futures.

**Problem Statement**

The problem is that a growing number of high school graduates are not placing into college-level courses, particularly in English (Goldrick-Rab, 2010; Horn et al., 2009). They are consequently placed into remedial or developmental English courses, causing them to get behind in their academic programs, wasting time, money, and valuable resources (Bahr, 2010; Davis, 2010; Fulton, 2010; Strong American Schools, 2008). College professors who could be better used teaching more advanced courses are instead required to teach the basic skills that high school graduates should have already developed (D’Agostino & Bonner, 2009; Davis, 2010). If high schools better prepared graduates for colleges, then colleges could better prepare graduates for the workforce (Maruyama, 2012). Any research to help predict successful placement into college-level courses would be beneficial to high school students, parents, educators, and employers alike.

**Purpose Statement**

The purpose of this multiple regression study is to use signal theory (Brown & Conley, 2007; Kirst & Venezia, 2004) to examine high school GPA and comprehensive English graduation examination scores from the New York State Regents Examination as predictors of college English placement (based on ACCUPLACER ENGLISH scores) and eventual college English 101 final course grades, after controlling for the demographics of race, age, gender, and major.

One of the main predictor variables, high school GPA, will be generally defined according to an unweighted 4.0 scale, because that is the scale that most four-year colleges and
universities use (College Board, 2012). Another major predictor variable, high school graduation examination scores, will be generally defined as the score a high school graduate receives on the New York State Comprehensive English Regents Examination. A computer program computes students’ raw scores into scaled scores, ranging from 0 to 100 (NYSED, 2010). Using hierarchical multiple regression, these predictor variables will be examined after controlling for demographics. The controlled variables for this study will include the demographics of race, age, gender, and major. Adding these variables will help to analyze the results by observing the prediction effects more specifically.

The primary criterion variable will be generally defined as college English entrance examination scores, specifically the scores that a student receives on the COMPASS writing skills placement test. Scores on this placement test range from 0 to 99 (ACT, 2012). To help explain the meaning of a student’s COMPASS test score, this criterion variable will also be evaluated using the variable of the level of English tested into (remedial or college-level). A second criterion variable will be generally defined as a student’s final grade, from 0 to 100, earned at the completion of college English 101.

**Significance of the Study**

This study is significant because it will attempt to fill a gap in the literature regarding the transition from high school to college, specifically in the area of English. Research has suggested that there is a clear disconnection between high school and college academic experience (Conley, 2003; Kirst & Venezia, 2004; Moss & Bordelon, 2007). High school graduates need proper indicators of their actual level of preparation for college (Kirst & Venezia, 2004; Brown & Conley, 2007). Colleges will be able to increase their effectiveness if their incoming freshmen arrive with skills and knowledge necessary to succeed in their first year
without remediation (Maruyama, 2012). Although many states nationwide have adopted the Common Core State Standards (CCSS) in order to address these concerns, many educators are concerned that the CCSS will only exacerbate the problem by creating greater achievement gaps and that the need for remediation will still exist (Spencer, n.d.; Yatvin, 2013). Because post-secondary institutions still have entrance requirements, and because implementing the CCSS does not guarantee post-high-school success for each child (Achieve, 2001), educators fear that implementing the CCSS will not decrease remediation rates. Therefore, the results of this study will be significant to taxpayers and policymakers who do not want to waste money, either by incorporating nation-wide curriculum that does not work or by remediating students and employees (Howell, 2011). The results of this study can also help high school educators, guidance counselors, and administrators know if the current indicators properly prepare their graduates for college, as well as help high school graduates know whether to assume that their high school grades act as accurate indicators of their level of college preparation (Brown & Conley, 2007). Focusing on high school English/language arts GPA (if available) could specifically help high school English teachers know if the grades that they give their students adequately predict the student’s actual level of preparation for college-level English. Following these high school graduates from college placement to the end of their college English 101 course will also help to increase the significance of this study. For further significance, the results of this study could potentially be applied to other disciplines as well, allowing for greater advancement of the current state of knowledge regarding the transition from high school to college.

**Research Questions**

The research questions for this study are the following:
RQ1: Does high school GPA predict scores on ACCUPLACER English placement tests, after controlling for the demographics of race, age, gender, and major?

RQ2: Do New York State Comprehensive English Regents Examination scores predict scores on ACCUPLACER English placement tests, after controlling for the demographics of race, age, gender, and major?

RQ3: Does high school GPA predict English 101 final course grades, after controlling for the demographics of race, age, gender, and major?

RQ4: Do New York State Comprehensive English Regents Examination scores predict English 101 final course grades, after controlling for the demographics of race, age, gender, and major?

Hypotheses

The research hypotheses are as follows:

H1: High school GPA does predict ACCUPLACER English placement test scores, after controlling for the demographics of race, age, gender, and major.

H2: New York State Comprehensive English Regents Examination scores do predict ACCUPLACER English placement test scores, after controlling for the demographics of race, age, gender, and major.

H3: High school GPA does predict English 101 final course grades, after controlling for the demographics of race, age, gender, and major.

H4: New York State Comprehensive English Regents Examination scores do predict English 101 final course grades, after controlling for the demographics of race, age, gender, and major.

The null hypotheses are as follows:
**H₀₁**: High school GPA does not predict ACCUPLACER English placement test scores, after controlling for the demographics of race, age, gender, and major.

**H₀₂**: New York State Comprehensive English Regents Examination scores do not predict ACCUPLACER English placement test scores, after controlling for the demographics of race, age, gender, and major.

**H₀₃**: High school GPA does not predict English 101 final course grades, after controlling for the demographics of race, age, gender, and major.

**H₀₄**: New York State Comprehensive English Regents Examination scores do not predict English 101 final course grades, after controlling for the demographics of race, age, gender, and major.

**Identification of Variables**

This study will examine two predictor variables. The two predictor variables will be high school GPA and Regents Comprehensive English examination scores. The first predictor variable in this study will be high school GPA (Nack & Townsend, 2007; Porter & Polikoff, 2011; Belfield & Crosta, 2012), as reported on high school transcripts and retrieved from archival data collection. High school GPA will be converted to an unweighted 4.0 scale (if not already reported as such on the students’ high school transcripts), because that is the scale that most four-year colleges and universities use (College Board, 2012). Another predictor variable will be high school graduation examination scores (Conley, 2003), specifically the New York State Comprehensive English Regents Examination scores, also reported on high school transcripts. The New York State Regents Examination is required for graduation from high school in New York. This examination includes multiple choice questions as well as essay questions which test students’ listening skills, reading comprehension, and writing ability.
Included in their writing ability score, students are assessed based on their coherence, organization, unity, knowledge of literary elements, and by how well they follow the principles of Standard English. Raw scores are converted to scaled scores, ranging from 0 to 100 (NYSED, 2010). This study will also examine the controlled variables of race, age, gender, and major to see how they interact with the criterion variables.

This study will also examine two main criterion variables. One criterion variable in this study will be college English entrance examination scores (Conley, 2003). For this study, the ACCUPLACER English placement test score will be used, because it is the required placement test for many community colleges in New York. The ACCUPLACER English placement test includes questions regarding various English skills such as reading comprehension, sentence structure, and logic; the WritePlacer essay evaluates a student’s writing ability, particularly in areas such as organization, focus, development and support, sentence structure, and mechanics (College Board, 2016a). Another main criterion variable will be English 101 final course grades, presented as grades ranging from A to F. To explain a student’s ACCUPLACER score, the criterion variable of the level of English tested into (remedial or college-level) will also be used.

Definitions

**ACCUPLACER English Placement Test**: A computer-adaptive assessment that evaluates a student’s reading and writing ability (College Board, 2016a).

**College readiness**: The level of knowledge and skill that a high school graduate needs in order to be successful in a college or university without having to take any remedial courses (Conley, 2007).

**College success**: Includes average or above-average performance, ability to develop study strategies, motivation, and completion (graduation) (Laskey & Hetzel, 2011). Initial
college success refers to successful placement into college-level courses; intermediate success refers to successful completion (with a grade of C- or above) of any remedial or introductory-level coursework, as well as returning for a second year; final success includes graduating and receiving a college diploma (Fulton, 2010).

**Computer-Adaptive Placement Assessment and Support Services (COMPASS)**

**writing skills placement tests:** The COMPASS writing skills placement test includes questions regarding various English skills such as mechanics and punctuation, verb form, agreement, clauses, and organization; scores range from 0 to 99 (ACT, 2012).

**Grade Point Average (GPA):** Some high schools record students’ GPA according to a weighted scale, meaning that they give extra points for grades earned in more difficult classes; other high schools and most colleges and universities use an unweighted GPA scale, considering all courses equal. The College Board (2012) reports that colleges typically convert high school student grades to a 4.0 scale according to a standard scale (See Table 1.1).

Table 1.1

### 4.0 Grade Point Average Scale

<table>
<thead>
<tr>
<th>Letter Grade</th>
<th>GPA</th>
</tr>
</thead>
<tbody>
<tr>
<td>A, A+</td>
<td>4.0</td>
</tr>
<tr>
<td>A-</td>
<td>3.7</td>
</tr>
<tr>
<td>B+</td>
<td>3.3</td>
</tr>
<tr>
<td>B</td>
<td>3.2</td>
</tr>
<tr>
<td>B-</td>
<td>2.7</td>
</tr>
<tr>
<td>C+</td>
<td>2.3</td>
</tr>
<tr>
<td>C</td>
<td>2.0</td>
</tr>
<tr>
<td>C-</td>
<td>1.7</td>
</tr>
<tr>
<td>D+</td>
<td>1.3</td>
</tr>
<tr>
<td>D</td>
<td>1.0</td>
</tr>
<tr>
<td>F</td>
<td>0</td>
</tr>
</tbody>
</table>
**New York State Comprehensive English Regents Examination**: The Regents Examination in Comprehensive English tests students’ listening skills, reading comprehension, and writing ability. Included in their writing ability score, students are assessed based on their coherence, organization, unity, knowledge of literary elements, and by how well they follow the principles of Standard English; a scoring program converts students’ scores to scaled scores, ranging from 0 to 100 (NYSED, 2010).

**Regents Examinations**: Regents Examinations are written according to the learning standards of New York State. In order to receive a high school Regents Diploma, a student must pass (with a 65 or above) Regents Examinations in English, math, science, Global History and Geography, and US History and Government; passing with higher scores (85 or above) allows a student to graduate with an honors diploma (NYSED, 2005).

**Remedial education**: (Also referred to as *developmental education* or *basic skills education*): Remedial courses simply prepare students for the academic challenges of their required college-level courses. Students do not receive college credit for these courses (National Conference of State Legislatures, 2011).

**Research Summary**

This study is a quantitative study, employing a correlational design using multiple regression analysis. Quantitative methods are appropriate for this study because its primary focus is the examination of relationships among predictor and criterion variables (Creswell, 2009; Gall, Gall, & Borg, 2007). Using a correlational study will also help to determine the direction and the strength between the variables, and to determine if further experimental research is necessary (Campbell & Stanley, 1963; Pallant, 2007). Multiple regression analysis will be used to “compare the predictive ability of particular independent variables and to find the
best set of variables to predict a dependent variable” (Pallant, 2007, p. 102). Also, according to Gall et al. (2007), multiple regression is one of the most commonly-used analysis for educational research due to its adaptability and the quantity of information that it provides. More specifically, hierarchal regression analysis will be used so that each independent variable can be evaluated for what it predicts in relation to the criterion variable, allowing for previous variables to be controlled for (Pallant, 2007). Because some existing research has already established factors such as high school GPA (Belfield & Crosta, 2012) and SAT scores (Coyle, Snyder, Pillow, & Kochunov, 2011) as predictors of first-year college GPA, hierarchal regression analysis will allow for the control of those variables, and it will also allow for the further analysis of other factors not previously studied. Although the use of stepwise multiple regression may also be valid for this study, Pallant (2007) and Howell (2011), among others, warn that there are a number of problems and controversies in the literature surrounding the various stepwise regression approaches. Therefore, hierarchal multiple regression will be used to analyze the independent variables of high school GPA and New York State Comprehensive English Regents Examination scores as predictors of college English placement (based on ACCUPLACER English test score) and English 101 final course grades, after controlling for the predictive effects of the demographic factors of race, age, gender, and major.
CHAPTER TWO: REVIEW OF THE LITERATURE

Many high school graduates, a few months after successfully completing their graduation exams, find that they are not adequately prepared for college, (Brown & Conley, 2007; Conley, 2003; Moss & Bordelon, 2007), particularly for college-level English (Goldrick-Rab, 2010; Horn, McCoy, Campbell, & Brock, 2009). The purpose of this study is to examine the signals that those students receive from their high school GPA and from their comprehensive English graduation examination scores to determine if they predict placement into college English and English 101 final course grades. If those signals are properly aligned, then this study will help to identify whether further research in other areas is needed to discover why students come to college having lost the knowledge and skills that they had when they graduated from high school. If, however, those signals are not properly aligned, then this study will help to confirm that further work needs to be done to align high school English exit examinations and college English entrance tests.

This chapter will begin by discussing the theoretical framework used to ground this study, as well as explaining how the theoretical frameworks relate to this study. Next, this chapter will discuss the current literature relating to this study, specifically as it relates to each of the following topics: high school graduation requirements (including the purpose of high school, content alignment, and high school graduation tests), college placement tests (specifically the ACCUPLACER English placement test), remediation, and college English 101. A summary of how this study could fill the gaps in the literature will conclude this chapter.

Theoretical Framework

The theoretical framework that will ground this study is Kirst and Venezia’s (2004) signal theory (based on signaling theory), a theory which indicates that high school students need
proper signals from teachers, assessments, and grades in order to help them fully develop the knowledge and skills required before moving on to college. This section will briefly introduce signal theory, as well as examine how this theory will serve as a foundation for this study.

**Signal Theory**

Signal theory, as it relates to education, was primarily developed in 2004 by Michael Kirst and Andrea Venezia in their book *From High School to College: Improving Opportunities for Success in Postsecondary Education*. It was developed from signaling theory, an economic theory which refers to the signals—such as grades, skills, or first impressions—that employers use when choosing which applicants to hire (Spence, 1973; Rosenbaum, 2001). When Spence (1973) developed signaling theory, his purpose was to examine what job applicants might do to seem more hirable as opposed to what their prospective employers actually looked for when determining whether to risk investing in an applicant. He concluded that the hiring process is somewhat like “purchas[ing] a lottery” (p. 356), and that the employer may not know until months down the road whether he made a good decision in hiring that particular applicant.

In education, however, signal theory focuses on the receiver of the signal—the student—as well as on the accuracy of the signal that was sent. Thus, the students, as well as the parents, are examined to see how they react to the signals (for example, how they set future goals and make future plans) sent by their teachers and schools. According to signal theory, several elements, including assessment scores and the course grades that students receive in high school, work together to act as signals to students regarding their level of preparedness for college (Brown & Conley, 2007; Cimetta, 2012; Kirst & Bracco, 2004; Venezia et al., 2005). Based on those signals, students will then make plans for their futures. Because college is an important and expensive step in a young adult’s life, it is important that high schools send out proper
signals that can best help their students prepare for that next step. Findings by Callan et al. (2006), Conley (2003), and Kirst and Bracco (2004) have suggested that high schools send mixed signals to their students when they improperly inflate grades or uphold only the minimum standards required for high school graduation; when students graduate from high school not knowing that they were accountable for only basic skills, they assume incorrectly that they are ready for college-level courses. These high school graduates then become frustrated when they receive the results from their college entrance or placement test and discover that they have been misled—that they must take remedial courses before they are actually ready to begin their core college classes. Wherever the miscommunication comes from, whether it be from the receivers not realizing that their high school grades were based on lower standards than their college grades will be (D’Agostino & Bonner, 2009), or whether it be from high schools and colleges not sending accurate signals to begin with, the result of the miscommunication is that students quit college before they even start (Kirst & Bracco, 2004). Therefore, signals received in high school must be accurate, for they can act either as a beacon for or as a barrier to college success.

Signal theory thus assumes that educational reforms would allow educators, parents, and students to receive proper signals and to have a greater chance of increasing college completion rates (Kirst, Venezia, & Antonio, 2004). If colleges work with high schools to ensure that appropriate standards are being met, then high school students presumably will be given proper signals to prepare them for college work. Also, if colleges would communicate with high schools regarding which signals that a particular college will examine when determining a student’s enrollment, high schools could presumably evaluate and signal their students more accurately. For example, some colleges may look at actual high school grades or grade point averages, while other colleges may simply look for a rigorous course of study in an applicant’s
transcript, without considering the grades earned in those rigorous courses (Jackson & Kurlaender, 2014). Information such as this could be shared with high schools so that high schools can signal their students accordingly.

Signal theory also assumes that a student’s inability to complete college has less to do with personal motivation and more to do with a lack of clear signals to high school students (Kirst et al., 2004). If students receive accurate signals of their actual level of preparation for and ability to complete college, then signal theory assumes that those students will have no difficulty completing rigorous college work and will have no academic reason to drop out of college. Furthermore, Bishop, Moriarty, and Mane (2000) suggest that increasing the amount of signals that high school students receive will in turn increase student achievement; by “making the connection between studying and rewards more visible,” signals will act as “rewards for learning” (p. 336). Thus, if the student realizes the connection between what he is doing in high school and what he hopes to do in college and beyond, maybe the student will be more likely to take his high school courses more seriously.

Once a student is accepted into a college, however, he must receive one more favorable signal before he is actually ready to begin enrolling for classes. Typically, the final signal which will indicate if a student is ready to begin college coursework is a placement test (Belfield & Crosta, 2012; Scott-Clayton, 2012; Jackson & Kurlaender, 2014), usually given in math and English. If a student does not earn a minimum score set by the institution (ACT, 2008a, 2008b, 2012; Jackson & Kurlaender, 2014), that score acts as a signal that the student is not prepared for college-level work, and he must instead take remedial courses. To avoid this problem, Long and Riley (2007) suggest applying signal theory to the placement testing process by starting college placement tests earlier in a student’s high school career. As a result, those scores can act as
“early signals” of college preparation (105), and the student will have the opportunity to make some changes before it is too late; if the high school student realizes early enough that he is lacking in a certain area, then he can take additional courses his senior year of high school rather than having to take remedial courses his first year of college. Therefore, if the assumptions underlying signal theory are accurate, once the signals are regulated, students and parents will better be able to interpret the signals, college completion and success rates will increase, and remediation rates will decrease.

Many studies of college readiness relate their findings to signal theory (Brown & Conley, 2007; Callan et al., 2006; Cimetta, 2012; Conley, 2003; D’Agostino & Bonner, 2009; Venezia et al., 2005). In New York, the Regents examination scores are believed to “produce signals of accomplishment” (Bishop, Moriarty, & Mane, 2000), signaling the students, teachers, and parents of the student’s current level of college preparedness. This study will also relate to signal theory because it will be looking at whether high school GPA and English graduation examination scores act as signals of students’ actual level of preparedness for college, particularly for college English placement tests and college English 101. Perhaps using signal theory could help to interpret certain high school GPA and examination scores as warning signs that students are not adequately prepared for college. And, if parents and teachers, who are aware of actual college requirements, accurately signal students for their accomplishments while they are young, then those properly-prepared students can be more likely to enter college, ready for college-level courses. The more information that educators collect, the more likely they will be able to learn about the appropriate signals that they should be sending to their students to help them become college-ready.
High School Graduation Requirements

Much of the literature surrounding the problem of students not being properly prepared for college seems to point accusatory fingers at America’s high schools. Some even consider that a high school diploma does not signify excellence, but merely indicates attendance (American Diploma Project, 2004). After attending four years of high school, many assume that graduates should have gained skills and knowledge needed to help them in whatever they decide to do next with their lives. However, Conley (2010) asks, “Should and can today’s high schools prepare all students for college and careers?” (p. 1). Is it reasonable to expect that young teenagers are capable of making important decisions regarding their future while they are in high school? If the purpose of high school is to provide students with a general post-elementary education, then it will be up to the colleges and universities to provide college-preparatory education to the high schools for college-bound students only. But, if the purpose of high school is to prepare students for college, then high school teachers, counselors, and parents need to be adequately knowledgeable so that they can encourage students to follow the right path to help them find success in college.

The Purpose of High School

Regardless of the overall purpose of high school, it is certainly true that what students do in high school will influence whatever academic or career field they enter into after high school. With more and more high school graduates attending college, thinking of high school graduation as the end of a person’s educational experience is no longer a valid assumption (Fanetti, Bushrow, & DeWeese, 2010). Instead, high school teachers should begin to assume that all of their students are planning to attend at least a few semesters of college. The knowledge and skills that students gain in high school can be applied to the tasks that they face in college and
beyond. Toward that end, a study presented by the National Council of Teachers of English (Graff & Birkenstein-Graff, 2009) encouraged educators to find specific links between high school and college—links that students could hold onto as they transition from high school into college. Although the tasks that they face in college will be proportionately more difficult than the tasks that they faced in high school, students are more likely to be successful if they are taught to use a variety of general skills that they can carry with them into their postsecondary studies. Conley (2010) even claimed that “high schools should be considered successful in proportion to the degree to which they prepare their students to continue to learn beyond high school [italics in original]” (p. 9). According to Conley’s criteria, high schools are failing to be successful, for growing numbers of high school graduates are finding that they are not properly prepared to continue their education. With more and more students entering remedial courses upon entering college, a report by Strong American Schools (2008) openly condemned American high schools for failing to adequately prepare their graduates for college, stating that a high school diploma does not signify that a student is ready for college entry-level work. Once again, America’s high schools take the blame for churning out improperly prepared graduates.

High school graduates themselves also receive some of the blame, for they often seem to focus on the “now” instead of on their seemingly-distant futures. However, while it may sometimes seem that high school students do not care about what happens after high school, they do actually want their high school academics to prepare them for college. Venezia et al. (2003) found that many high school students are worried that their high school classes are not adequately preparing them for college, but yet, many of them are apathetic about the college application process. They do not often realize that the application process can be rigorous and that they may not get into the first college of their choice. They need college representatives and
counselors to educate them about the challenges that may await them once they begin their college admission process. For example, many high school students erroneously believe the myth that taking easy classes in high school and earning good grades is the best way to prepare for college. However, Kirst et al. (2004) revealed that rigorous high school courses, even though they may cause students to have lower grades, are the best predictors of college success. If high school students are unaware of college admission requirements and overall college standards, they will not know what specific academic goals they should be striving to reach while in high school.

Ultimately, in order to properly prepare their graduates for colleges, high schools need a consistent flow of information from colleges, coupled with counseling sessions with college admissions advisors that can help students synthesize the information that they are accumulating (Venezia, Kirst, & Antonio, 2003; Callan et al., 2006). If colleges are frustrated that so many students must enter remedial courses, then it seems obvious that they should communicate with high schools to repair that problem. Callan et al. (2006) explained that “it would make sense” for high schools and colleges to communicate about how to best prepare students for college (p. 5). Venezia, Kirst, and Antonio (2003), however, found that, in most cases, high school teachers and college professors do not communicate; as a result, high school teachers assume that they are adequately preparing their students for college, and high school graduates assume that they are adequately prepared to begin the college application process. However, while information from colleges is clearly necessary to high school students, Tierney and Garcia (2011) found that information alone is not enough. Their study revealed that when students received information regarding their actual level of college preparedness, most students did not alter their behavior, even when their grades were shown to be inadequate for college entrance. Many students never
even remembered that they had received any information. Thus, Tierney and Garcia (2011) encourage that educators provide high school students with tangible academic support, support that the students will remember and that will motivate them to change. Some connection needs to be made to help them cross that bridge between high school and college.

**Content Alignment**

Whatever the reason, there is a clear “disconnect” between high school and college (Conley, 2003; Kirst & Venezia, 2004; Moss & Bordelon, 2007; Venezia, Kirst, & Antonio, 2003). A report by Strong American Schools (2008) claimed that there is “barely any academic connection between high school and universities, and the standards for high school graduation are not linked to the standards for college” (p. 5). Kirst and Bracco (2004) also suggested that “state and institutional policies continue to reflect a significant separation between K–12 and postsecondary education” (p. 3). Parents, students, teachers, and counselors do not always know what colleges expect from their applicants.

One common suggestion for bridging this gap between high school and college is that of content alignment. Content alignment would require communication between K–12 and postsecondary educators to ensure that high school graduation requirements and college entry requirements are properly aligned (Callan et al., 2006). Fanetti, Bushrow, and DeWeese (2010) explained that, just as elementary and middle schools are designed to prepare students to progress grade by grade until they reach high school, high school should be specifically designed to prepare students step by step for college. Venezia et al. (2005) claimed that this lack of alignment between high school and college, in both areas of coursework and assessment, is what is causing high school graduates to be incapable of completing college-level work.
Aligning K–12 and post-secondary education may be a daunting task. While Domina and Ruzek (2012) found that there are some benefits of uniting K–12 and post-secondary curriculum, their study provided more questions than answers. Instead of finding an efficient solution, their study indicated that curriculum alignment is a long and tedious process—a process that sometimes works effectively and sometimes does not.

In spite of the challenging process, there have been many suggested benefits that could come from aligning the content of high schools and colleges. For example, Callan et al. (2006) claimed that the percentage of students enrolled in remedial courses “could be reduced dramatically” if high schools and colleges were to align their content (p. 5). Also, aligning K–12 and postsecondary databases to track students throughout their entire education process may help to answer some questions regarding the effectiveness of America’s current education system. Callan et al. (2006) and Chait and Venezia (2009) suggested that tracking students’ progress from high school into postsecondary education would better allow researchers to discover which factors helped to best prepare students for college and can therefore help high schools know how to help smooth the transition from high school to college. However, Venezia et al. (2005) realized that alignment projects will need to be handled within each state; if colleges and high schools within each state would continue taking steps to align their standards, perhaps starting with high school graduation tests and college entrance examinations, then the chances of a national educational adjustment would begin to increase.

Recently, many states have adopted the Common Core State Standards (CCSS) in an attempt to help bridge this gap between high school and college. The goal of the CCSS is “to cover most of the skills in greatest demand by employers, postsecondary systems and our society, including the ability of students to communicate effectively in a variety of ways, work
collectively, think critically, solve routine and nonroutine problems and analyze information and
data” (Achieve, 2012, p. 3). The overwhelming focus of the CCSS is mathematics and English,
attempting to provide students with a solid foundation needed for post-high-school success. In
an Achieve report, King (2011) promises that “the CCSS, because they are anchored in college-
and career-ready expectations, will ensure that students graduate from high school ready to enter
and succeed in entry-level, credit-bearing college courses without the need for remediation
[emphasis in original]” (p. 2). However, many educators doubt that “educational equality,” the
goal of the CCSS, will lead to academic success; instead, they fear that greater achievement gaps
will be created in the long run (Spencer, n.d.).

Although the Common Core curriculum is aimed toward a college-preparatory education
for all students, some educators doubt whether college success rates will increase as nation-wide
implementation of Common Core increases (Valez & Marshall, 2013). Even the College Board
(2010) acknowledged that content standards alone will not be enough to eliminate the need for
developmental or remedial education. Indeed, many states are finding that implementing the
CCSS alone is not enough; in order for the CCSS initiative to be successful, it needs to be
supplemented with additional resources for both teachers and students (Venezia & Jaeger, 2013).
Yatvin (2013) found that English/language arts standards are too difficult for elementary
students; she criticizes that the standards require elementary students to think like high school
students, a problem which troubles elementary teachers who fear that their students will not be
able to succeed under such rigorous criteria. A report on Understanding the Skills in the
Common Core State Standards by Achieve (2012) also admitted that teachers will need further
professional development and additional materials for instruction within the classroom in order
for the CCSS to be effective. Furthermore, schools will need additional materials to supplement
the classroom instruction. For example, deficient high school libraries need to be stacked with adequate books for required reading and research projects, and with librarians who are properly equipped to help students find and use materials (Achieve, 2013; Jaeger, 2014). After implementing the required changes, many educators have already realized that the need for postsecondary remediation will still exist. A report by Achieve (2011) reveals that student performance will still be varied; there is no way to guarantee post-graduation success for each child. Post-secondary institutions will still have entrance requirements that high school graduates may or may not be able to meet. It is too soon to tell what the exact correlation will be between the implementation of the CCSS and the remediation rates in American colleges and universities. Because the CCSS are still in the early stages of being implemented, much time and further research will be required before a conclusive statement can be made. However, initial projections indicate that the Common Core State Standards are not the solution to America’s growing remediation rates.

**High School Graduation Tests**

In 2010, twenty-eight states (affecting nearly seventy-five percent of all high school students) required successful completion of some type of high school exit examinations or graduation tests in order for the student to get a diploma, with more states beginning to head in that same direction (Center on Education Policy, 2010). New York, for example, requires high school students to take five Regents Examinations, which are written according to the learning standards of New York State. Although the Common Core Regents (examinations based on the Common Core standards) are being filtered in, in order for a current potential graduate to receive a high school Regents Diploma, that student must pass (with a 65 or above) Regents examinations in English, math, science, Global History and Geography, and United States
History and Government; passing with higher scores (85 or above) allows a student to graduate with an honors diploma (NYSED, 2005). In other states, the process is similar; the graduation tests are written according to the educational (or Common Core) standards of that state, and a specific score is set to determine if a student passes or fails. All states allow the student to take the test at least a few times if needed, until the student gets a passing grade. In many states, like New York, a student must receive a passing grade in order to graduate.

High school graduation tests provide valuable signals that can lead high school students to success, both in high school and after graduation. In high school, those signals act as incentives for students to work harder in order to avoid academic consequences and to achieve academic success. Bishop, Moriarty, and Mane (2000) examined the effectiveness of the New York State Regents examinations, and they found that requiring all students to reach a specific standard “will significantly increase student achievement, college attendance and completion, and the quality of jobs that students get after high school” (p. 346). After graduating from high school, those students who were required to take the graduation examinations went on to achieve greater success than those who were not required to. Bishop, Moriarty, and Mane (2000) also found that high school students who were allowed to simply take basic or remedial courses for graduation credit were not as successful after graduating from high school. Requiring students to take more rigorous academic courses to prepare them for required graduation tests resulted in more students earning more money after graduation.

Although high school graduation tests may provide valuable information to graduating students, their high schools, and the states administering them, they do present a few problems. For example, Holme et al. (2010) suggested that exit examinations have not produced the desired results of spurring students on to excellence; instead, they are costly and ineffective, particularly
to at-risk students. Students who struggle through high school will continue to struggle in the job market when they cannot pass their graduation examinations needed to receive their diploma. Dee (2003) found that raising curriculum requirements to meet the standards required by graduation tests slightly increases the likelihood for students to drop out of high school, particularly among blacks and white males. Holme et al. (2010) also found that more rigorous testing policies in high school have no influence on college attendance, as was originally believed. In addition, the Center on Education Policy (2010) found evidence that high school teachers feel compelled to teach the test, knowing that their students’ graduation rests on successful completion of the test; consequently, high school teachers do not feel free to offer the more advanced coursework that might actually help to better prepare their students for college-level work. Teaching to the test will only result in more students needing remedial education upon entering college.

As current remediation rates prove, the main problem with high school exit examinations is that they do not always accurately indicate adequate preparation for college entrance examinations. Whether the problem lies with high school exit examinations or college entrance examinations is unclear (Bishop, Moriarty, and Mane, 2000; Center on Education Policy, 2010; Holme et al., 2010). These findings seem to indicate that successful completion of a high school graduation test or a standardized achievement test does not necessarily equal college readiness. More research needs to be done, specifically examining high school English graduation test scores with college English placement test scores, to see how to best help high school graduates find success in college.
College English Placement Exams

Although not every state requires a high school graduation test, more and more states are requiring students to take some type of college entrance examination, as a way to test all students’ level of preparation for their state’s colleges and universities (Center on Education Policy, 2010). Before getting accepted into a college or university, every college applicant takes either an ACT or an SAT (or both). These test scores, combined with other college placement test scores, ideally can be used to benefit colleges and universities by helping to identify how an individual applicant compares to other applicants, as well as to the current educational standards (Miller, 2006). The College Board (2008) recommends that colleges and universities consider both an applicant’s SAT scores and high school GPA together; the SAT score combined with the applicant’s high school GPA work together as “the best combination of predictors” of the student’s first-year GPA in college (p. 6). Similarly, Noble and Sawyer (2004) found that the ACT score combined with a student’s high school GPA serves as a better predictor of first-year college GPA, rather than looking at each variable individually. Although these tests have been used successfully for years, some educators criticize them as being biased toward wealthier students or as being ineffective as predictors of college academic performance (Lemann, 1999; Bettinger, Boatman, & Long, 2013). Hughes and Scott-Clayton (2010) suggest the possibility that the “assessment process itself may be broken” (p. ii). Therefore, must controversy exists regarding the legitimacy of these types of assessments.

Regardless of their opinions regarding ACTs and SATs, most colleges and universities now offer tailored entrance examinations and placement tests in order to examine how prepared a freshman student is for the particular courses available at that institution. A study conducted by the Center on Education Policy (2010) found that many states prefer college entrance
examinations because they can seemingly assess college readiness more accurately than high school graduation examinations. Conley (2007), however, found that college entrance examinations may not always serve as accurate predictors of college readiness or of college success because high school and college content standards are not aligned. Kirst and Bracco (2004) also discussed this “confusing array of exams” that students take between high school and college (p. 10), examinations which Callan et al. (2006) and Venezia et al. (2003) found to assess very different skills. Venezia et al. (2003) explained the frustrations that high school graduates face when they find that the knowledge and skills that they had mastered just a few months earlier are inadequate to meet college entry requirements. To help avoid this frustration, the Center on Education Policy (2010) suggested that states planning to require entrance or placement exams should consult the makers of the ACT and SAT to oversee that the college’s entry requirements line up with state high school graduation requirements. Although colleges may worry that aligning their entrance test with high school graduation requirements will result in lowering their college standards, Kirst et al. (2004) suggested that comparing college entrance tests with K–12 assessments and standards does not necessarily mean that colleges will have to moderate their assessments, but rather that colleges can help to reform K–12 education if needed.

One type of entrance examination that many colleges and universities use is a placement test (National Conference of State Legislatures, 2011). The two most commonly-used placement tests are the ACCUPLACER by the College Board, and the COMPASS by ACT (Hughes & Scott-Clayton, 2010). While an entrance test such as the ACT or SAT may be used to determine whether a student can be accepted into the college or into a certain degree program, a placement test is usually required after admission to ensure that the student is placed into an appropriate level of a particular course. After taking the required placement tests, a student is given a list of
courses to take, based on his test score. Colleges prefer to use placement tests because they know what their standard is, and they can use the placement test score to properly place their students into the class that best aligns with their skill level (ACT, 2008a; National Conference of State Legislatures, 2011). A minority of incoming students are aware of their deficiencies and are grateful for the opportunity to take remedial courses before being placed in the more challenging courses, particularly in English. Gray (2013), for example, met an incoming student at Dutchess Community College in upstate New York who knew that her high school English class did not adequately prepare her for a future career in forensic science. She planned to enroll in the community college’s remedial reading, writing, and study-skills course before transferring to the State University of New York at Binghamton. Her positive attitude is the exception rather than the rule.

Most incoming students are caught by surprise by their college’s placement test. For example, less than 50% of the students surveyed by Venezia et al. (2003) knew of the placement testing policies from the colleges and universities used in that particular study. In addition, many students do not realize that the results of the test will affect their placement in college courses, and thus, “they do not take the test seriously” (National Conference of State Legislatures, 2011, p. 3). Furthermore, many students come to college having done well in high school, and thus assume that they will do well on their placement tests. An administrator from a Maryland community college stated that “so many students come to this college with not a clue that they’re underprepared. They get those [placement] test results and they are sometimes very upset. . . . We always have people here who got B’s in English and test into developmental English and they think they know how to write and read, so it’s a surprise” (Venezia, Kirst, & Antonio, 2003, p. 22). Because students are only allowed to take the placement test one time, they become
frustrated when they see their score, realize the consequences, and want a second chance. They wonder if that one-time test was an accurate measurement of their knowledge of that particular subject. Studies conducted by Belfield and Crosta (2012) and LaForte (2000) indicated that placement tests scores have only a weak positive relationship with college GPA. LaForte (2000) further concluded that COMPASS placement test scores do not consistently predict overall college success; however, her study was limited by a small sample size and the results were therefore not generalizable. Scott-Clayton (2012) also studied the predictive validity of the COMPASS tests; although she discovered that the tests more accurately predict success in math than in English, she did find that the COMPASS English placement tests do help to increase success rates of those students who place into a college-level English course. For these reasons, placement tests and their consequences remain a controversy.

In spite of current debates regarding the effectiveness of placement tests, the reasoning behind placement testing makes good sense. ACT (2008a), the maker of the COMPASS placement test, believes that proper placement into college courses is “crucial to success in college” (p. 1); while students who are unprepared will become frustrated in their freshmen college-level courses, students who are adequately prepared will become bored in those same, basic courses. Specifically, the ACCUPLACER English placement test was designed to help colleges and universities to place incoming college freshmen into an appropriate level of English. The ACCUPLACER English placement test includes questions regarding various English skills such as reading comprehension, sentence structure, and logic; the WritePlacer essay evaluates a student’s writing ability, specifically the areas of focus, organization, development and support, sentence structure, and mechanics (College Board, 2016a). The score that the student receives on the test is then translated into a required course number. In order to determine what course
number best meets the needs of individual students, the College Board’s Admitted Class Evaluation Services (ACES) help institutions place students into appropriate courses according to their skill level, and to evaluate the accuracy and effectiveness of their placement decisions (College Board, 2016b; 2016c). That institution can then internally examine the effectiveness of the placement test by evaluating final grades at the end of the term, and the institution can adjust the cutoff score as needed to ensure that the students are being properly placed. Colleges that properly place their incoming freshmen into the appropriate levels of courses will allow the prepared students to advance more quickly, but will still allow for those students who do need remediation to start at a slower pace.

**Remediation**

More and more students are placing into remedial courses before they can begin their college-level work (Conley, 2003; National Conference of State Legislatures, 2011; Strong American Schools, 2008). Although estimates of the exact number of students who enroll in remedial courses vary, most studies agree that the percentage is significant. For example, Conley (2010) found remediation rates on average to be at least 40% of all students enrolled in American colleges; Kirst and Bracco (2004) indicated that at least 50% of all college students take remedial courses. Strong American Schools (2008) reported that nearly one million incoming college freshman fail to place into college-level English; thus, their research found that at least one third of all students attending public colleges and universities must enroll in remedial courses. Strong American Schools (2008) also found that the students who were required to take the remedial courses were students who did well in high school, achieving a high GPA (3.0 or higher) while taking challenging courses. Callan et al. (2006) mentioned that, in spite of increased enrollments in college-preparatory courses, college remediation rates are not
decreasing. Therefore, Howell (2011) suggested that remediation rates be examined more thoroughly than test scores because remediation rates more adequately represent the actual state of preparedness of high school graduates for college. Fulton (2010) also noted that students who took advanced courses in high school were only slightly less likely to require remediation; she concluded that more research needs to be conducted to determine whether recent policy changes are working effectively to help better prepare students for college-level courses.

In spite of the growing numbers of students requiring remediation and the consequential growing numbers of remedial courses being offered, there is still some doubt as to the overall effectiveness of remediation. In fact, Esch (2009) referred to community college remedial courses as “Higher Ed’s Bermuda Triangle,” claiming that “vast numbers of students enter community college remedial classes every year. Few are ever heard from again” (p. 33). Nearly half of the students who must enter remedial courses seem to disappear from the system. They often do not give remedial education a chance; they drop out of their courses or take recommended courses out of sequence, thus negating any influence that the remedial courses could have offered (Bailey, Jeong, & Cho, 2009).

Some educators also question whether placing low-achieving students together in one class will remove some of the academic improvement that naturally comes when low-achieving students are paired with high-achieving students; others question whether the psychological effects of being placed into a developmental course could hinder a student from even trying to be successful (Bettinger & Long, 2009). Some legislators in Connecticut have even suggested eliminating separate remedial courses altogether, proposing “embedded” college-level courses which would allow extra help to those developmental students who need it (Fain, 2012; Megan, 2012). The assumption of this legislation is that those students who require remediation can take
their college-level courses in sequence, without getting behind in their program and without feeling like a failure, but they can have greater access to tutors and to other supplementary activities that can help eliminate their deficiencies.

In spite of the controversy, there is research which suggests that remediation can be beneficial in the long-term to the growing number of students requiring it. For example, Bahr (2008) found that college math remediation was highly effective for removing math skill deficiencies, and that the students who successfully completed math remediation were just as capable of completing college-level math as those incoming freshman who did not require remediation. Bahr (2010) later completed an additional study of both math and English remediation which again indicated that, regardless of a student’s initial level of deficiency, college remedial mathematics and English classes can both produce favorable outcomes for those students who follow through and complete the course successfully. When students remediate successfully, they greatly increase their chances of completing their degree programs (Bettinger & Long, 2009; National Conference of State Legislatures, 2011).

One main reason why remediation’s effectiveness is a popular discussion for debate among educators is due to its cost. The estimated cost of remediation on states and students is approximately two billion dollars (Strong American Schools, 2008). Because of the expense, states must evaluate how and if to offer remedial courses; some even question if students slack off on purpose in high school because they know that remedial courses await them when they arrive at college (Bettinger & Long, 2009). Whatever the reason, students’ placement into remedial courses is costly; and if students are already struggling financially, the extra course might be the reason that they end up withdrawing from college altogether.
Not only does remediation cost money, but it also costs students valuable time that they could be using to advance in their majors and graduate on time—especially if the student was placed into a remedial course unnecessarily. Remedial students must enroll in courses which cover material that they should have learned in high school, often delaying their graduation date so much that many students become discouraged and drop out of college (Kirst & Bracco, 2004; Strong American Schools, 2008). Bettinger and Long (2004) found that simply being placed in remedial courses causes many students to drop out of college before they even begin; some four-year college drop outs transfer to two-year colleges, but they still take longer to complete their degrees. Venezia et al. (2005) reported that approximately 25% of remedial students in four-year colleges and about 50% of remedial students in community colleges drop out of college before their sophomore year. More work needs to be done to figure out how to help those college students continue in their education. Perhaps if more research could clearly prove that remedial courses such as developmental English actually work to help students achieve success, then maybe more students would be willing to give it a try.

**English 101**

One course that college freshmen are often unprepared for is college English 101. Conley (2005) estimated that approximately one third of high school graduates are not prepared for college English. Yet, college English is a foundational course that will help students in their future courses (SUNY, 2014, Dumbauld, 2013; NYU, 2014a; NYU 2014b) and in their future careers (College Board, 2004; Kellogg & Raulerson, 2007; and Applebee & Langer, 2009; Rasul, Rauf, Mansor, & Puvanasvaran, 2012). Across the state of New York, colleges and universities use their required English courses as a means to instruct students in necessary skills that both future courses and future employment require, skills such as higher-level writing and
critical thinking (SUNY, 2014; Dumbauld, 2013; NYU, 2014a; NYU 2014b). In order to realize this goal, New York colleges and universities require their students to successfully complete at least one English course, in which the student demonstrates a knowledge of the English language and an ability to think critically by writing essays (SUNY, 2014; Dumbauld, 2013; NYU, 2014a; NYU, 2014b). As in other states, developmental courses are also required for those who are unprepared for college-level English, as indicated by an entrance or placement test.

There are many reasons why incoming freshmen are unprepared for college English 101. For example, high school English curriculums vary among schools; some high school English classes require students to write essays about what they have read in literature, while other English classes do not require writing at all. When high school English courses do require writing, it is often on a limited scale (Applebee & Langer, 2009). High school English teachers attempt to teach the skills that they believe their students will need in their postsecondary education; however, many of these teachers are not able to follow up on their students’ English education after graduation. Without following up on their students’ postsecondary success, many high school teachers can only assume that they are adequately preparing their students for college English (Patterson & Duer, 2006). Many high school teachers would welcome the chance to know for sure that their curriculum is adequately college preparatory. One Georgia high school teacher stated, “I would love to sit down and talk with, or get reports from college professors about what they’re expecting in their English programs for different groups of kids” (Venezia, Kirst, & Antonio, 2003, p. 18). Curriculum studies conducted by ACT (2003, 2007) found that there are discrepancies between what high school and college English teachers believe to be important English skills. For example, college English professors believe grammar and
usage to be important components of the English class; however, high school instructors found grammar and usage to be among the least important skills.

Another reason for high school graduates’ lack of preparation for college English is due to their lack of reading ability. A surprising find by ACT (2006a) revealed that high school students somehow lose their momentum; their study tested the same students’ reading ability in eighth grade, tenth grade, and again in twelfth grade. While over sixty percent of the students were on track for college-level reading ability in eighth and tenth grade, the percentages dip below sixty percent in the twelfth grade. While it is easy to assume that a high school student knows how to read already, high school English teachers may need to take a more careful approach to ensure that each of their graduates does indeed know how to read. Colleges are quickly learning that many high school students have somehow managed to graduate with low reading ability.

In a few areas, high school and college English do share some similarities. For example, both high school English teachers and college English teachers place extensive emphasis on the writing process, including some kind of planning stage; they both also do well at setting clear standards and guidelines for their writing assignments (Addison & McGee, 2010). In spite of these few similarities, college English professors often feel as if their students have to “unlearn” what they learned in their high school English courses before they can begin to learn on the college level (Fanetti, Bushrow & DeWeese, 2010, p. 78). Consequently, writing has come to be known as a skill that elementary teachers “teach up” to postsecondary levels, and which postsecondary teachers “‘blame down’ for what students ‘should have learned’ by the time that they arrive at college” (O’Neill et al., 2012, p. 520). If students are to be successful in their
college English classes, they will need to be taught a standard way to use these essential skills in high school.

Because of its foundational nature, English 101 must be taught as a first-year course. Yet, many freshmen are either too inexperienced to understand the true benefits of the course or too eager to begin their core classes to stay focused on grammar. Because college English professors realize the critical value of their course, they face the often-difficult challenge of molding beginning-level students into college-level writers (Sullivan, 2003). College English professors realize that students must succeed in English 101 in order to excel in the remainder of their college courses. In most colleges and universities, successful completion of English 101 is mandatory—not just before a student can graduate, but also before a student can access many upper-level courses. Therefore, adequate preparation for college English 101 is vital so that freshman students can get the most out of this foundational course. Conley (2005) found that a good college-preparatory English course is one that exposes students to a variety of literary genres in historical context, requires students to analyze and write about that literature, and provides assignments that develop both their critical thinking and research skills.

Not only can completion of English 101 allow students access to upper-level courses, but successful completion of college English 101 can provide numerous other benefits to college students for their freshman year and beyond. The major essential skill that college English 101 courses across the nation emphasize is writing. The National Commission on Writing in America’s Schools and Colleges (2003) stated that “American education will never realize its potential as an engine of opportunity and economic growth until a writing revolution puts language and communication in their proper place in the classroom. Writing is how students connect the dots in their knowledge” (p. 3). Geiser and Studley (2002) found that a student’s
ability to compose written compositions (as measured by the SAT II writing test) is the number one predictor of early success among freshmen intending to major in humanities, social sciences, or general studies. It is through the process of writing that students process what they have learned; teaching them to write thus teaches them to think (Langer & Applebee, 1987).

A student who possesses excellent writing skills will likely be successful not only in college, but in any career as well. Kellogg and Raulerson (2007) and Applebee and Langer (2009) suggested that effective writing skills are vital keys to success in both higher education and future careers—perhaps even more critical than high scores on standardized tests. Thus, writing well will be their “ticket to professional opportunity,” while neglecting this important skill will become their “ticket out” of any chance at success in the business world (College Board, 2004, p. 3). Writing well is a skill that nearly every occupation will require. Even scientists agree that writing is an essential part of their occupation, and they realize that their research studies need to be written in clear language that the average reader can understand (Lindsay, 2011). Furthermore, in today’s economy, businesses desire their employees to possess good communication skills, placing even more responsibility on freshmen students to gain as much as they can from their college English courses (Brandt, 2005). Because at least 65% of salaried personnel in the business world are expected to do at least some writing, businesses currently spend billions of dollars on correcting their employees’ writing deficiencies (College Board, 2004). The National Commission in Writing in America’s Schools and Colleges (2003) concluded that “writing today is not a frill for the few, but an essential skill for the many” (p. iii). Consequently, foundational courses such as English 101 that instruct students in these vital communication skills will help them to be successful—not just in college, but in whatever future career they decide to pursue. As the National Commission on Writing in America’s Schools and
Colleges (2003) recognized, writing can “enrich” politics, “sustain” American life, and change the world (p. 10). Students who are well prepared for college English and can perfect their skill in college English will have great opportunities afforded to them.

**Summary**

What is currently known is that more and more high school graduates are not prepared for college-level courses (Brown & Conley, 2007; Conley, 2003; Moss & Bordelon, 2007), particularly for college-level English (Goldrick-Rab, 2010; Horn et al. 2009). What is not known is how to predict whether high school students are adequately prepared for college-level English courses, based on high school GPA or graduation examination scores. Studies have examined relationships between high school and college math (Cimetta, 2012), between high school and college in general (Conley, 2003; Davis, 2010), and between high school and college for at-risk students (Laskey & Hetzel, 2011). Content analyses have been conducted between college standards and high school exit examinations (Brown & Conley, 2007), and between high school and community college assessments in California (Brown & Neimi, 2009). Results are inconclusive.

Although much research has been done on the disconnection between high school and college, there are still many gaps in the literature. For example, a study relating solely to tracing a student’s English career from high school into college has not been found. In addition, a study relating specifically to graduation exam scores and college placement scores has not been found. Therefore, this study will be significant for several reasons. First, this study will attempt to add to what is already known, and to show how educators can better prepare high school students for immediate success in college English placement, and for continued success in college English 101. This study also will be significant since many students, parents, and educators are currently
interested in finding ways to better prepare high school graduates for college success. It will contribute to the literature and help to find ways to improve the transition from high school to college. Overall, this study will specifically address the gap by examining high school GPA and comprehensive English graduation examinations scores to see if they can help to predict whether students are prepared to pass their college English entrance exams and to enter their college-level English courses.
CHAPTER THREE: METHODOLOGY

The purpose of this multiple regression study was to determine if high school grade point average and New York State Comprehensive English Regents Examination scores predict college English placement (based on ACCUPLACER English placement test score) or English 101 final course grades, after controlling for the demographics of race, age, gender, and major. High school GPA, Regents Examination scores, ACCUPLACER English placement test scores, and English 101 final course grades were collected as archival data. This chapter will discuss the research design, review the research questions and hypotheses, as well as introduce the setting, participants, instrumentation, and procedures. This chapter will conclude with the plan used for data analysis.

Design

This study was a quantitative study, employing a multiple regression analysis. There are several reasons why quantitative methods were best for this study. The primary reason why quantitative methods were chosen for this study is that the main purpose of this study was to examine the relationships among variables, an examination that is best completed through quantitative methods (Gall et al., 2007; Pallant, 2007; Creswell, 2009). Furthermore, this study required quantitative methods in order to examine the strength and direction of the relationship between the multiple predictive and criterion variables (Gall et al., 2007; Pallant, 2007; Creswell, 2009). Also, a correlational design was chosen since this was an exploratory study being used to determine if further experimental research is needed (Campbell & Stanley, 1963).

Questions and Hypotheses

The research questions for this study were the following:
RQ1: Does high school GPA predict scores on ACCUPLACER English placement tests, after controlling for the demographics of race, age, gender, and major?

RQ2: Do New York State Comprehensive English Regents Examination scores predict scores on ACCUPLACER English placement tests, after controlling for the demographics of race, age, gender, and major?

RQ3: Does high school GPA predict English 101 final course grades, after controlling for the demographics of race, age, gender, and major?

RQ4: Do New York State Comprehensive English Regents Examination scores predict English 101 final course grades, after controlling for the demographics of race, age, gender, and major?

Hypotheses

The research hypotheses were as follows:

H₁: High school GPA does predict ACCUPLACER English placement test scores, after controlling for the demographics of race, age, gender, and major.

H₂: New York State Comprehensive English Regents Examination scores do predict ACCUPLACER English placement test scores, after controlling for the demographics of race, age, gender, and major.

H₃: High school GPA does predict English 101 final course grades, after controlling for the demographics of race, age, gender, and major.

H₄: New York State Comprehensive English Regents Examination scores do predict English 101 final course grades, after controlling for the demographics of race, age, gender, and major.

The null hypotheses were as follows:
**H₀₁:** High school GPA does not predict ACCUPLACER English placement test scores, after controlling for the demographics of race, age, gender, and major.

**H₀₂:** New York State Comprehensive English Regents Examination scores do not predict ACCUPLACER English placement test scores, after controlling for the demographics of race, age, gender, and major.

**H₀₃:** High school GPA does not predict English 101 final course grades, after controlling for the demographics of race, age, gender, and major.

**H₀₄:** New York State Comprehensive English Regents Examination scores do not predict English 101 final course grades, after controlling for the demographics of race, age, gender, and major.

**Participants**

This multiple regression study used archival data; therefore, no treatment was given to the participants. Before collecting the data, however, several steps were followed. First, a complete list of New York colleges and universities was compiled, using the websites 4icu.org and usnews.com/education/community-colleges/new-york to ensure that no college or university was missed. Microsoft Excel was used to randomly sort the list. Next, the individual New York college websites were used to determine which colleges met the criteria of requiring the ACCUPLACER English placement test. The websites indicated that public, 4-year colleges and universities do not typically require placement tests for all applicants; they only use ACCUPLACER English placement tests for certain students who do not meet admission requirements. However, most New York community colleges require placement tests such as ACCUPLACER for all students. Therefore, this study included only those community colleges that did require the ACCUPLACER English placement test. Those individual community
colleges were contacted via phone call or email, in the order set by the randomly-sorted list, and were asked to participate by sending the necessary anonymous data. Six community colleges across the state of New York were contacted; although three colleges responded positively, only two colleges in the State University of New York (SUNY) system were able to provide the data needed for the study. But, between the two colleges, there were more than enough participants. According to Cohen (1988), the needed sample size was 783 (if $\alpha = .05$, $r = .10$, $p = .80$). The actual sample size ($N = 2,665$) was determined by the amount of archival data available from the two individual colleges.

The participants were first-year college students who attended either one of the two colleges in the SUNY system that participated in the study, and who took remedial English or college English during the 2014-2015 school year. Participants also graduated from a New York high school; therefore, they were to have a New York State Comprehensive English Regents Examination score included in their data. However, only one of the colleges that agreed to participate actually had that data available; but, because all other data was present, both colleges were included in the study. Participants also had to have taken the ACCUPLACER English placement test upon entering college and completed English 101 during their first or second semester of college.

Once the data for the two colleges was combined, there were a total of 2,665 cases; approximately 48% of them were men, and 52% were women. The majority of the cases were 17 to 20 year olds (86%) and were Caucasian (69%). Additionally, 54% of the cases were enrolled in a Liberal Arts program of study. See Table 3.1 for complete descriptive statistics.
Table 3.1

Descriptive Statistics

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</table>

Setting

For this study, archival data was collected from two SUNY colleges that met the criteria for the study (i.e., colleges that require the ACCUPLACER English placement test). Because community colleges all across New York state require the ACCUPLACER English placement test, and because it is likely that students who attended high school in New York will also attend college in New York, demographics from both the colleges and the students should demonstrate a representative sample of the state of New York.

Both colleges included in the study are community colleges in the State University of New York system. One of the colleges is located in a rural setting, employing a faculty and staff
of over 550 full-time and part-time members. Approximately 100 professors teach full time, with another 166 professors teaching part time. Currently, over 4,200 full-time and part-time students attend this community college; 43% of them are men, and 57% are women. The majority of students (90%) and employees (97%) are Caucasian, with a small percentage of Black or African American (3%) and Hispanic (3%) students. Less than 3% of the faculty and student body are Asian, American Indian/Alaska Native, or Native Hawaiian. The student-to-faculty ratio is 20:1. A wide variety of programs are offered, the most popular of which is the Humanities and Social Science degree in the Liberal Arts program. Other popular programs include Math and Science, Business Administration, Criminal Justice: Police, and Nursing.

The other college is also located in a rural setting, but with a student body of over 7,200 students, nearly 60% of which are full time. Approximately 43% men and 57% women make up the student body, which is primarily Caucasian (65%). The rest of the student body is made up of 11% Black or African American students, 3% Asian students, and less than 2% American Indian/Alaska Native, Hispanic, or Native Hawaiian students. Over 435 faculty members teach full time, with an additional 141 professors teaching part time. The student-to-faculty ratio here is also 20:1. The most popular degree program in this community college is Liberal Arts, with Health Sciences, Business/Public Service, and STEM degree programs following close behind.

Additionally, colleges throughout New York share similar English requirements, both for entering college and for successfully graduating from college. For example, the State University of New York (SUNY) system requires four units of high school English, a satisfactory Comprehensive English Regents Examination score (for New York residents), and a satisfactory end-of-course English grade (albany.edu/undergraduate_bulletin/admissions.html). After being accepted into the college, the prospective student must then sign up for the ACCUPLACER
English placement test to determine which English course he will be placed into (sunyulster.edu/admissions/start_here/step_2.php). All SUNY students must meet a writing requirement before graduating. One way to meet this writing requirement is to pass the college English course ENG 110Z, Writing and Critical Inquiry in the Humanities, with a grade of C or satisfactory. This course focuses on clarity of communication through writing, and encourages students to adhere to the writing process while demonstrating skill and critical thinking (albany.edu/undergraduate_bulletin/a_eng.html).

**Instrumentation**

Archival data was the type of data used to measure the relationship between variables. One predictor variable for this study was high school grade point average. GPA is often calculated on a 4.0 scale, with a 4.0 signifying an A+ average. High school GPA is often used cautiously because some high schools use a weighted GPA, granting extra points for more difficult classes; some high schools use an unweighted GPA, considering all courses as equal; and some high schools use a combination of weighted and unweighted scales (Lang, 2007). Still, colleges and universities indicate that high school GPA is one of the top four contributing factors when evaluating a student for admission (Lang, 2007). Belfield and Crosta (2012) also suggested that high school GPA acts as a good predictor of college GPA.

Another predictor variable for this study was the New York Comprehensive English Regents Examination score. Regents Examinations in various forms have been used in New York at least since the 1930s (NYSED, 2012). Regents examinations are required in various subjects; however, this study examined only the comprehensive English examination scores. The Regents examination in comprehensive English tests students’ listening skills, reading comprehension, and writing ability. Included in their writing ability score, students are assessed
based on their coherence, organization, unity, knowledge of literary elements, and by how well they follow the principles of Standard English; a scoring program converts students’ scores to scaled scores, ranging from 0 to 100 (NYSED, 2010).

The control variables included age, gender, race, and degree program. Because much literature already exists to explain the correlation between these variables and first year college GPA, these variables were controlled for using hierarchal regression analysis in order to examine the ability of high school GPA and the Regents Comprehensive English examination score to predict the criterion variables.

One criterion variable in this study was English placement test score. One of the most commonly-used and recognized college English placement tests is the College Board’s ACCUPLACER English placement tests (The College Board, 2015). The ACCUPLACER English placement test analyzes a student’s level of ability in areas such as sentence structure and sentence logic. The WritePlacer portion of the test evaluates the student’s ability to organize, develop, and support a topic. Based on their score, students are placed into an English course according to the standards set by the college or university. For example, administrators can predetermine the cutoff score to include only those students with a chance of passing English 101 with an A or B average, or they can allow for students with a chance of passing with a C average to be considered qualified for English 101. Each institution using a placement test must evaluate its own resources in order to determine how many remedial students it can handle. For overall placement validity, however, the College Board (2015) reported that the reliability for the English placement test is approximately 90%, with about 70% of students who take their tests being accurately placed into appropriate levels of English. Once an institution uses the ACCUPLACER English placement test a time or two, they can run internal tests to verify that
the system is working properly. The beauty of placement tests such as the ACCUPLACER English placement test is that the individual institution can tweak the pass/fail score as needed to ensure that those who need remediation will get it, while those who do not need it can continue in their course of study.

Although the College Board provides annual accuracy and reliability statistics, it does not provide overall predictive validity statistics. Scott-Clayton (2012) explained that neither the ACCUPLACER nor COMPASS placement tests come with national predictive validity statistics because each institution must evaluate their programs annually to ensure that the testing procedures are effective. The institution must internally examine its own students’ course grades to determine if the system is working properly. If the remedial students are getting the help that they need to succeed without dropping out, and if the students who place directly into the college-level English course are passing on the first try, then that institution’s testing system will have a high predictive validity. Therefore, because each institution suits the placement test to meet their needs, the ACT writing skills placement test has no universal validity statistics.

**Procedures**

After the researcher gained approval from the Institutional Review Boards of all institutions involved in the study, data collection began. Six community colleges across the state of New York were contacted and asked to participate by allowing the use of archived data of the 2014-2015 freshman class; two colleges had the necessary data available and were willing to participate in the study. In both cases, the data were emailed directly to the researcher. Data were kept in a secure location at all times, in a place accessible only by the researcher. Data included the following: an identification number (for tracking purposes only), age, gender, race, high school GPA, New York State Comprehensive English Regents Examination score
(available from one college only), ACCUPLACER English placement exam score, initial English course number placed into, college English 101 final grade, and degree program. No names were given to the researcher; all data were anonymous.

**Data Analysis**

For this correlational study, hierarchal multiple regression analysis was used to analyze the predictive value of high school GPA and New York State Comprehensive English Regents Examination scores on college English placement (based on ACCUPLACER English placement test score) and English 101 final course grades. Multiple regression is used when determining the relationships between predictor variables and criterion variables (Gall et al., 2007). Multiple regression was more beneficial to this study than simple regression because it allowed for the examination of more than one predictor variable at a time, helping to explain the relationships between each predictor variable at one time or as a group (Howell, 2011). Specifically, hierarchal multiple regression was used because it allows for the control of variables that have been previously studied and allows for each independent variable to be analyzed in relation to its effect on the dependent variable (Pallant, 2007); although the use of stepwise multiple regression may also have been valid for this study, Pallant (2007) and Howell (2011), among others, warn that there are a number of problems and controversies in the literature surrounding the various stepwise regression approaches.

SPSS was used to run a series of correlational tests to examine the relationships between each set of predictor and criterion variables stated in this study’s research questions and hypotheses: high school GPA and college English placement test score, high school GPA and college English 101 final grade, Regents Comprehensive English examination score and college
English placement test score, and Regents Comprehensive English examination score and college English 101 final grade.

A significance level of $p < .05$ was used for all analyses (Cohen, 1988). The statistic used to report the effect size was Pearson’s $r$ because both variables being correlated “are expressed as continuous scores” (Gall et al., 2007, p. 347). A coefficient of determination ($R^2$) was also used to show how much the individual predictor variables influenced the amount of variance in the criterion variable (Gall et al., p. 634). Preliminary tests were used to check for the following assumptions: normality was tested by examining the histogram for normal distribution, independence of observations was tested by ensuring that each measurement was not dependent on any other measurement, multicollinearity was tested by examining if $r \geq .9$, homoscedasticity was tested by checking for a cigar-shaped design on the scatterplot, and multivariate normality was tested by checking for multiple peaks or extreme outliers that may have skewed the results (Pallant, 2007).
CHAPTER FOUR: FINDINGS

The purpose of this multiple regression study was to determine if high school grade point average and New York State Comprehensive English Regents Examination scores predict college English placement (based on ACCUPLACER English placement test score) or English 101 final course grades.

Research Questions

The research questions for this study were the following:

**RQ1**: Does high school GPA predict scores on ACCUPLACER English placement tests, after controlling for the demographics of race, age, gender, and major?

**RQ2**: Do New York State Comprehensive English Regents Examination scores predict scores on ACCUPLACER English placement tests, after controlling for the demographics of race, age, gender, and major?

**RQ3**: Does high school GPA predict English 101 final course grades, after controlling for the demographics of race, age, gender, and major?

**RQ4**: Do New York State Comprehensive English Regents Examination scores predict English 101 final course grades, after controlling for the demographics of race, age, gender, and major?

Null Hypotheses

The null hypotheses were as follows:

**H01**: High school GPA does not predict ACCUPLACER English placement test scores, after controlling for the demographics of race, age, gender, and major.
Ho₂: New York State Comprehensive English Regents Examination scores do not predict ACCUPLACER English placement test scores, after controlling for the demographics of race, age, gender, and major.

Ho₃: High school GPA does not predict English 101 final course grades, after controlling for the demographics of race, age, gender, and major.

Ho₄: New York State Comprehensive English Regents Examination scores do not predict English 101 final course grades, after controlling for the demographics of race, age, gender, and major.

**Descriptive Statistics**

Archival data collected from two community colleges from the State University of New York (SUNY) system for the 2014-2015 freshman class were used in this study. Data from a total of 2,665 cases were evaluated for descriptive statistics. Descriptive statistics first revealed that the cases were nearly evenly split with approximately 48% men, and 52% women. Descriptive statistics also revealed that the ages ranged from 17 to 56 (see Table 4.1 for the distribution), but that the most popular ages were 17 to 20 (86%). Race was also examined using descriptive statistics, revealing that the majority of the cases (69%) were Caucasian. See Table 4.1 for the complete descriptive statistics.

Another controlled variable considered for this study was the students’ college degree program. For this study, degree program was evaluated based on a Liberal Arts degree or a non-Liberal Arts degree. The Liberal Arts degree programs included majors in areas such as liberal arts, media arts, communications, humanities, and education. The non-Liberal Arts degrees included majors in professions such as accounting, business, computer science, hospitality, nursing, and STEM (science, technology, engineering, and math). Table 4.1 shows that 46% of
the cases were non-Liberal Arts majors and 54% of the cases were students in a Liberal Arts
program of study.

Table 4.1

*Descriptive Statistics*

<table>
<thead>
<tr>
<th>Variable</th>
<th>Category</th>
<th>N</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td>Men</td>
<td>1287</td>
<td>48.3</td>
</tr>
<tr>
<td></td>
<td>Women</td>
<td>1378</td>
<td>51.7</td>
</tr>
<tr>
<td>Age</td>
<td>17-20</td>
<td>2396</td>
<td>86.3</td>
</tr>
<tr>
<td></td>
<td>21-30</td>
<td>191</td>
<td>7.3</td>
</tr>
<tr>
<td></td>
<td>31-40</td>
<td>48</td>
<td>2.8</td>
</tr>
<tr>
<td></td>
<td>41-50</td>
<td>26</td>
<td>.9</td>
</tr>
<tr>
<td></td>
<td>51-60</td>
<td>4</td>
<td>.1</td>
</tr>
<tr>
<td>Race</td>
<td>African American</td>
<td>265</td>
<td>9.9</td>
</tr>
<tr>
<td></td>
<td>Asian</td>
<td>34</td>
<td>1.3</td>
</tr>
<tr>
<td></td>
<td>Caucasian</td>
<td>1834</td>
<td>68.8</td>
</tr>
<tr>
<td></td>
<td>Hispanic</td>
<td>14</td>
<td>.5</td>
</tr>
<tr>
<td></td>
<td>Multi-race/Other</td>
<td>33</td>
<td>1.2</td>
</tr>
<tr>
<td></td>
<td>Native American</td>
<td>15</td>
<td>.6</td>
</tr>
<tr>
<td></td>
<td>No Reply</td>
<td>470</td>
<td>17.7</td>
</tr>
<tr>
<td>Major</td>
<td>Liberal Arts</td>
<td>1442</td>
<td>54.1</td>
</tr>
<tr>
<td></td>
<td>Non-liberal Arts</td>
<td>1223</td>
<td>45.9</td>
</tr>
</tbody>
</table>

Descriptive statistics were also used to evaluate the variables of high school GPA,
Regents English exam scores, and ACCUPLACER English scores. Table 4.2 shows that the
mean high school GPA was 3.2 (out of a 4.0 scale), the mean Regents English examination score
was 78.71 and the mean ACCUPLACER English Placement test score was 75.77. Table 4.2 also
shows that there are only 823 cases that include the Regents English exam score because the
exam score was available only from one of the two colleges included in the study. Only 1,971 of
the cases had an ACCUPLACER English exam score; however, 254 cases were exempted from
the ACCUPLACER exam because of their high school GPA or because of their ACT or SAT score. Those cases were not removed from the study because the other variables were present and the cases could still provide valuable information about the signals that students receive in high school about their actual preparedness level for college.

Table 4.2

Descriptive Statistics for Select Variables

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>High School GPA</td>
<td>2596</td>
<td>.68</td>
<td>4.00</td>
<td>3.2869</td>
<td>.32526</td>
</tr>
<tr>
<td>Regents English Exam Score</td>
<td>823</td>
<td>36</td>
<td>100</td>
<td>78.71</td>
<td>9.587</td>
</tr>
<tr>
<td>ACCUPLACER English Exam Score</td>
<td>1971</td>
<td>27</td>
<td>120</td>
<td>75.77</td>
<td>19.377</td>
</tr>
</tbody>
</table>

Finally, descriptive statistics were used to evaluate the variables of remedial English and English 101 final grade. Table 4.3 shows that just under 15% of the students were required to take remedial English. Of those who were required to take remedial English, Table 4.3 shows that 10.5% withdrew and 18% received a grade of either unsatisfactory, D, or F. For those who did take college English 101 at some point during their first year, either right away or after a semester of remedial English, Table 4.3 reveals that over 64% successfully passed college English 101. It also reveals that 4.5% either withdrew or did not complete the course for any number of personal reasons, while 2.6% were withdrawn administratively as a result of too many absences.
Table 4.3

*Descriptive Statistics for English Placement and English Grades*

<table>
<thead>
<tr>
<th>Variable</th>
<th>Category</th>
<th>N</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>English Placement</td>
<td>Remedial</td>
<td>392</td>
<td>14.7</td>
</tr>
<tr>
<td></td>
<td>College-Level</td>
<td>1720</td>
<td>64.4</td>
</tr>
<tr>
<td>Remedial English Final Grade</td>
<td>Satisfactory/A/B/C</td>
<td>286</td>
<td>71.5</td>
</tr>
<tr>
<td></td>
<td>Unsatisfactory/D/F</td>
<td>72</td>
<td>18.0</td>
</tr>
<tr>
<td></td>
<td>Withdrew/Incomplete</td>
<td>42</td>
<td>10.5</td>
</tr>
<tr>
<td>College English Final Grade</td>
<td>A</td>
<td>630</td>
<td>23.6</td>
</tr>
<tr>
<td></td>
<td>B</td>
<td>677</td>
<td>25.4</td>
</tr>
<tr>
<td></td>
<td>C</td>
<td>362</td>
<td>13.6</td>
</tr>
<tr>
<td></td>
<td>D</td>
<td>172</td>
<td>6.5</td>
</tr>
<tr>
<td></td>
<td>F</td>
<td>74</td>
<td>2.8</td>
</tr>
<tr>
<td></td>
<td>Did not take/no grade</td>
<td>559</td>
<td>21.0</td>
</tr>
<tr>
<td></td>
<td>Withdrew/Incomplete</td>
<td>119</td>
<td>4.5</td>
</tr>
<tr>
<td></td>
<td>Withdrawn Administratively</td>
<td>70</td>
<td>2.6</td>
</tr>
</tbody>
</table>

**Findings**

**Data Screening**

Data files were received from two colleges in the SUNY system. The data files from both colleges were screened separately to check for incomplete data. The more complete data file included data for 958 cases. All of the cases included all of the necessary variables of race, age, gender, high school GPA, Regents English exam score, ACCUPLACER English placement score, college major, the level of English tested into, Remedial English final grade (if applicable), and college English final grade. No cases were removed from this file.

The second file originally included data for 2,077 cases, but 363 cases were removed because of incomplete variables. Also missing from the second file was the requested variable of Regents English exam scores. This college was contacted regarding the missing Regents English
exam scores, but the researcher was told that those scores are not kept on file and that all of the available data had been sent. In spite of the missing Regents English exam scores, this file of 1,714 cases was included in the study because all of the other variables were included: race, age, gender, high school GPA, ACCUPLACER English placement test score, college program of study, level of English tested into, Remedial English final grade (if applicable), and college English final grade.

The two data files were then combined for a total of 2,673 cases. Maximum and minimum nominal values were checked for each of the variables. There were no out-of-range values on any of the variables.

**Assumption Tests for Null Hypothesis One**

Assumption tests for the first null hypothesis were completed by evaluating the descriptive statistics for the predictor variable of high school GPA and the criterion variable ACCUPLACER English score. First, the sample size was evaluated for generalizability. The sample size meets the requirements for generalizability as suggested by Stevens (1996) and Tabachnick and Fidell (2007). Next, the predictor variable of high school GPA was examined for outliers. Descriptive statistics for high school GPA revealed that there were some outliers. The box and whisker plot identified seven of those outliers as extreme. Those outliers (case numbers 1361, 1587, 2302, 1004, 1731, 1142, and 2608) were removed, and a second box and whisker plot was screened. Although some outliers remained as shown in Figure 4.1, none of them were extreme; they were all within 1.5 whiskers (Green & Salkind, 2011). Also, the 5% trimmed mean further demonstrated that the outliers did not have a strong influence on the mean; therefore, those outliers were not removed (Pallant, 2007).
To assess the normality of high school GPA mathematically, the Kilmogorov-Smirnov statistic was evaluated because the sample size was large (more than 50 participants). This assumption test was not met, a result that is typical for large samples (Pallant, 2007). See Table 4.4 for the results of the Kilmogorov-Smirnov test.

Table 4.4

Kolmogorov-Smirnov Test of Normality for High School GPA

<table>
<thead>
<tr>
<th></th>
<th>Statistic</th>
<th>df</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>GPA</td>
<td>.030</td>
<td>2589</td>
<td>.000</td>
</tr>
</tbody>
</table>
To further assess the normality of high school GPA, a histogram was evaluated. The histogram (see Figure 4.2) showed that the distribution did not exhibit normality; the scores had a slight negative skew (skewness = -1.258, SE = .048) with distribution peaked around the mean GPA ($M = 3.28$, $S.D. = .33$; kurtosis = 6.053, $SE = .096$).

![Histogram of high school GPA](image)

*Figure 4.2. Histogram of high school GPA*

The criterion variable of ACCUPLACER English score was also examined for outliers and normality. Descriptive statistics revealed that the distribution was near normal with no outliers. First, a box and whisker plot of ACCUPLACER English scores was examined for outliers, and there were no outliers. See Figure 4.3 for the box and whisker plot.
To assess normality of ACCUPLACER English scores mathematically, the Kilmogorov-Smirnov statistic was again evaluated because the sample size was large (more than 50 participants). This assumption test was not met, a result that is typical for large samples (Pallant, 2007). See Table 4.5 for the results of the Kilmogorov-Smirnov test.

Table 4.5

<table>
<thead>
<tr>
<th>Kolmogorov-Smirnov Test of Normality for ACCUPLACER English Scores</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACCUPLACER_English_Scores</td>
</tr>
<tr>
<td>--------------------------------</td>
</tr>
<tr>
<td>ACCUPLACER English Scores</td>
</tr>
</tbody>
</table>
To further assess normality of ACCUPLACER English scores, a histogram was evaluated. The histogram (see Figure 4.4) showed that the distribution does not exhibit normality; the results had a slight negative skew (skewness = -.271, SE = .055) with a peak around the mean (kurtosis = -.418, SE = .110). Therefore, the normality assumption was not met.

![Histogram](image)

*Figure 4.4. Histogram of ACCUPLACER English score*

Next, the correlations table was evaluated to check for multicollinearity. The correlations table (see Table 4.6) revealed that the controlled variables of race, age, gender, and major do not have a significant relationship with the ACCUPLACER English score, nor is the controlled variable of *major* significant; but, because they are controlled variables, these variables must
remain in the model (Pallant, 2007). However, the independent variable of high school GPA and the dependent variable of ACCUPLACER English score have a significant relationship of .3 (Pearson correlation = .297) (Pallant, 2007). This table also reveals that none of the variables have a high correlation (above .7), indicating that there was no violation of the assumption of multicollinearity.

Table 4.6

Pearson Product-Moment Correlations for Selected Variables with ACCUPLACER English Exam Scores

<table>
<thead>
<tr>
<th>Variable</th>
<th>ACCUPLACER</th>
</tr>
</thead>
<tbody>
<tr>
<td>Race</td>
<td>.052 **</td>
</tr>
<tr>
<td>Age</td>
<td>.078 ***</td>
</tr>
<tr>
<td>Gender</td>
<td>-.139 ***</td>
</tr>
<tr>
<td>Major</td>
<td>-.018</td>
</tr>
<tr>
<td>GPA</td>
<td>.297 ***</td>
</tr>
</tbody>
</table>

* p < .1  ** p < .05  ***p < .001

To further verify that there were no problems with multicollinearity, the coefficients table was examined. The coefficients table (see Table 4.7) reveals that the tolerance level is not too small (because it is above .10 for each variable) nor is the variance inflation factor (VIF) too high (because it is below 10 for each variable) (Pallant, 2007). Therefore, these results also indicate that the multicollinearity assumption was not violated.
Table 4.7

**Coefficients for the Dependent Variable ACCUPLACER English Exam Score**

<table>
<thead>
<tr>
<th>Model</th>
<th>Unstandardized Coefficients</th>
<th>Std. Coefficients</th>
<th>Correlations</th>
<th>Collinearity Statistics</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>Std. Error</td>
<td>Beta</td>
<td>Sig.</td>
</tr>
<tr>
<td>(Constant)</td>
<td>3.472</td>
<td>2.716</td>
<td>7.047</td>
<td>.000</td>
</tr>
<tr>
<td>Race</td>
<td>.765</td>
<td>.295</td>
<td>.059</td>
<td>.598</td>
</tr>
<tr>
<td>Age</td>
<td>.427</td>
<td>.111</td>
<td>.087</td>
<td>3.842</td>
</tr>
<tr>
<td>Gender</td>
<td>-5.599</td>
<td>.882</td>
<td>-.144</td>
<td>-6.350</td>
</tr>
<tr>
<td>(Constant)</td>
<td>3.221</td>
<td>.731</td>
<td>26.816</td>
<td>.000</td>
</tr>
<tr>
<td>Race</td>
<td>.754</td>
<td>.295</td>
<td>.058</td>
<td>2.556</td>
</tr>
<tr>
<td>Age</td>
<td>.434</td>
<td>.111</td>
<td>.089</td>
<td>.899</td>
</tr>
<tr>
<td>Gender</td>
<td>-5.803</td>
<td>.910</td>
<td>-.150</td>
<td>6.378</td>
</tr>
<tr>
<td>Major</td>
<td>.830</td>
<td>.914</td>
<td>.021</td>
<td>.908</td>
</tr>
<tr>
<td>(Constant)</td>
<td>-1.367</td>
<td>5.303</td>
<td>.258</td>
<td>.797</td>
</tr>
<tr>
<td>Race</td>
<td>.273</td>
<td>.278</td>
<td>.021</td>
<td>.982</td>
</tr>
<tr>
<td>Age</td>
<td>.725</td>
<td>.106</td>
<td>.149</td>
<td>6.838</td>
</tr>
<tr>
<td>Gender</td>
<td>-8.316</td>
<td>.868</td>
<td>-.215</td>
<td>-9.586</td>
</tr>
<tr>
<td>Major</td>
<td>1.026</td>
<td>.857</td>
<td>.026</td>
<td>1.197</td>
</tr>
<tr>
<td>GPA</td>
<td>22.534</td>
<td>1.403</td>
<td>.355</td>
<td>16.062</td>
</tr>
</tbody>
</table>

Next, the residuals were examined to check for normality, linearity, and homoscedasticity. The histogram revealed that the residuals did not exhibit normality. See Figure 4.5 for the histogram. To check for linearity, a P-P plot of the standardized residuals was examined; this plot showed that the residuals were approximately linear (see Figure 4.6). The standardized residuals did show homoscedasticity, as demonstrated by a scatterplot (see Figure 4.7), because the scatterplot was relatively square around the mean.
Figure 4.5. Histogram of the Standardized Residuals for ACCUPLACER as predicted by GPA
Figure 4.6. P-P Plot of the Standardized Residuals for ACCUPLACER as predicted by GPA
Results for Null Hypothesis One

Hierarchical multiple regression was used to assess the ability of high school GPA to predict ACCUPLACER English scores, after controlling for the influence of race, age, gender, and major. Gender, race, and age were entered at Step 1, explaining 3% of the variance in the ACCUPLACER English score. After entry of the major at Step 2, the total variance remained 3%; R square change = .000, $F(4, 1879) = 14.701, p = .000$. Adding high school GPA in Step 3 explained an additional 11.7% of the variance in the ACCUPLACER English score, explaining a total of 14.7% of the variance. After controlling for gender, race, age, and major, the R square change = .117, $F$ change (5, 1878) = 64.97, $p = .000$. See Table 4.8 for the results. An analysis
of variance (ANOVA) showed that the model as a whole was significant (see Table 4.9).

Furthermore, the Coefficients table (see Table 4.7) indicated that high school GPA made a large positive contribution (beta = .36) to the prediction of the ACCUPLACER score. Therefore, the researcher rejected null hypothesis one.

Table 4.8

*Hierarchical Regression Model Predicting ACCUPLACER English Exam Score According to Age, Race, Gender, Major, and High School GPA*

<table>
<thead>
<tr>
<th>Predictor</th>
<th>Std. Error of the Estimate</th>
<th>R Square</th>
<th>R Square Change</th>
<th>F Change</th>
<th>Sig. F Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step 1: Age, race, gender</td>
<td>19.091</td>
<td>.030</td>
<td>.030</td>
<td>19.328</td>
<td>.000</td>
</tr>
<tr>
<td>Step 2: Age, race, gender Major</td>
<td>19.092</td>
<td>.030</td>
<td>.000</td>
<td>.825</td>
<td>.364</td>
</tr>
<tr>
<td>Step 3: Age, race, gender Major GPA</td>
<td>17.907</td>
<td>.147</td>
<td>.117</td>
<td>257.991</td>
<td>.000</td>
</tr>
</tbody>
</table>
Table 4.9

ANOVA Table for the Dependent Variable ACCUPLACER English Score

<table>
<thead>
<tr>
<th>Model</th>
<th>Sum of Squares</th>
<th>Df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Step 1: Age, race, gender</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Regression</td>
<td>21133.859</td>
<td>3</td>
<td>7044.620</td>
<td>19.328</td>
<td>.000</td>
</tr>
<tr>
<td>Residual</td>
<td>685228.863</td>
<td>1880</td>
<td>364.483</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>706362.722</td>
<td>1883</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Step 2: Age, race, gender Major</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Regression</td>
<td>21434.542</td>
<td>4</td>
<td>5358.635</td>
<td>14.701</td>
<td>.000</td>
</tr>
<tr>
<td>Residual</td>
<td>684928.180</td>
<td>1879</td>
<td>364.517</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>706362.722</td>
<td>1883</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Step 3: Age, race, gender Major GPA</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Regression</td>
<td>104161.983</td>
<td>5</td>
<td>20832.397</td>
<td>64.967</td>
<td>.000</td>
</tr>
<tr>
<td>Residual</td>
<td>602200.739</td>
<td>1878</td>
<td>320.661</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>706362.722</td>
<td>1883</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Assumption Tests for Null Hypothesis Two

Assumption tests for the second null hypothesis were completed by evaluating the descriptive statistics for the predictor variable of the Regents English examination score and the criterion variable of the ACCUPLACER English score. First, the sample size was examined for generalizability. The sample size meets the requirements for generalizability as suggested by Stevens (1996) and Tabachnick and Fidell (2007). Next, the predictor variable of the Regents English examination score was examined for outliers. The box and whisker plot revealed that the data contained some outliers, and that one was extreme (case 1). That case was removed, and a second box and whisker plot was screened. Although some outliers remained (see Figure 4.8), none of them were extreme because they were all within 1.5 whiskers (Green & Salkind, 2011). Therefore, those outliers were not removed.
To assess normality of the Regents English examination scores mathematically, the Kilmogorov-Smirnov statistic was evaluated because the sample size was larger than 50 participants. This assumption test was not met, a result that is typical for large samples (Pallant, 2007). See Table 4.10 for the results of the Kilmogorov-Smirnov test. 

Table 4.10

Kolmogorov-Smirnov Test of Normality for Regents English Exam Scores

<table>
<thead>
<tr>
<th></th>
<th>Kolmogorov-Smirnov</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Statistic</td>
</tr>
<tr>
<td>Regents English Exam</td>
<td>.049</td>
</tr>
</tbody>
</table>

*Figure 4.8. Boxplot of Regents English Exam scores*
To further assess normality of the Regents English examination scores, a histogram was evaluated. The histogram (see Figure 4.9) showed that the distribution was not normal with a slight negative skew (skewness = -.263, $SE = .085$) and with a peak at the mean (kurtosis = .154, $SE = .170$).

![Histogram](image)

*Figure 4.9. Histogram of Regents English exam scores*

The criterion variable of ACCUPLACER English score was also examined for outliers and normality. Descriptive statistics revealed that the distribution contained no outliers, but was not normal. First, a box and whisker plot was examined for outliers, and there were no outliers. See Figure 4.10 for the box and whisker plot.
To assess normality of the ACCUPLACER English scores mathematically, the Kilmogorov-Smirnov statistic was again evaluated because the sample size was large (more than 50 participants). This assumption test was not met, a result that is typical for large samples (Pallant, 2007). See Table 4.11 for the results of the Kilmogorov-Smirnov test.

Table 4.11

**Kolmogorov-Smirnov Test of Normality for ACCUPLACER English Scores**

<table>
<thead>
<tr>
<th>Kolmogorov-Smirnov</th>
<th>Statistic</th>
<th>df</th>
<th>Sig</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACCUPLACER English Scores</td>
<td>.045</td>
<td>1966</td>
<td>.000</td>
</tr>
</tbody>
</table>
To further assess normality, a histogram was evaluated. The histogram (see Figure 4.11) showed that the distribution of ACCUPLACER English scores was not normal; the results had a slight negative skew (skewness = -.271, SE = .055) with one peak (kurtosis = -.418, SE = .110). Therefore, the assumption of normality was not met.

![Histogram of ACCUPLACER English score](image)

*Figure 4.11. Histogram of ACCUPLACER English score*

The correlations table was also evaluated to check for multicollinearity. The correlations table (see Table 4.12) revealed that the controlled variables of race, age, gender, and major do not have a strong relationship with ACCUPLACER English score, nor is the controlled variable of major significance; but, because they are controlled variables, these variables must remain in the model (Pallant, 2007). However, the independent variable of Regents English exam score
and the dependent variable of ACCUPLACER English score do have a large relationship of above .3 (.439). Because none of the variables have a high correlation with each other (above .7), there was no violation of the assumption of multicollinearity.

Table 4.12

*Pearson Product-Moment Correlations for Selected Variables with ACCUPLACER English Exam Scores*

<table>
<thead>
<tr>
<th>Variable</th>
<th>ACCUPLACER</th>
</tr>
</thead>
<tbody>
<tr>
<td>Race</td>
<td>.053 **</td>
</tr>
<tr>
<td>Age</td>
<td>.078 ***</td>
</tr>
<tr>
<td>Gender</td>
<td>-.139 ***</td>
</tr>
<tr>
<td>Major</td>
<td>-.018</td>
</tr>
<tr>
<td>Regents English Exam Score</td>
<td>.439 ***</td>
</tr>
</tbody>
</table>

* p < .1   ** p < .05   ***p < .001

To further verify that there was no violation of the assumption of multicollinearity, the coefficients table was also examined. The coefficients table (see Table 4.13) shows that the tolerance level is not too small (because it is above .10 for each variable), nor is the variance inflation factor (VIF) too high (because it is below 10 for each variable) (Pallant, 2007). Therefore, these results also indicate that the multicollinearity assumption was not violated.
Table 4.13

*Coefficients for the Dependent Variable ACCUPLACER English Exam Score*

<table>
<thead>
<tr>
<th>Model</th>
<th>Unstandardized Coefficients</th>
<th>Std. Coefficients</th>
<th>Correlations</th>
<th>Collinearity Statistics</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>Std. Error</td>
<td>Beta</td>
<td>t</td>
</tr>
<tr>
<td>1 (Constant)</td>
<td>73.475</td>
<td>4.964</td>
<td></td>
<td>14.803</td>
</tr>
<tr>
<td>Race</td>
<td>.770</td>
<td>.539</td>
<td>.059</td>
<td>1.429</td>
</tr>
<tr>
<td>Age</td>
<td>.427</td>
<td>.203</td>
<td>.088</td>
<td>2.104</td>
</tr>
<tr>
<td>Gender</td>
<td>-5.611</td>
<td>1.612</td>
<td>-.145</td>
<td>-3.482</td>
</tr>
<tr>
<td>2 (Constant)</td>
<td>73.227</td>
<td>4.993</td>
<td></td>
<td>14.667</td>
</tr>
<tr>
<td>Race</td>
<td>.758</td>
<td>.539</td>
<td>.058</td>
<td>1.406</td>
</tr>
<tr>
<td>Age</td>
<td>.435</td>
<td>.204</td>
<td>.089</td>
<td>2.133</td>
</tr>
<tr>
<td>Gender</td>
<td>-5.812</td>
<td>1.664</td>
<td>-.150</td>
<td>-3.493</td>
</tr>
<tr>
<td>Major</td>
<td>.821</td>
<td>1.671</td>
<td>.021</td>
<td>.491</td>
</tr>
<tr>
<td>3 (Constant)</td>
<td>-8.967</td>
<td>7.737</td>
<td></td>
<td>-1.159</td>
</tr>
<tr>
<td>Race</td>
<td>.145</td>
<td>.477</td>
<td>.011</td>
<td>.305</td>
</tr>
<tr>
<td>Age</td>
<td>.873</td>
<td>.182</td>
<td>.179</td>
<td>4.791</td>
</tr>
<tr>
<td>Gender</td>
<td>-7.322</td>
<td>1.467</td>
<td>-.189</td>
<td>-4.991</td>
</tr>
<tr>
<td>Major</td>
<td>1.072</td>
<td>1.469</td>
<td>.028</td>
<td>.730</td>
</tr>
<tr>
<td>Regents</td>
<td>.988</td>
<td>.077</td>
<td>.483</td>
<td>12.900</td>
</tr>
</tbody>
</table>

Next, the residuals were examined to check for normality, linearity, and homoscedasticity. The histogram reveals that the residuals do not exhibit normality (see Figure 4.12). To check for linearity, a P-P plot of the standardized residuals was examined; this plot shows that the residuals were not linear (see Figure 4.13). The standardized residuals do not show homoscedasticity as demonstrated by a scatterplot (see Figure 4.14).
Figure 4.12. Histogram of Standardized Residuals for ACCUPLACER as predicted by Regents English examination scores.
Figure 4.13. P-P Plot of the Standardized Residuals for ACCUPLACER as predicted by Regents English examination scores
Results for Null Hypothesis Two

Hierarchical multiple regression was used to assess the ability of the Regents English exam scores to predict ACCUPLACER English scores, after controlling for the influence of race, age, gender, and major. Race, age, and gender were entered at Step 1, explaining 3% of the variance in the ACCUPLACER English score. After entry of the major at Step 2, the total variance explained remained 3%; R square change = .000, $F(4, 562) = 4.411, p = .002$. The Regents English exam score was entered at Step 3, explaining an additional 22% of the variance in the ACCUPLACER English score, after controlling for race, age, gender, and major, R square
change = .222, $F$ change (5, 561) = 37.848, $p = .000$. See Table 4.14 for the results. An analysis of variance (ANOVA) showed that the model was significant (see Table 4.15). Furthermore, the coefficients table (see Table 4.13) indicates that the Regents English exam score made a significant contribution (beta = .48) to the prediction of the ACCUPLACER score. Therefore, the researcher rejected null hypothesis two.

Table 4.14

*Hierarchical Regression Model Predicting ACCUPLACER English Exam Score According to Age, Race, Gender, Major, and Regents English Exam Score*

<table>
<thead>
<tr>
<th>Predictor</th>
<th>Std. Error of the Estimate</th>
<th>R Square</th>
<th>Change</th>
<th>F Change</th>
<th>Sig. F Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step 1: Age, race, gender</td>
<td>19.130</td>
<td>.030</td>
<td>.030</td>
<td>5.808</td>
<td>.001</td>
</tr>
<tr>
<td>Step 2: Age, race, gender Major</td>
<td>19.143</td>
<td>.030</td>
<td>.000</td>
<td>.241</td>
<td>.624</td>
</tr>
<tr>
<td>Step 3: Age, race, gender Major Regents English Exam Score</td>
<td>16.826</td>
<td>.252</td>
<td>.222</td>
<td>166.405</td>
<td>.000</td>
</tr>
</tbody>
</table>
Table 4.15

ANOVA Table for the Dependent Variable ACCUPLACER English Score

<table>
<thead>
<tr>
<th>Model</th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step 1: Demographics</td>
<td>Regression</td>
<td>6377.062</td>
<td>3</td>
<td>2125.687</td>
<td>5.808</td>
</tr>
<tr>
<td></td>
<td>Residual</td>
<td>206039.245</td>
<td>563</td>
<td>365.967</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>212416.307</td>
<td>566</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Step 2: Demographics Major</td>
<td>Regression</td>
<td>6465.440</td>
<td>4</td>
<td>1616.360</td>
<td>4.411</td>
</tr>
<tr>
<td></td>
<td>Residual</td>
<td>205950.867</td>
<td>562</td>
<td>366.461</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>212416.307</td>
<td>566</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Step 3: Demographics Major Regents Score</td>
<td>Regression</td>
<td>53579.793</td>
<td>5</td>
<td>10715.959</td>
<td>37.848</td>
</tr>
<tr>
<td></td>
<td>Residual</td>
<td>158836.514</td>
<td>561</td>
<td>283.131</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>212416.307</td>
<td>566</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Demographics = race, age, and gender

Assumption Tests for Null Hypothesis Three

Assumption tests for the third null hypothesis were completed by evaluating the descriptive statistics for the predictor variable of high school GPA and the criterion variable of the college English final grade. First, the sample size was evaluated for generalizability. The sample size meets the requirements for generalizability as suggested by Stevens (1996) and Tabachnick and Fidell (2007). Next, the predictor variable of high school GPA was examined for outliers. Descriptive statistics for high school GPA revealed that there were some outliers. The box and whisker plot identified seven of those outliers as extreme. Those outliers (case numbers 1361, 1587, 2302, 1004, 1731, 1142, and 2608) were removed, and a second box and whisker plot was screened. Although some outliers remained as shown in Figure 4.15, none of them were extreme; they were all within 1.5 whiskers (Green & Salkind, 2011). Also, the 5% trimmed mean further demonstrated that the outliers did not have a strong influence on the mean. Therefore, those outliers were not removed (Pallant, 2007).
To assess normality of high school GPA mathematically, the Kilmogorov-Smirnov statistic was evaluated because the sample size was large (more than 50 participants). This assumption test was not met, a result that is typical for large samples (Pallant, 2007). See Table 4.16 for the results of the Kilmogorov-Smirnov test.

Table 4.16

Kolmogorov-Smirnov Test of Normality for High School GPA

<table>
<thead>
<tr>
<th></th>
<th>Kolmogorov-Smirnov Statistic</th>
<th>df</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>GPA</td>
<td>.030</td>
<td>2589</td>
<td>.000</td>
</tr>
</tbody>
</table>
To further assess normality of high school GPA, a histogram was evaluated. The histogram (see Figure 4.16) showed that the distribution did not exhibit normality; the scores had a slight negative skew (skewness = -1.258, SE = .048) with distribution peaked around the mean GPA (M = 3.28, SD = .33; kurtosis = 6.053, SE = .096).

Figure 4.16. Histogram of high school GPA

The criterion variable of the college English final grade was also examined for outliers and normality. Descriptive statistics revealed that the distribution was nearly normal with no outliers. First, a box and whisker plot was examined for outliers, and there were none. See Figure 4.17 for the box and whisker plot.
To assess normality mathematically, the Kilmogorov-Smirnov statistic was evaluated because the sample size was large (more than 50 participants). This assumption test was not met, as is typical for large samples (Pallant, 2007). See Table 4.17 for the results of the Kilmogorov-Smirnov test.

Table 4.17

<table>
<thead>
<tr>
<th></th>
<th>Kolmogorov-Smirnov</th>
</tr>
</thead>
<tbody>
<tr>
<td>College English Final Grade</td>
<td>Statistic, df, Sig.</td>
</tr>
<tr>
<td>College English Final Grade</td>
<td>.230, 2592, .000</td>
</tr>
</tbody>
</table>
To further assess normality, a histogram of college English final grades was evaluated. College English final grades were entered on a scale as follows: 0 = Withdrawn/Incomplete; 1 = Did not take/no grade; 2 = F; 3 = D; 4 = C; 5 = B; 6 = A. The histogram (see Figure 4.18) showed that the distribution was not normal. The results showed a bivariate distribution, an expected distribution because a large number of students did not take the course as suggested during their first year. However, for those that did take and finish the course, the results were negatively skewed (skewness = -.533, SE = .048) with a distribution that lacked normality (kurtosis = -1.211, SE = .096). Therefore, this variable did not pass the test of normality.

![Histogram of college English 101 final grades](image)

*Figure 4.18. Histogram of college English 101 final grades*
The correlations table was also evaluated to check for multicollinearity. The correlations table (see Table 4.18) revealed that the controlled variables of race, age, gender, and major do not have a strong relationship with college English final grades, nor is the controlled variable of age significant; but, because they are controlled variables, these variables must remain in the model (Pallant, 2007). Furthermore, the independent variable of high school GPA and the dependent variable of college English final grade have only a small relationship of below .3 (.072). Because none of the variables have a high correlation (above .7), there was no violation of the assumption of multicollinearity.

Table 4.18

*Pearson Product-Moment Correlations for Selected Variables with College English 101 Final Grades*

<table>
<thead>
<tr>
<th>Variable</th>
<th>College English 101 Final Grades</th>
</tr>
</thead>
<tbody>
<tr>
<td>Race</td>
<td>.038 **</td>
</tr>
<tr>
<td>Age</td>
<td>-.012</td>
</tr>
<tr>
<td>Gender</td>
<td>.051 **</td>
</tr>
<tr>
<td>Major</td>
<td>.053 **</td>
</tr>
<tr>
<td>GPA</td>
<td>.072 ***</td>
</tr>
</tbody>
</table>

* p < .1     ** p < .05     *** p < .001

To further verify that there was no violation of the assumption of multicollinearity, the coefficients table was also examined. The coefficients table (see Table 4.19) shows that the tolerance level is not too small (because it is above .10 for each variable), nor is the variance inflation factor (VIF) too high (because it is below 10 for each variable) (Pallant, 2007). Therefore, these results also indicate that the multicollinearity assumption was not violated.
Table 4.19

Coefficients for the Dependent Variable College English 101 Final Grades

<table>
<thead>
<tr>
<th>Model</th>
<th>Unstandardized Coefficients</th>
<th>Std. Coefficients</th>
<th>Correlations</th>
<th>Collinearity Statistics</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>Std. Error</td>
<td>Beta</td>
<td>t</td>
</tr>
<tr>
<td>Model 1 (Constant)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Race</td>
<td>.049</td>
<td>.028</td>
<td>.037</td>
<td>1.789</td>
</tr>
<tr>
<td>Age</td>
<td>-.007</td>
<td>.010</td>
<td>-.013</td>
<td>-.650</td>
</tr>
<tr>
<td>Gender</td>
<td>.203</td>
<td>.082</td>
<td>.050</td>
<td>2.460</td>
</tr>
<tr>
<td>Model 2 (Constant)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Race</td>
<td>.047</td>
<td>.028</td>
<td>.035</td>
<td>1.705</td>
</tr>
<tr>
<td>Age</td>
<td>-.005</td>
<td>.010</td>
<td>-.010</td>
<td>-.504</td>
</tr>
<tr>
<td>Gender</td>
<td>.162</td>
<td>.085</td>
<td>.040</td>
<td>1.911</td>
</tr>
<tr>
<td>Major</td>
<td>.165</td>
<td>.085</td>
<td>.041</td>
<td>1.932</td>
</tr>
<tr>
<td>Model 3 (Constant)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Race</td>
<td>.040</td>
<td>.028</td>
<td>.030</td>
<td>1.454</td>
</tr>
<tr>
<td>Age</td>
<td>.001</td>
<td>.011</td>
<td>.002</td>
<td>.080</td>
</tr>
<tr>
<td>Gender</td>
<td>.135</td>
<td>.085</td>
<td>.034</td>
<td>1.584</td>
</tr>
<tr>
<td>Major</td>
<td>.179</td>
<td>.085</td>
<td>.044</td>
<td>2.096</td>
</tr>
<tr>
<td>HS_GPA</td>
<td>.008</td>
<td>.002</td>
<td>.068</td>
<td>3.236</td>
</tr>
</tbody>
</table>

Next, the standardized residuals were examined to check for normality, linearity, and homoscedasticity. The histogram reveals that the residuals are again bivariate (because a large number of students did not take college English 101 as scheduled) and do not exhibit normality (see Figure 4.19). To check for linearity, a P-P plot of the standardized residuals was examined; this plot (see Figure 4.20) reveals that the residuals were not linear. The standardized residuals also do not show homoscedasticity, as demonstrated by a scatterplot (see Figure 4.21).
Figure 4.19. Histogram of Standardized Residuals for English 101 final grades as predicted by high school GPA.
Figure 4.20. P-P Plot of Standardized Residuals for English 101 final grades as predicted by high school GPA
Results for Null Hypothesis Three

Hierarchical multiple regression was used to assess the ability of high school GPA to predict college English 101 final grades, after controlling for the influence of race, age, gender, and major. Gender, race, and age were entered at Step 1, explaining 04% of the variance in college English final grades. After entry of the major at Step 2, the total variance raised only to .06%; R square change = .002, $F$ change (4, 2381) = 3.396, $p = .009$. Adding high school GPA in Step 3 explained an additional .04% of the variance in college English final grades, bringing the total variance to 1%. After controlling for gender, race, age, and major, the R square change
= .004, $F$ change (5, 2380) = 4.822, $p = .000$. See Table 4.20 for the results. An analysis of variance (ANOVA) showed that the model as a whole was significant (see Table 4.21). Furthermore, the coefficients table (see Table 4.19) indicates that high school GPA made a small positive contribution (beta = .068) to the prediction of college English 101 final grades. Therefore, the researcher rejected null hypothesis three.

Table 4.20

*Hierarchical Regression Model Predicting College English Final Grades According to Demographics, Major, and High School GPA*

<table>
<thead>
<tr>
<th>Predictor</th>
<th>Std. Error of the Estimate</th>
<th>R Square</th>
<th>R Square Change</th>
<th>F Change</th>
<th>Sig. F Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step 1:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Demographics*</td>
<td>2.009</td>
<td>.004</td>
<td>.004</td>
<td>3.281</td>
<td>.020</td>
</tr>
<tr>
<td>Step 2:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Demographics</td>
<td>2.008</td>
<td>.006</td>
<td>.002</td>
<td>3.731</td>
<td>.054</td>
</tr>
<tr>
<td>Major</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Step 3:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Demographics</td>
<td>2.004</td>
<td>.010</td>
<td>.004</td>
<td>10.471</td>
<td>.001</td>
</tr>
<tr>
<td>Major</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GPA</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Demographics = age, race, and gender*
Table 4.21

**ANOVA Table for the Dependent Variable College English Final Grades**

<table>
<thead>
<tr>
<th>Model</th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step 1: Demographics</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Regression</td>
<td>39.725</td>
<td>3</td>
<td>13.242</td>
<td>3.281</td>
<td>.020</td>
</tr>
<tr>
<td>Residual</td>
<td>9612.563</td>
<td>2382</td>
<td>4.036</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>9652.287</td>
<td>2385</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Step 2: Demographics</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Major</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Regression</td>
<td>54.764</td>
<td>4</td>
<td>13.691</td>
<td>3.396</td>
<td>.009</td>
</tr>
<tr>
<td>Residual</td>
<td>9597.524</td>
<td>2381</td>
<td>4.031</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>9652.287</td>
<td>2385</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Step 3: Demographics</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Major</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Major</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GPA</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Regression</td>
<td>96.802</td>
<td>5</td>
<td>19.360</td>
<td>4.822</td>
<td>.000</td>
</tr>
<tr>
<td>Residual</td>
<td>9555.486</td>
<td>2380</td>
<td>4.015</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>9652.287</td>
<td>2385</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Demographics = age, race, and gender

**Assumption Tests for Null Hypothesis Four**

Assumption tests for the fourth null hypothesis were completed by evaluating the descriptive statistics for the predictor variable of the Regents English examination score and the criterion variable of college English 101 final grades. First, the sample size was evaluated for generalizability. The sample size meets the requirements for generalizability as suggested by Stevens (1996) and Tabachnick and Fidell (2007). Next, the predictor variable of the Regents English examination score was examined for outliers. The box and whisker plot revealed that the data contained some outliers, and that one was extreme (case 1). That case was removed, and a second box and whisker plot was screened. Although some outliers remained (see Figure 4.22), none of them were extreme because they were all within 1.5 whiskers (Green & Salkind, 2011). Therefore, those outliers were not removed.
Figure 4.22. Boxplot of Regents English exam scores

To assess normality of Regents English exam scores mathematically, the Kilmogorov-Smirnov statistic was evaluated because the sample size was larger than 50 participants. This assumption test was not met, a result that is typical for large samples (Pallant, 2007). See Table 4.22 for the results of the Kilmogorov-Smirnov test.

Table 4.22

<table>
<thead>
<tr>
<th>Kolmogorov-Smirnov Test of Normality for Regents English Exam Scores</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Kolmogorov-Smirnov</strong></td>
</tr>
<tr>
<td>Statistic</td>
</tr>
<tr>
<td>Regents English Examination Score</td>
</tr>
</tbody>
</table>
To further assess normality of Regents English exam scores, a histogram was evaluated. The histogram (see Figure 4.23) showed that the distribution was not normal with a slight negative skew (skewness = -.263, \(SE = .085\)) and with a peak at the mean (kurtosis = .154, \(SE = .170\)).

![Histogram](image)

*Figure 4.23. Histogram of Regents English exam scores*

The criterion variable of the college English final grade was also examined for outliers and normality. Descriptive statistics revealed that the distribution was nearly normal with no outliers. First, a box and whisker plot was examined for outliers, and there were none. See Figure 4.24 for the box and whisker plot.
To assess normality mathematically, the Kilmogorov-Smirnov statistic was evaluated because the sample size was large (more than 50 participants). This assumption test was not met, as is typical for large samples (Pallant, 2007). See Table 4.23 for the results of the Kilmogorov-Smirnov test.

Table 4.23

**Kolmogorov-Smirnov Test of Normality for College English Final Grades**

<table>
<thead>
<tr>
<th></th>
<th>Kolmogorov-Smirnov</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Statistic</td>
</tr>
<tr>
<td>College English Final Grade</td>
<td>.230</td>
</tr>
</tbody>
</table>
To further assess normality, a histogram of college English final grades was evaluated. College English final grades were entered on a scale as follows: 0 = Withdrawn/Incomplete; 1 = Did not take/no grade; 2 = F; 3 = D; 4 = C; 5 = B; 6 = A. The histogram (see Figure 4.25) showed that the distribution was not normal. The results showed a bivariate distribution, because a large number of students did not take the course as suggested during their first year. However, for those that did take and finish the course, the results were negatively skewed (skewness = - .533, SE = .048) with a distribution that lacked normality (kurtosis = -1.211, SE = .096). Therefore, this variable did not pass the test of normality.

Figure 4.25. Histogram of college English 101 final grades
Next, the correlations table was evaluated to check for multicollinearity. The correlations table (see Table 4.24) revealed that the controlled variables of race, age, gender, and major do not have a strong relationship with college English Final grades, nor is the controlled variable of age significant; but, because they are controlled variables, these variables must remain in the model (Pallant, 2007). However, the independent variable of Regents English exam score and the dependent variable of college English final grades do have a small relationship (Pearson correlation = .227). This table also reveals that none of the variables have a high correlation (above .7), indicating that there was no violation of the assumption of multicollinearity.

Table 4.24

*Pearson Product-Moment Correlations for Selected Variables with College English 101 Final Grades*

<table>
<thead>
<tr>
<th>Variable</th>
<th>College English 101 Final Grades</th>
</tr>
</thead>
<tbody>
<tr>
<td>Race</td>
<td>.038 **</td>
</tr>
<tr>
<td>Age</td>
<td>-.012</td>
</tr>
<tr>
<td>Gender</td>
<td>.051 **</td>
</tr>
<tr>
<td>Major</td>
<td>.053 **</td>
</tr>
<tr>
<td>Regents English Exam Score</td>
<td>.227 ***</td>
</tr>
</tbody>
</table>

* p < .1    ** p < .05    ***p < .001

To further verify that there were no problems with multicollinearity, the coefficients table was examined. The coefficients table (see Table 4.25) reveals that the tolerance level is not too small (because it is above .10 for each variable) nor is the variance inflation factor (VIF) too high (because it is below 10 for each variable (Pallant, 2007). Therefore, these results also indicate that the multicollinearity assumption was not violated.
Table 4.25

Coefficients for the Dependent Variable College English 101 Final Grades

<table>
<thead>
<tr>
<th>Model</th>
<th>Unstandardized Coefficients</th>
<th>Std. Coefficients</th>
<th>Correlations</th>
<th>Collinearity Statistics</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>Error</td>
<td>Beta</td>
<td>t</td>
</tr>
<tr>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Constant)</td>
<td>3.457</td>
<td>.434</td>
<td>7.969</td>
<td>.000</td>
</tr>
<tr>
<td>Race</td>
<td>.049</td>
<td>.047</td>
<td>.037</td>
<td>1.047</td>
</tr>
<tr>
<td>Age</td>
<td>-.007</td>
<td>.018</td>
<td>-.013</td>
<td>-.381</td>
</tr>
<tr>
<td>Gender</td>
<td>.203</td>
<td>.141</td>
<td>.050</td>
<td>1.440</td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Constant)</td>
<td>3.407</td>
<td>.436</td>
<td>7.815</td>
<td>.000</td>
</tr>
<tr>
<td>Race</td>
<td>.047</td>
<td>.047</td>
<td>.035</td>
<td>.998</td>
</tr>
<tr>
<td>Age</td>
<td>-.005</td>
<td>.018</td>
<td>-.010</td>
<td>-.295</td>
</tr>
<tr>
<td>Gender</td>
<td>.162</td>
<td>.145</td>
<td>.040</td>
<td>1.118</td>
</tr>
<tr>
<td>Major</td>
<td>.165</td>
<td>.146</td>
<td>.041</td>
<td>1.130</td>
</tr>
<tr>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Constant)</td>
<td>-.642</td>
<td>.750</td>
<td>-.857</td>
<td>.392</td>
</tr>
<tr>
<td>Race</td>
<td>.017</td>
<td>.046</td>
<td>.012</td>
<td>.364</td>
</tr>
<tr>
<td>Age</td>
<td>.016</td>
<td>.018</td>
<td>.032</td>
<td>.927</td>
</tr>
<tr>
<td>Gender</td>
<td>.088</td>
<td>.142</td>
<td>.022</td>
<td>.619</td>
</tr>
<tr>
<td>Major</td>
<td>.177</td>
<td>.142</td>
<td>.044</td>
<td>1.246</td>
</tr>
<tr>
<td>Regents</td>
<td>.049</td>
<td>.007</td>
<td>.229</td>
<td>6.560</td>
</tr>
</tbody>
</table>

Next, the standardized residuals were examined for normality, linearity, and homoscedasticity. The histogram reveals that the standardized residuals do not exhibit normality (see Figure 4.26). A P-P plot also reveals that the standardized residuals were not linear (see Figure 4.27). Furthermore, a scatterplot (see Figure 4.28) reveals that the standardized residuals did not exhibit homoscedasticity.
Figure 4.26. Histogram of the Standardized Residuals for English 101 final grades as predicted by Regents English exam scores
Figure 4.27. P-P Plot of the Standardized Residuals for English 101 final grades as predicted by Regents English exam scores
Hierarchical multiple regression was used to assess the ability of the Regents English examination score to predict college English 101 final grades, after controlling for race, age, gender, and major. Gender, race, and age were entered at Step 1, explaining only .4% of the variance in college English final grades. After entry of the major at Step 2, the total variance increased only .2%; R square change = .002, $F(4, 815) = 1.277, p = .326$. Adding the Regents English exam score in Step 3 explained an additional 5% of the variance in college English final grades, explaining a total of 5.6% of the variance. After controlling for gender, race, age, and
major, the R square change = .05, \( F(5, 814) = 9.585, p = .000 \). See Table 4.26 for the results.

An analysis of variance (ANCOVA) showed that the model as a whole was significant (see Table 4.27). Furthermore, the coefficients table (see Table 4.25) indicates that the Regents English examination score made a small contribution (beta = .229) to the prediction of college English final grades. Therefore, the researcher rejected null hypothesis four.

Table 4.26

Hierarchical Regression Model Predicting College English Final Grades According to Demographics, Major, and Regents English Exam Scores

<table>
<thead>
<tr>
<th>Predictor</th>
<th>Std. Error of the Estimate</th>
<th>R Square Change</th>
<th>F Change</th>
<th>Sig. F Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step 1: Demographics*</td>
<td>2.011</td>
<td>.004</td>
<td>1.124</td>
<td>.338</td>
</tr>
<tr>
<td>Step 2: Demographics</td>
<td>2.011</td>
<td>.006</td>
<td>1.277</td>
<td>.259</td>
</tr>
<tr>
<td>Major</td>
<td>1.961</td>
<td>.050</td>
<td>43.035</td>
<td>.000</td>
</tr>
</tbody>
</table>

*Demographics = age, race, and gender
Table 4.27

ANOVA Table for the Dependent Variable College English Final Grade

<table>
<thead>
<tr>
<th>Model</th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step 1:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Demographics</td>
<td>Regression</td>
<td>13.641</td>
<td>3</td>
<td>4.547</td>
<td>1.124</td>
</tr>
<tr>
<td></td>
<td>Residual</td>
<td>3300.918</td>
<td>816</td>
<td>4.045</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>3314.559</td>
<td>819</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Step 2:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Demographics</td>
<td>Regression</td>
<td>18.806</td>
<td>4</td>
<td>4.701</td>
<td>1.163</td>
</tr>
<tr>
<td></td>
<td>Residual</td>
<td>3295.754</td>
<td>815</td>
<td>4.044</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>3314.559</td>
<td>819</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Step 3:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Demographics</td>
<td>Regression</td>
<td>184.300</td>
<td>5</td>
<td>36.860</td>
<td>9.585</td>
</tr>
<tr>
<td>Major</td>
<td>Residual</td>
<td>3130.259</td>
<td>814</td>
<td>3.846</td>
<td></td>
</tr>
<tr>
<td>Regent Score</td>
<td>Total</td>
<td>3314.559</td>
<td>819</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Demographics = age, race, and gender
CHAPTER FIVE: DISCUSSION, CONCLUSIONS, AND RECOMMENDATIONS

Discussion

The purpose of this multiple regression study was to use signal theory (Kirst & Venezia, 2004; Brown & Conley, 2007) to examine high school GPA and comprehensive English graduation examination scores from the New York State Regents Examination as predictors of college English placement (based on ACCUPLACER ENGLISH scores) and eventual college English 101 final course grades. Data collected from two schools in the State University of New York (SUNY) system were analyzed using hierarchical multiple regression analysis so that the contribution of each main predictor variable could be examined individually.

Null Hypothesis One

The first null hypothesis stated that high school GPA does not predict ACCUPLACER English placement test scores. The researcher rejected the first null hypothesis, indicating that high school GPA did make a statistically significant contribution to the prediction of ACCUPLACER English placement test scores.

Therefore, this study supports previous research (Belfield & Crosta, 2012; Liu & Wade, 2012; Nack & Townsend, 2007; Noble & Sawyer, 2004; Scott-Clayton, 2012) which found that high school GPA is a good predictor of college success. Although there is no previous research to determine if high school GPA is a good predictor of college English placement tests specifically, Nack and Townsend (2007) and Scott-Clayton (2012) determined that high school GPA is a better predictor of first-semester college success than other predictors such as high school class rank, ACT scores, or placement test scores. Belfield and Crosta (2012) further determined that high school GPA is a good predictor for a variety of college academic activities, such as accumulation of college credits, as well as a good predictor of college GPA.
This study confirmed the existing literature, because the results for this study also revealed that high school GPA is a good predictor of ACCUPLACER English placement test scores. The results of the regression for this first hypothesis indicate that high school GPA explains an additional 11.7% of the variance for the ACCUPLACER English score, after controlling for demographics and program of study, with a large positive contribution (beta = .36) to the prediction of the ACCUPLACER English score. Therefore, according to signal theory (Kirst & Venezia, 2004), these results confirm that high school GPA is a good indicator for high school students as to their actual level of preparedness for the ACCUPLACER English placement test.

**Null Hypothesis Two**

The second null hypothesis stated that Regents English examination scores do not predict ACCUPLACER English placement test scores. The researcher rejected this hypothesis, indicating that Regents English examination scores made a statistically significant contribution to the prediction of ACCUPLACER English placement test scores.

Although there is minimal literature on the influence of high school graduation tests on college entrance tests, this study supports one previous research study (Bishop, Moriarty, & Mane, 2000) which shows that rigorous graduation tests, such as the Regents system of examinations, require students to take more rigorous academic courses in high school and result in students being better prepared for college-level courses. Their study also showed the opposite to be true: that when students do not take challenging academic courses in high school for the sake of a graduation examination, they are less likely to be successful in college and beyond.

However, this study does not support the previous research by other studies (Center on Education Policy, 2010; Dee, 2003; Holme et al., 2010) which suggest that high school
graduation examinations are not effective tools for preparing students for college. Holme et al. (2010) especially found high school graduation tests to be costly and ineffective, causing a snowball effect for at-risk students who cannot get a job because they do not have a diploma because they could not pass their graduation tests. Kirst and Venezia (2004) also found that successful completion of high school graduation examinations does not always indicate proper preparation for college entrance tests.

But, in this case, the hierarchical regression analysis for hypothesis two revealed that the Regents English examination score is a good predictor of ACCUPLACER placement test scores. In fact, the results indicate that the Regents English examination score is an even better predictor than high school GPA for the ACCUPLACER English test scores. After controlling for demographics and program of study, the Regents English examination score explained an additional 22% of the variance for ACCUPLACER English scores, with a large positive contribution (beta = .48) to the prediction of ACCUPLACER English scores. Therefore, according to signal theory (Kirst & Venezia, 2004), the results of this study confirm that the Regents English examination score is a good predictor for high school students as to their actual level of preparedness for the ACCUPLACER English placement test.

**Null Hypothesis Three**

The third null hypothesis stated that high school GPA does not predict college English final grades. The researcher rejected the third null hypothesis, indicating that high school GPA did contribute to the prediction of college English final grades.

Thus, this study again confirms previous research. Belfield and Crosta (2012) determined that high school GPA is the best predictor of overall college success, as well as success in college English. They found that high school GPA is specifically a better predictor
than placement tests for overall college success, including success in English and math. The College Board (2008) found that an applicant’s SAT scores and high school GPA work together as the best predictors for a student’s first year college GPA, while Noble and Sawyer (2004) found that the combination of an applicant’s ACT score and high school GPA work together as the best predictors of the student’s first year college GPA.

In this study, the regression for hypothesis three indicated that high school GPA is a predictor of college English final grades. Although the addition of high school GPA explained only an additional .04% of the variance in college English final grades after controlling for demographics and program of study, high school GPA did make a small positive contribution (beta = .068) to the prediction of college English final grades. Although the contribution was small, high school GPA did still help to predict college English final grades. Therefore, according to signal theory (Kirst & Venezia, 2004), the results of this study confirm that high school GPA is an accurate predictor for high school students as to their actual level of preparedness for college-level English.

**Null Hypothesis Four**

The fourth null hypothesis stated that Regents English examination scores do not predict college English final grades. The researcher rejected this null hypothesis, indicating that Regents English examination scores made a statistically significant contribution to the prediction of college English final grades.

Although there is minimal literature on the influence of high school graduation tests on college success, this study supports one previous research study (Bishop, Moriarty, & Mane, 2000) which shows that rigorous graduation tests, such as the Regents system of examinations, require students to take more rigorous academic courses in high school and result in students
being better prepared for college-level courses. Their study also showed the opposite to be true: that when students do not take challenging academic courses in high school for the sake of a graduation examination, they are less likely to be successful in college and beyond.

However, this study does not support the previous research by other studies (Center on Education Policy, 2010; Dee, 2003; Holme et al., 2010) which suggest that high school graduation examinations are not effective tools for preparing students for college. Holme et al. (2010) especially found high school graduation tests to be costly and ineffective, causing a snowball effect for at-risk students who cannot get a job because they do not have a diploma because they could not pass their graduation tests. Kirst and Venezia (2004) also found that successful completion of high school graduation examinations does not always indicate proper preparation for college.

The hierarchical regression model for hypothesis four revealed that the Regents English examination scores explained an additional 5% of the variance in college English final grades, after controlling for demographics and program of study. Although the contribution was small, Regents English scores made a positive contribution (beta = .229) to the prediction of college English final grades. Therefore, according to signal theory (Kirst & Venezia, 2004), the results of this study confirm that the Regents English examination score is an accurate predictor for high school students as to their actual level of preparedness for college-level English.

**Conclusions**

The results of this study supported signal theory by indicating that the grades which students receive in high school are accurately indicating their actual level of college readiness (Kirst & Venezia, 2004; Brown & Conley, 2007), at least in the state of New York. Signal theory is founded upon the assumption that if a high school student receives clear and consistent
direction from course grades and assessment tests, then that student will be properly prepared for the rigors of college coursework (Kirst & Bracco, 2004; Kirst & Venezia, 2004). As Kirst and Bracco (2004) suggest, the “signals” that a high school student receives need to be based on an academically-rigorous high school curriculum in order to more accurately indicate to the student his actual preparedness level for college work.

Specifically, this study revealed that high school GPA can be used as a predictor of both college English placement tests (such as the ACCUPLACER English test) and college English final grades. It adds to the research by Belfield and Crosta (2012) who determined that high school GPA is the best predictor of overall college success, as well as success in college English. It also contributes to the research conducted by the College Board (2008) and Noble and Sawyer (2004) which revealed that an applicant’s high school GPA, combined with an ACT or SAT score, works as a good predictor for a student’s first year college GPA.

This study also revealed that high school graduation examinations (such as the Regents English exams) are good predictors of both college English placement tests (such as the ACCUPLACER English test) and college English final grades. As one previous research study indicated (Bishop, Moriarty, & Mane, 2000), rigorous graduation tests, such as the Regents system of examinations, require students to take more rigorous academic courses in high school and result in students being better prepared for college-level courses, and thus they are better prepared for their future careers, as well.

However, this study did not explain why so many high school graduates are not testing directly in to college-level English (Goldrick-Rab, 2010; Horn et al., 2009). They are still being placed into remedial or developmental English courses, causing them to get behind in their academic programs, wasting time, money, and valuable resources (Bahr, 2010; Davis, 2010;
Fulton 2010; Strong American Schools, 2008). Because the results indicate that high school GPA and Regents English examination scores are good predictors of ACCUPLACER English scores and college English final grades, the question remains: why are the remediation rates so high in American colleges and universities? For this study, however, only about 15% of the students were required to take remedial English. The national average is much higher—between 40 and 50% of American high school graduates are required to take remedial courses each year (Callan et al., 2006; Conley, 2010; Kirst & Bracco, 2004; Strong American Schools, 2008). Furthermore, only 10% of the students who tested into remedial English withdrew before the end of their first semester, a statistic which is much lower than the national average of 50% (Bailey, Jeong, & Cho, 2009; Esch, 2009). Therefore, because the remediation and drop-out rates were so low for this study, the results of this study may not be typical with other sections of the country.

**Implications**

This study helped to fill the gaps in the literature regarding the disconnection between high school and college English. Previous research has been conducted to determine if high school GPA is a good predictor of college success, with contradictory results (Belfield & Crosta, 2012; Laskey & Hetzel, 2011; Nack & Townsend, 2007; Noble & Sawyer, 2004). A few studies have focused on individual high school courses as predictors of college success; for example, some studies examine high school math scores as predictors of college math success (Foley-Peres & Poirier, 2008; Peng, Li, & Milburn, 2011), and other studies mention the fact that college students are not being successful in college English (Behr, 2010; Brown & Conley, 2007; Strong American Schools, 2008). But, studies specifically addressing high school English courses and graduation tests as predictors of college English placement and college English final
grades could not be found. Because English is a foundational course upon which many other courses are built, students need to know how to properly prepare so that they do not get behind in their program before they even start (Dumbauld, 2013; SUNY, 2014; NYU 2014a; NYU 2014b). Because many colleges require successful completion of college-level English before the student is allowed to graduate (Dumbauld, 2013; SUNY, 2014; NYU 2014a; NYU 2014b), information on how to better prepare incoming freshmen for this course is vital. This study aimed to fill these gaps in the literature by specifically examining high school GPA and comprehensive English graduation examinations (particularly the New York State Regents Examination) to see if they can predict college English placement (based on ACCUPLACER English placement test scores) and English 101 final course grades.

Although this study left many questions regarding the nation’s remedial English rates unanswered, it did provide answers at least for the state of New York. The results of this study can help New York high school educators, guidance counselors, and administrators know that the current indicators are properly preparing their graduates for college English, as well as to help New York high school graduates to know that their high school GPA and Regents English exam scores are accurate indicators of their actual level of college preparation for their college English placement test and college English final grades.

One additional finding in this study is that there is also a positive correlation between remedial English final grades and college English final grades. The relationship between remedial English grades and college English final grades was examined to determine the benefits of a remedial English course. The results of a Pearson product-moment correlation show that there is a moderate positive relationship between remedial English grades and college English final grades. See Table 5.1 for the results. Therefore, if students are required to take remedial
English, and if they keep up with their recommended English course sequence, the results of this test indicate that they are likely to successfully pass college English, allowing them to continue on in their studies.

Table 5.1

*Pearson Product-Moment Correlation between Remedial English Final Grade and College English Final Grade*

<table>
<thead>
<tr>
<th>Variable</th>
<th>College English Final Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>Remedial English Final Grade</td>
<td>.433***</td>
</tr>
</tbody>
</table>

* * p < .1 ** p < .05 *** p < .001

**Assumptions and Limitations**

**Assumptions**

First, because this study is based on archival data, the main assumption relates to human data entry. This study assumed that human error was avoided and that data of all students was entered, and that it was entered correctly. There was no feasible way to ensure that this assumption was met.

The second set of assumptions relates to the tests themselves. This study assumed that the Regents Comprehensive English examination and the ACCUPLACER English placement tests accurately reflect each student’s actual knowledge of the English language at the time of the test. Year after year, the NYSED and the College Board evaluate the content of these tests in light of state standards and student scores (College Board, 2014; NYSED, 2014); therefore, it was assumed that the content of these tests serves as an accurate measurement of what students are supposed to know upon graduating from high school and entering college.

The final set of assumptions related to the students. This study assumed that the students were prepared for both the Regents Comprehensive English examination and the ACCUPLACER English placement tests, that they took the tests honestly, that they did not
merely guess or accidentally choose their answers, and that they did not experience any technical errors during the tests that would influence their score.

**Limitations**

Because this study was based on archival data, there were also some limitations. Although this study assumed that all data of all students was entered, and entered correctly, this study was limited by the fact that human data-entry error may have caused some students to be unaccounted for, or that some students were accounted for incorrectly. Also, high school GPA may not be consistent across schools if teachers allow other factors to influence student grades. Because research findings indicate that an unweighted high school GPA is a better predictor of college GPA than a weighted high school GPA (Warne et al., 2014), using an unweighted GPA scale may have helped to increase consistency of this predictor variable.

Another limitation to this study was found in the placement test scores. Although each college or university participating in this study used the ACCUPLACER English placement test, each institution sets its own cut off score for “pass” or “fail”; therefore, results may not have been consistent (Porter & Polikoff, 2011).

This study was also limited by threats to validity. As a multiple regression study, one threat to internal validity was that the statistical inferences about any predictive effects are valid only for the population being studied. Also, a threat to internal validity was that there were multiple sections of college English offered in the colleges being tested; the different teachers or classroom environments may have influenced the variable of the college English final grade. Other threats to the internal validity of regression analysis included omitted variable bias (if a causal factor was left out), errors-in-variables bias (if variables were improperly identified or if data was entered incorrectly), sample selection bias (if the sample was not properly randomized
or representative of the entire population), and simultaneous causality bias (if another factor influenced the outcome). External threats to validity included population validity and generalizability. Because each state has its own requirements for their high school English graduation examination (or lack thereof), and because each college or university sets its own cut-off score for the ACCUPLACER English placement test score, the study may not be exactly replicable in another state. Including the controlled variable of program of study may have helped to increase the study’s external validity.

**Recommendations for Further Research**

Because this study focused only on the state of New York, one recommendation for further research would be that the study be replicated in other states across the country. Although the ACCUPLACER English placement tests are used nation-wide, each state has its own graduation tests. Currently, at least twenty-eight states require high school graduation tests, with more states heading in that direction (Center on Education Policy, 2010). Evaluating each state’s high school graduation tests is necessary in order to determine what common factors in each test provide the best prediction of college success rates.

Finally, because remediation rates remain high across the country, more research needs to be done on the gap between high school and college. If high school GPA and high school English graduation tests are good predictors of college English placement and college English final grades, why are so many students still required to take remedial English? What is happening between high school and college that causes high school graduates to miss the mark upon entering college? Certainly, more research needs to be done to help our nation’s students succeed in this vital course.
REFERENCES


Dumbauld, B. (2013). *7 reasons why English composition is the most important course you will ever take*. Retrieved from http://www.straighterline.com/online-education-resources/back-to-college-14/7-reasons-why-english-composition-is-the-most-important-course-you-will-ever-take/


Lindsay, D. (2011). *Scientific writing = Thinking in words.* Collingwood, Australia: CSIRO.


Yatvin, J. (2013). Warning: The common core standards may be harmful to children. *Phi Delta Kappan, 94*(6), 42-44.
APPENDIX A: IRB Approval Letter

December 15, 2015

Elizabeth Vinaja
IRB Exemption 2168.121515: High School GPA and English Graduation Examinations: Predicting College English Placement and English 101 Final Course Grades

Dear Elizabeth,

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

Your study falls under exemption category 46.101(b)(4), which identifies specific situations in which human participants research is exempt from the policy set forth in 45 CFR 46.101(b):

(4) Research involving the collection or study of existing data, documents, records, pathological specimens, or diagnostic specimens, if these sources are publicly available or if the information is recorded by the investigator in such a manner that subjects cannot be identified, directly or through identifiers linked to the subjects.

Please note that this exemption only applies to your current research application, and any changes to your protocol must be reported to the Liberty IRB for verification of continued exemption status. You may report these changes by submitting a change in protocol form or a new application to the IRB and referencing the above IRB Exemption number.

If you have any questions about this exemption or need assistance in determining whether possible changes to your protocol would change your exemption status, please email us at irb@liberty.edu.

Sincerely,

G. Michele Baker, MA, CIP
Administrative Chair of Institutional Research
The Graduate School

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APPENDIX B: College A Approval Letter

December 15, 2015

Elizabeth,

This is to certify that the data provided by SUNY XXX will be de-identified. There will be no student names or identification numbers attached to the data records. Only data for the variables requested will be provided.

XXX
APPENDIX C: College B Approval Letter

December 01, 2015

Dear Elizabeth Vinaja:

This letter is to inform you that your Institutional Review Board (IRB) application for the project “High School GPA and English Graduation Examinations: Predicting College English Placement and College English 101 Final Course Grades” has been approved by the SUNY XXX Institutional Review Board. Your proposal went through the expedited IRB review process. In accordance with the Department of Health and Human Services regulations (45 CFR 46.111; 46.116 4) this approval will expire one year from the date of this letter, December 01, 2015. The proposal is subject to application for extension if needed.

Please note that all data sent from SUNY XXX will be de-identified. If your research undergoes any substantial modifications, these changes must be reported to the SUNY XXX IRB prior to implementation.

This approval and all supporting materials will be kept on file in the Institutional Effectiveness Office.

Sincerely,

XXX