Predicting Graduate School Success: A Critical Race Analysis of the Graduate Record Examination

Raeshanda Wilson

Follow this and additional works at: https://digitalcommons.kennesaw.edu/seceddoc_etd

Recommended Citation

This Dissertation is brought to you for free and open access by the Department of Secondary and Middle Grades Education at DigitalCommons@Kennesaw State University. It has been accepted for inclusion in Doctor of Education in Secondary Education Dissertations by an authorized administrator of DigitalCommons@Kennesaw State University. For more information, please contact digitalcommons@kennesaw.edu.
Predicting Graduate School Success: A Critical Race Analysis of the Graduate Record Examination

by

Raeshanda N. Wilson

Kennesaw State University

2020

A Dissertation

A Dissertation Presented in Partial Fulfillment of the Requirements for the Degree Doctor of Education in Secondary Education, Mathematics Education in the Bagwell College of Education

Dissertation Chair: Dr. Brian Lawler
Committee Member: Dr. Jillian Ford
Committee Member: Dr. Jihye Kim
Dedication

I would like to dedicate this dissertation to my family for always being supportive and there for me when needed. Specifically, my sister and children. Without their support I would not have made it this far.
Acknowledgements

First, I would like to thank my dissertation chair Dr. Brian Lawler for becoming my chair and helping me with my research. Thank you for meeting with me to discuss my dissertation. Your words have been extremely helpful throughout this process. I would also like to thank the rest of my committee Dr. Jillian Ford and Dr. Jihye Kim for their feedback and support. It has truly been a pleasure working with this committee. I would also like to thank Monica Doriney for being a good friend throughout this entire dissertation process. I would like to thank my Gwinnett Tech family for believing in me and helping me achieve my goals. I would also like to thank my Georgia Cyber Academy colleagues for pushing me to become a better teacher.
Abstract

GRE is a standardized assessment used by school leaders in the US to predict student success in graduate school during admission (Colarelli, Monnot, Ronan, & Roscoe, 2012). But it underpredicts graduate school success, acting as a barrier to higher education for marginalized groups (e.g. Blacks, Asians, Hispanics, and American Indian/Alaska Native students; Stewart & Haynes, 2016), thus the use of the GRE is criticized. ETS and other proponents of using the GRE claimed that the GRE is an objective way to compare applicants to one another without bias. Those who opposed the GRE argue that the GRE is not a valid predictor of graduate school success among underrepresented groups.

The findings in the literature were inconsistent when determining if the GRE was a valid measure of graduate school success. Few research studies examining the validity of the GRE as a predictor disaggregated the data based on characteristics such as race/ethnicity, age, gender, socioeconomic status, etc. Among the few studies that did disaggregate by marginalized groups, the findings were that the GRE was not a valid predictor of graduate school success for these groups (Cahn, 2015; Hughey, 1995). The present study aimed to determine whether the GRE is a valid predictor of graduate school success among black students at a large, public, diverse university in the Southeast. Specifically, the purpose of this quantitative research study was to investigate how well the GRE predicts graduate school success across race and gender among graduate students within a variety of majors in education using a critical theoretical standpoint in the nascent tradition of QuantCrit (Gillborn, Warmington, & Demack, 2018). The application of a Critical Race Theory framework to this quantitative research helped to gain a better understanding of how the GRE affect access to higher education for marginalized groups by considering the adversities and challenges faced by black students in obtaining higher education,
and the role that white supremacy might play on a black student’s journey toward higher education attainment.

The methodology was split into two distinct phases: phase one—exploration of predictive relationships between variables; and phase two—application of CRT principles in the research context and findings for critical analysis. Pearson’s correlations and multiple linear regression were used to determine the association between the predictor variables and the criterion variables. The results of the analyses in phase one failed to reject both null hypotheses, suggesting that GRE verbal (GREV) and GRE quantitative (GREQ) do not significantly predict graduate GPA (GGPA) among black students. Further, undergraduate GPA (UGPA) did not significantly predict graduate school success as measured by the GGPA. Finally, the effects of UGPA or GRE scores on GGPA vary significantly when disaggregated by race/ethnicity, gender, and degree level.

The use of CRT provided insight to the challenge’s students face along with a deeper understanding of experiences encountered by black students in higher education. The CRT framework used may provide insight into inequalities associated with using the GRE for admission into graduate school. Specifically, one challenge black students face is accessing a graduate education. The GRE is considered a barrier to graduate school for black students.

This study has the potential to inform college and university admission coordinators how well several commonly used admission criteria predict graduate school success and the limitations of the GRE to predict graduate school success among black students.

Key words: CritQuant, GRE, graduate school success, Critical Race Theory, standardized tests, graduate school admissions
# Table of Contents

Dedication...............................................................................................iv

Acknowledgements................................................................................v

Abstract.................................................................................................vi

List of Tables .........................................................................................x

Chapter 1: Introduction ........................................................................1
  Statement of the Problem ......................................................................8
    Admission requirements in the early 1900s ........................................8
  Purpose of Study ..................................................................................13
  Significance of Study ..........................................................................15
  Research Questions .............................................................................17
  Conclusion ...........................................................................................17

Chapter 2: Review of Literature ...........................................................19
  Race as a function of White supremacy ..............................................20
  Permanence of racism and interest convergence ..............................24
  Whiteness as a property ...................................................................29
  Predicting graduate school success using the Graduate Record Examination........
    Graduate Record Examination and education ....................................41

Chapter 3: Methodology .......................................................................55

Population and Sampling ......................................................................58
  Data Analysis ....................................................................................59
  Validity ..............................................................................................62
  Conclusion .........................................................................................62
Chapter 4: Results .................................................................................................................. 63

Chapter 5: Discussion ............................................................................................................ 69

Limitations of the Study ...................................................................................................... 73

Relationship of Findings to Previous Literature .................................................................. 74

Implications .............................................................................................................................. 79

Reflections and Implications based on Critical Race Theory .................................................. 85

Counter-storytelling ............................................................................................................. 86

Permanence of racism ........................................................................................................ 88

Whiteness as property ........................................................................................................... 90

Interest conversion ................................................................................................................ 92

Critique of liberalism ............................................................................................................. 95

Recommendations for Future Research ................................................................................ 96

Conclusion ............................................................................................................................... 98

References .............................................................................................................................. 99
List of Tables

Table 1. Demographic information of total 5,106 students ................................................. 34
Table 2. Undergraduate/graduate GPA and GRE scores between black and white student........ 65
Table 3. Pearson’s correlation coefficients and significant levels for Black graduate students…65
Table 4. Summary of regression analysis for variables predictiong graduate GPA for graduate. 66
Table 5 Regression Analysis Result on predictive relationship of UGPA scores on GPA...........68
Chapter 1: Introduction

My Brother’s Story

To whom it may concern,

My name is Reginold Combs, and this is the story of how I turned my life around.

Before I go into the ugly details, I will start with a little background information. I am a 24-year-old black male who was born to a working-class family in a middle-class neighborhood in Mableton, Georgia. We moved from a place in College Park, Georgia, to Mableton after my father and mother purchased a home. I was about one year old at the time. I could not recollect what type of home or lifestyle we lived in College Park as I was so young, my memory had not yet developed. And honestly, the lifestyle we lived in Mableton led me to make a career out of forgetting my childhood, so I never ask my parents about life before rote memory.

In our first few years in the home, it was my father, mother, two older brothers, older sister, and I. We lived in a four-bedroom, two-bathroom home financed by my parents. My early childhood days were not as bad as the latter. My mother worked as a medical assistant for Kid Care Pediatrics and my father was a store manager for Duron (now Sherwin Williams), which made him the breadwinner. I made good grades in elementary school and I played the steel/African drums in second grade very well, so well that I played a solo in front of many people at a Marriot Hotel. But like many good things, they seldom last forever. In 1999, when I was about seven years old, my mother and father separated, which cut the household income in half and forced my mother to work longer hours to make up some of that lost money. And since my two brothers and sister had a different father than I, when my father left I questioned whether he left because of something I did. Before the separation, I
remember listening to my parents argue viciously through the floor in my room about issues I was too young to understand. Even as young as I was then, I knew it was only a matter of time before they divorced. Nevertheless, it was a struggle for my emotions to develop because I loved my father, and his absence left me devastated and deeply saddened. Further, my father’s absence meant we no longer had the luxury of traveling as frequently as we did before his departure. In the beginning, I tried to convince myself he would return, but as time proceeded, I was coerced to face the reality that he would never come back home.

Now that you know a little about me, allow me to share about my academics. As stated, I was pretty much an A/B student in elementary school. Award ceremonies were always a big deal, and I usually came home with about three or four recognitions. Unfortunately, this trend of academic success began to diminish as I became distracted by the shortcomings of my troubling life. School was important to me, but when all your friends are wearing the newest fashion while you can barely afford a meal, it’s extremely hard to focus on maintaining good grades. I think another contributor to my struggle was that my mother worked so much, so she did not have time to push me or obtain the resources to get me the help I needed. Plus, she also had my brothers and sister to worry about.

My oldest sister, Sebirana, had a hard time in high school. She argued with most of her teachers, which ultimately led to her dropping out in 11th grade and getting pregnant at age 17. My oldest brother, Dwayne, also struggled in high school. He became involved in a life of crime and was easily distracted by women and fashion, which led him to drop out in 10th grade. And my youngest brother aside from me, Dion, was in special education classes for behavior, and consistent fights caused him to drop out his second year of ninth grade.
This meant I did not have any academic leaders in my early life, so it was hard to follow a path that my only role models never walked.

On top of all that, I was very self-conscious about my physical image, which caused me to enter a state of depression. Specifically, I thought my head was too big, my body was too scrawny, my teeth were too crooked, and my skin was too black. To make matters worse, my brothers were the ones who always had girlfriends, and I always felt like the less attractive third wheel. So I was left wondering why I was not attracting girls, even with my good grades, while my two dropout brothers were swatting them away like a sport. It got to the point where I felt like I had no one, and no one cared about me at all.

My father kept promising me that I could move in with him at different points, but he never held up his end. As a matter of fact, the closest thing my father and I had to a stable relationship was him picking me up every other weekend from ages 7 to 17 to take me to visit his ex-wife and my sisters on his side. I mean, how can I possibly think about making good grades when every day is a fight for a meal, self-acceptance, and a father? Fast-forward to high school: I began to my state of rebellion. I started skipping class in ninth and 10th grade, and smoking cigarettes and marijuana on the side of the gym with friends (or at least they felt like friends). I started making C’s and D’s instead of A’s and B’s, all the way up until 12th grade when I failed an English class, which caused me to take a credit recovery course in the summer. My parents would no longer even request my progress reports, and we did not have a landline, so all attempts the school made to contact my parents were unsuccessful. It was like my family completely lost hope in me or did not have the willingness to ask about school, given all the counterproductive activities I participated in.
I graduated high school with a GPA so horrid it is embarrassing to mention, and I was unable to participate in the graduation ceremony as a result. I can admit, at that time college was not even on my radar of things to do post-graduation. I mean, how could I ever get into a decent college with a 1.87 GPA? The only reason I finished school was so my mother could say at least one of her kids graduated. Well, I had just turned 18, and I was finally free from the restraints of public schooling. But I felt like a dog that had just been taken off a chain after 12 years of being locked in a basement, and boy did I run far! I began affiliating with the wrong people, selling illegal contraband, and spending most of my time making rap music in my mother’s basement (I know, stereotypical). This behavior carried on for about a year before I had the final of many wake-up calls. An associate and I were facilitating a deal gone wrong and were almost shot in his mother’s car. I remember that night as vividly as if it were yesterday. We miraculously managed to escape danger and drove to another friend’s home for safe haven, and I began to panic.

The only solution I could think of at that time was to call my sister, Raeshanda (Combs) Wilson, who was the second oldest on my dad’s side. When I was young, she had always told me to reach out for help when I was ready to get into college. Since she had already earned three degrees at the time and had experience in the college application process, I took up her offer. When I called, she did not ask for details of what happened, all she knew was her little brother was in trouble. She immediately stopped what she was doing to pick me up around 9 pm that same night, then proceeded to move me into her three-bedroom apartment in Duluth, Georgia. She did not consult with her fiancée; she just brought me in. She saved me! That night, she ordered a 10-dollar box from pizza hut, and we sat down and filled out an application to Gwinnett Technical College. She paid the application
fee of $50 and started going through the programs. At the time I did not put much thought into what major I wanted to pursue, nor did I intend to spend a lot of time contemplating. All I wanted was to get in as soon as possible. My sister then asked me, “What was your favorite subject in grade school”? I said, “Well, I don’t have a favorite, but I have always excelled at math.” So she replied, “How about accounting?” I responded, “Sounds good to me.”

From that moment on we began preparing to take the Compass test. About a week or two later, she took me to take the test, and I did so well on the test that I was not required to take any remedial courses. I got accepted! I was so surprised when I realized I did not have to take the SAT or the ACT. Nevertheless, I started by taking two courses in the summer and made two A’s. I used the financial aid to buy a car and new clothes. Admittedly, this was the first time in my life I had more than $200 in my pocket, and it felt good not to worry about when I would have my next real meal. Anyway, after taking eight more classes in the fall and spring semester, I had accumulated a 3.9 GPA and was doing very well. In all 10 classes, I received A’s, with the exception of one B in College Algebra (the irony). I took English 1102 in the spring semester of 2012 and my sister happened to get ahold of one of my essays. When she read it and realized how skilled I was in writing, she suggested that I shift gears and test my intelligence at a four-year college; specifically, Georgia State University in Atlanta, Georgia. I concurred. At that time, we looked at the requirements to transfer to Georgia State, and to my surprise all I needed was to attain 30 transferable credits, fill out an application, and answer an essay question. So after my spring semester at Gwinnett Tech, I had the 30 transferable credits I needed to apply. I applied, and got accepted to start in the summer of 2012.
Let’s just say, my sister was right about my potential. I did very well at Georgia State. I ended up graduating in May of 2016 with honors (3.67 GPA) and got a bachelor’s in business administration in accounting. I could have done better, but one thing about life is there will always be struggles and stressors to test your willpower. Even so, I did so well that I was conditionally accepted in the Robinson College of Business Master of Professional Accounting or Master of Taxation graduate programs starting in the fall of 2016, which meant I did not have to take the GRE or GMAT (or any standardized test) to get in. But Robinson was not just any business school; Robinson College of Business is ranked number 83 in the nation. All I needed was to obtain a letter of recommendation, answer two narrative questions, pay the application fee and complete my BBA program. Needless to say, I completed all the tasks above and was accepted—and the fact that I got in without ever taking the GRE and GMAT shows that hard work never goes unnoticed or unappreciated. Now I am currently a graduate student in the Flex MPA program at the Robinson College of Business of Georgia State University, and I am currently studying to take the CPA exam.

I share this story to show that no matter what your circumstances may be, you can always turn your life around for the better. Regardless of if you’re underprivileged, misguided, or just dealt a bad hand, there is always a way out. Take me for example: a 19-year-old African-American male from a low-income home of which none of my immediate family graduated high school, who barely graduated high school himself, and I still managed to attain a bachelor’s degree and get into one of the top business schools in the southeast, without taking a standardized test. So yes, anything is possible. Thank you for taking the
time to read my story, and I hope that this can inspire other people in similar, or worse situations to work hard and succeed.

Sincerely,

Reginold Combs Jr.

**Introduction**

The graduate record examination (GRE) is a standardized assessment used by graduate schools leaders across the United States to predict student success (Colarelli, Monnot, Ronan, & Roscoe, 2012, p. 499). Among several factors considered during graduate school admission, the GRE is relied on heavily as a criterion for determining whether a student may excel in a given scholastic environment (Cahn, 2015). However, the use of the GRE as admission criteria is a highly controversial and criticized topic (Schwager, Hulsheger, Bridgeman, & Lang, 2015). Cahn (2015) defined the GRE as a “gatekeeper” and as a barrier to higher education for minority groups, including but not limited to African Americans, Asians, Hispanics, and American Indian/Alaska Native students. For these minority groups, the GRE under-predicts graduate school success, which can hinder these minority groups’ access to graduate education (Cahn, 2015).

Graduate education is crucial for obtaining employment with high-paying salaries and for individuals to be competitive prospective employees in the international job market (Stewart & Haynes, 2016). Students attending graduate school benefit the United States, especially students in marginalized groups. Not only are the earning potentials of individuals with advanced degrees higher than individuals without, increasing graduate school attendance among marginalized groups may also indirectly reduce crime rates and/or poverty, improve social mobility, and boost the economy (Squire et al., 2018). Additionally, enrolling more students from marginalized
groups in graduate schools may create a more just and equitable system that promotes diversity and equality in the United States. Thus, the admission process to graduate school is essential due to the significant influence that graduate schools can have on the lives of underrepresented minority groups.

Statement of the Problem

Admission requirements in the early 1900s. In the early 1900s, standardized tests were not used for admissions into undergraduate or graduate programs (Beale, 2012). The first wide-sweeping use of the standardized test as an entrance examination for college admission in America was the use of the Scholastic Aptitude Test (SAT). Created by Carl C. Brigham, the SAT was originally used to measure intelligence among Army men to determine official ranks during World War I. Thus, the SAT was considered a successful way for measuring intellect. The results of the SAT study inspired leaders of colleges and universities to use the SAT for admissions to undergraduate programs. Using a standardized test as requirements for admissions to graduate programs had not been implemented. However, historically, standardized tests were used for more than solely admissions to colleges and universities.

Instead, admission requirements to graduate school were not limited to a conferred bachelor’s degree, personal statement, recommendation, and undergraduate grade point average (UGPA). During the war, enrollment to graduate schools was low. Therefore admission requirements during this time were substandard (Beale, 2012). Some leaders of colleges accepted applicants to graduate school without reviewing their submissions. Not too long after the end of World War I, the U.S. stock market prices plummeted causing a devastating economic depression felt worldwide world during the Great Depression. During these periods, students
dropped out of schools, leaders of colleges and universities downsized faculties, and enrollment declined considerably.

Before the Servicemen’s Readjustment Act of 1944 (Jolly, 2013) better known as the GI Bill, graduate school for the average American seemed impossible, even though admission requirements to graduate school after World War II were subjective. Admission criteria included letters of recommendations, UGPA, letters of intent, and other subjective criteria, such as where the student attended college, the professor the student had, and faculty ratings of students where all criteria may be exemplary for some applicants (Beale, 2012). With the GI Bill passed, millions of veterans wanted to take advantage of free education instead of flooding the job market (Jolly, 2013). Consequently, leaders of college and university graduate schools required an instrument to compare the surplus of applicants fairly. The influx of individuals applying for college and the need for an objective measure to compare students led to leaders forming the Educational Testing Service (ETS, 2008).

ETS (2019) combined the three leading testing services of the 1900s, which included the College Examination Board, Graduate Record Office, and the Cooperative Test Service of the American Council on Education. ETS (2019) became the national testing company responsible for administering all national standardized tests including an entrance examination for graduate school (Vaughn, 1947). Not too long after the merging of leading testing services in America, leaders of Ivy League colleges and universities began to require that a standardized test be used as an entrance exam into graduate school. Today, this test is known as the Graduate Record Exam, or the GRE.

Using standardized tests for admission to college has created a barrier to college access for some marginalized groups (Stewart & Haynes, 2016). Even though standardized tests have
been considered as an objective, fair assessment that can accurately predict intelligence or success in higher education, standardized tests are often based on normative White culture, experiences, and assumptions; for example, a word association question that asks which word is best matched with “cup”—“saucer”, “door”, “table”, or “chair”—may be answered incorrectly by a student raised outside of White cultural norms and experiences, because saucers are most closely associated with traditional English culture. Thus, non-White students can be placed at a disadvantage when testing (Cahn, 2015). Guinier (2015) posited that standardized tests might predict wealth, socioeconomic status, and race more effectively than student success. Guinier (2015) suggested this difference occurred due to tests being oriented toward White upper- and middle-class norms. In this way, standardized tests can result in racially-biased results which then affect college admission decisions and hinder minority groups’ access to higher education.

Leaders of colleges and universities rely on several admission criteria to determine acceptance into their graduate programs (Cahn, 2015). Frequently, admission requirements used to admit graduate students include the GRE, UGPA, letters of recommendations, philosophy regarding a topic of interest, and faculty ratings (Kuncel, Wee, Serafin, & Hezlett, 2010). Subjective admission criteria, such as letters of recommendations, UGPA, and letters of intent, are considered biased due to a reliance on personal opinions. Depending on where the student attended college, the professor the student had, and faculty ratings of students, all admission criteria can be exemplary for most applicants. Universities desired more objective and easily managed criteria, leading to the development of standardized measures such as the GRE. However, standardized measures, and specifically the GRE, may be biased.

The history of the Graduate Record Examination. The GRE was administered for the first time in October 1937 as an experimental project to first-year graduate students attending
GRE AS A PREDICTOR OF GRADUATE SUCCESS

Harvard, Yale, Columbia, and Princeton (Waddington, 1977). The GRE consisted of six profile tests that objectively measured students’ knowledge and achievement in mathematics, literature, physics, biology, social studies, and chemistry (Waddington, 1977). During the experimental phase, more than 27,000 students from 26 undergraduate and 14 graduate institutions had taken the GRE, which supported interest in using the GRE for graduate school admission across the nation. Leaders of Ivy League colleges relied greatly on the GRE as a predictor of success in graduate school, because it was considered the only measure of success they could use to compare one student to another objectively.

ETS (2008) claimed that the GRE was an objective, standardized test that leaders of colleges and universities could use to compare applicants to one another without bias. ETS explained the value of the GRE by elaborating on what the GRE was supposed to measure. ETS claimed the GRE measures individual characteristics that were important to graduate school success. Those characteristics included “reasoning skills, critical thinking, and the ability to communicate effectively in writing in the General Test, and discipline-specific content knowledge through the Subject Tests” (ETS, 2008, p. 3).

ETS (2008) described several factors that contributed to graduate school success, such as creativity, motivation, and family circumstances. However, ETS (2008) cautioned how to use GRE scores and stated that limitations associated with GRE scores meant these should be used as a supplement to other admission factors. The GRE cannot measure all qualities that are significant in predicting graduate school success. Additionally, the GRE is “an inexact measure,” which means GRE scores may not always adequately represent applicants’ developed abilities and academic knowledge (ETS, 2018, p. 4). ETS stated the following:
GRE test scores can be used by admissions or fellowship panels to supplement undergraduate records and other qualifications for graduate study. The scores provide common measures for comparing the qualifications of applicants and aid in the evaluation of recommendations. (p. 4)

Therefore, leaders of colleges and universities use the GRE heavily to predict graduate school success due to the objective nature of the GRE serving as a way to compare students equally without the criteria being subject to bias, opposed to other forms of admission criteria. Soon after the first official administration of the GRE by the ETS (2008), ETS leaders began conducting studies on the validity and reliability of the GRE in association with graduate school success. This process led to a plethora of researchers interested in exploring the validity and reliability of the GRE. There has been a myriad of studies on the predictability of the GRE studied not only by ETS, but also by other researchers.

The predictability of the GRE was an ongoing debate among scholars who supported using the GRE as a valid predictor of graduate success and other researchers who claimed the GRE was an inaccurate predictor of graduate success (Liu et al., 2016). Proponents of using the GRE for graduate school admission argued the GRE was an accurate predictor of graduate school success and the GRE was an equalizing factor used to offset other bias criterion, such as essays, letters of recommendation, and grade inflation (Liu et al., 2016). Those who oppose the GRE argue the GRE is not a valid predictor of graduate school success among underrepresented groups, such as older students, women, and minorities (Wao, Ries, Flood, Lavy, & Ozbek, 2015). Therefore, findings in the literature were inconsistent when determining if the GRE was a valid measure of graduate school success. The inconsistencies of findings in the research raise questions about whether the GRE is a valid predictors of graduate school success.
Not only were the findings inconsistent, but very few research studies also disaggregated the data by any marginalized group such as race/ethnicity, age, gender, socioeconomic status, etc. Among the few studies that did disaggregate the data by marginalized groups, the findings were that the GRE was not a valid predictor of graduate school success for these groups (Cahn, 2015; Hughey, 1995). Thus, one could ask whether the GRE should be used in admission considerations for marginalized groups. However, even with the plentiful cautions that ETS stated, leaders of colleges and universities still use GRE scores for admittance into graduate school. GRE scores are often used as a factor when selecting students into business programs and even to receive a graduate fellowship (ETS, 2018). Thus, the problem this research will address is that the use of GRE scores as admission criteria may create a barrier for marginalized groups (Cahn, 2015). Due to limited research on predictors of graduate school success disaggregated by marginalized groups, coupled with inconsistent findings concerning the predictive validity of the GRE in relation to student success, this research is aimed at determining whether the GRE is a valid predictor of graduate school success among marginalized groups.

**Purpose of Study**

The purpose of this study is to investigate how well the GRE predicts graduate school success across race, gender, and different majors in education at a large public diverse university. This study can inform leaders of colleges and universities whether different regression models are needed for different groups, such as race, gender, degree level, and degree majors. Therefore, I have two primary goals for this study. The first primary goal is to determine whether the GRE is a valid predictor of graduate school success across degree type and marginalized groups at a large, diverse university. Researchers have conducted numerous GRE studies conducted to determine the predictive validity of the GRE. However, very few studies disaggregated the data
by marginalized groups (such as race, gender, and age, etc.), and degree level. Among the many predictive validity studies, only two had a significant minority student population (N>100). The findings of these two studies were inconsistent. For example, Sampson and Boyer (2001) sampled a large African American student population and found that only the GRE verbal scores were a valid predictor of first-year graduate GPA but not the GRE quantitative scores. Whitworth and Barrientos (1990) found that GRE scores for Hispanic students did not predict graduate GPA concluding that there was no association between changes in graduate GPA and GRE scores. With only two major studies conducted focusing on minority students, there is a gap in the literature, and more validity studies are needed to determine the predictive validity of the GRE among minority students.

The second goal of this study is to apply the critical race theory (CRT) theoretical framework to quantitative research to gain a better understanding of how the GRE affects access to higher education for marginalized groups. No GRE studies have used CRT as a theoretical framework to analyze GRE data. The CRT tenets applied in the context of higher education include the following:

1. Counter-storytelling: Encouraging students of color in higher education to tell the story of their experiences, rather than relying on the master narrative that White faculty, students, or other stakeholders may provide (Hiraldo, 2010).

2. Permanence of racism: Recognizing that racism permeates all spheres of society, including the political, social, and economic spheres, and understanding how this impacts higher education (Hiraldo, 2010).

3. Whiteness as property: Understanding the privilege and property-like advantages that Whiteness holds, specifically in higher education (Hiraldo, 2010).
4. Interest convergence: Understanding that supposed civil rights gains only occurred due to White interests, and this includes higher education issues, such as affirmative action (Hiraldo, 2010).

5. Critique of liberalism: Recognizing colorblindness and its harmful effects for students of color in higher education (Hiraldo, 2010).

These CRT tenets will be discussed more in depth and in relation to the GRE later on, with an in-depth analysis provided in a section to follow. The QuantCrit tenets (Garcia, Lopez, & Velez, 2017) applied to help understand how the GRE is used as a barrier include the following:

1. The centrality of racism where race is placed at the center of the analysis.

2. Numbers are not neutral by looking behind the numbers to understand how numbers are used to cover up inequalities among races and distort findings and conclusions.

3. Categories are neither “natural” nor given to understand the use of a racial category or lack thereof in quantitative analysis.

4. Voice and insight, which is data cannot “speak for itself,” meaning using experiential knowledge in the form of counter-stories and insight from marginalized groups to inform research.

5. Researchers using numbers for social justice to achieve equity and equality.

**Significance of Study**

Leaders of most colleges and universities require students to submit their GRE Verbal and GRE quantitative score, along with their undergraduate GPA, to be considered for admissions. Some leaders of schools used GRE cutoff scores to select applicants. However, GRE scores and UGPA may differ significantly depending on an applicant’s subgroup, such as race, gender, age, social economic status, degree level, and degree major. Due to these differences,
caution should be implemented when using the GRE as an admission criterion for graduate education.

College and universities should use GRE validity studies to help determine the appropriate use of GRE scores for their particular program by interpreting validity study results from their specific program or similar programs (ETS, 2016). Therefore, the significance of this study is to inform colleges and universities’ admission coordinators how well several commonly used admission criteria predict graduate school success among marginalized groups. Multiple GRE validity studies have concluded that the GRE is a valid predictor of graduate school success. However, many validity studies had very low sample sizes for minority groups; thus, the researchers could not extend the findings that the GRE is a valid predictor of graduate school success for marginalized groups.

This research provided a new perspective on the predictive validity of the GRE. I will analyze the data disaggregated by race, gender, and degree level. Additionally, I will expand the current body of knowledge by determining if the GRE is a valid predictor of graduate school success among marginalized groups and by using a CRT theoretical framework that serves as a lens to analyze the results of the statistical analysis. Additionally, using a CRT theoretical framework has never been applied to a study concerning the predictive validity of the GRE. A CRT theoretical framework may facilitate insight into inequalities associated with using the GRE for admission into graduate school, as well as providing insight into how barriers associated with using the GRE as an admission criterion may be overcome.
Research Questions

<table>
<thead>
<tr>
<th>Research Question</th>
<th>Hypothesis</th>
<th>Hypothesis</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 To what extent do GRE scores predict graduate school success among Black students as measured by their GGPA?</td>
<td>H₀₁a: GREV does significantly predict graduate school success among Black students.</td>
<td>H₀₁b: GREQ does not significantly predict graduate school success among Black students.</td>
</tr>
<tr>
<td>2 To what extent does UGPA predict graduate school success?</td>
<td>H₀₂a: UGPA significantly predicts graduate school success</td>
<td>H₀₂b: UGPA does not significantly predict graduate school success</td>
</tr>
<tr>
<td>3 How do the relationships between GGPA, UGPA, GREV, and GREQ vary when disaggregated by race/ethnicity, gender, and degree level?</td>
<td>Hₐ₃a: The effect of UGPA and GRE scores on GGPA varies significantly when disaggregated by race/ethnicity, gender, and degree level.</td>
<td>H₀₃b: The effect of UGPA and GRE scores on GGPA does not vary significantly when disaggregated by race/ethnicity, gender, and degree level.</td>
</tr>
<tr>
<td>4 How can a CRT theoretical framework be applied to contextualize whether or not the GRE is a valid predictor of graduate school success?</td>
<td>How can a CRT theoretical framework aid in explaining the challenges and obstacles that African Americans face when accessing higher education?</td>
<td>How can a CRT theoretical framework facilitate deeper understanding of barriers that minorities have faced in education, particularly those related to admission to higher education institutions?</td>
</tr>
</tbody>
</table>

Conclusion

Today, standardized tests are widely used in admission procedures among colleges and universities. The GRE is a standardized test used for admissions to graduate school. However, the use of the GRE for admissions to graduate school can be seen as a tool of oppression by limiting access to graduate school for marginalized groups. Predictors of graduate school success may vary significantly depending on race, gender, socioeconomic status, degree level, and degree major. The volume of studies conducted on the predictive validity of the GRE was numerous. Nonetheless, there is a gap in the research studying marginalized groups and using a CRT analytical framework. Majority of the studies conducted focused on White students due to
the small number of minority students enrolled in graduate school programs (Ingram, 1983). Few researchers have disaggregated data and analyzed subgroups, such as race/ethnicity, gender, and age. Exploring the use of the GRE in college admissions through a critical race lens can determine if the use of the GRE in college admissions denies marginalized groups access to quality higher education.

Throughout the remainder of this paper, I will discuss the theoretical framework, review the literature on GRE validity studies, lay out the research design and methodology of this study, present the results from the statistical analysis, and conclude with a discussion of the results through a CRT lens, to include recommendations and implications for future research.
Chapter 2: Review of Literature

Using standardized tests to select qualified individuals for graduate school has been a topic of debate over the past few decades (Cahn, 2015; Moore et al., 2018; Sackett & Kuncel, 2017). Standardized tests, such as the GRE, indicate mixed results concerning predictive validity and may serve as a gatekeeper for admissions into graduate school for marginalized groups (Hatchett, Lawrence, & Coaston, 2017; Kindle & Brock, 2017). Researchers have challenged the notion that GRE results are generalizable across marginalized groups (McGrath & Morriss, 2018). The purpose of this study is to investigate how well the GRE predicts graduate school success across race, gender, and different degree majors in education at a large public diverse university.

This chapter includes a review of literature on previous research on GRE predictive validity studies. Many researchers have conducted studies on the predictive validity of the GRE, but very few researchers disaggregated the data based on race/ethnicity and gender. This study will contribute to the small body of literature on the predictive validity of the GRE disaggregated by race, gender, degree major, and degree level with the results analyzed through a critical race lens to address the research questions of the study, as seen in Chapter 1.

The next chapter summarized existing literature concerning the GRE’s predictive validity. First, a conceptual framework for White supremacy and the theoretical framework of CRT will be discussed. Subsequently, literature concerning how graduate school success may be predicted using the GRE will be reviewed through the theoretical and conceptual frameworks (?). Existing meta-analyses will subsequently be discussed. A summary will conclude this chapter (or maybe that discussion through these frameworks is here?}
Conceptual Framework

The conceptual framework of this research will identify the relationship between white supremacy and the access to education in the United States (see Figure 1). Traditionally, researchers have treated “White supremacy” in race and racism discourse as White domination and White discrimination against non-Whites, especially African Americans (Cell, 1982; Marx, 1998; Shapiro, 1988).

Race as a function of white supremacy. The idea of White supremacy is rarely mentioned in textbooks today. This is because the dominant group ignored the existence of White supremacy, and thus, disrupting White supremacy is challenging. Mills (1997) asserted:

White supremacy is the unnamed global political system that has profoundly shaped the modern world. Despite its pervasiveness and impact, most standard textbooks about philosophy, political science, history, and education rarely mention this domination. This omission is not accidental. (p. 3)

One of the power structures that disguise White supremacy is meritocracy. Vaught (1947) defined meritocracy as the idea that individuals who work hard and make good choices will be successful, regardless of race, sex, gender, or social class. However, Vaught described how scholars guided students to challenge meritocracy by analyzing power structures in different areas (e.g., law enforcement, school, etc.). Collectively, these power structures, controlled by White people, led to full institutional power. According to Mills (1997), “Racism is a global white supremacy and is itself a political system, a particular power structure of formal and informal rule, privilege, socioeconomic advantages and wealth and power opportunities” (p. 3). That is, for racism to exist, the notion of “race” was created by Whites to maintain power,
superiority, and assign privileges (i.e., education opportunities) exclusive to individuals belonging to the pure White race.

This social construction of race was created to distinguish those in power from those they wished to maintain as subjugated; creating categories of White from non-White. A distinction was needed, it was argued, because Black people were considered genetically inferior to White people. Billings and Tate (2006) described being White as not being “contaminated” with Blackness, “thus, one drop of black blood” constructs one as Black, regardless of phenotypic markers (Bell, 1980)” (p. 23). At one point, Black people were considered property, thus Black people could not own property for themselves. Harris (1995) coined the term Whiteness as property to describe this phenomenon in greater detail. As a result of racism, Whites inherited institutional power, by forming a meritocracy, and controlled the government, laws, and policies giving them the authority to decide what is best for all people of all races and allocate resources wherever Whites deemed fit.

Disrupting White supremacy. During the 50s and 60s, strides in disrupting White supremacy were in full effect. The advancements for African Americans of civil rights and equal treatment rose in conjunction with a sequence of Supreme Court verdicts ruling in favor of African Americans. The Supreme Court verdict of Brown vs. Board of Education (1954) ruled in favor of Brown. This ruling overturned Plessy vs. Ferguson (1891) and concluded that “separate but equal” was unconstitutional, thus schools should be integrated (Wasserman, Connolly, & Steen, 2015). The Civil Rights Act of 1964 passed laws that supported equal treatment to all individuals regardless of race. The Voting Rights Act of 1965 allowed African Americans to vote. The Elementary Secondary Act of 1965 allowed African Americans to have a quality education. Lastly, the Fair Housing Act of 1968 stated companies could no longer discriminate
against African Americans by not allowing them to buy real estate. White supremacy was
continuously disrupted due to these monumental verdicts ruling in favor of African Americans
and the courageous men and women who did not give up in the fight for racial equality.
However, the incremental progressions made in the advancement of African Americans during
the 1950s and 60s were soon negated by new leadership in the U.S. government.

In 1969, newly elected President Nixon replaced the Supreme Court justices with
members who were not as concerned as the former Supreme Court justices with the advancement
of African Americans (Brown & Jackson, 2013). Consequently, the progression of African
Americans stalled with a series of decrees ruling against African Americans.

Maintaining White supremacy. Leaders of the judgment of Keyes vs. School District
No. 1 (1973) affirmed school segregation was unconstitutional if the intentions of the school
authorities were to uphold racial discrimination (Wasserman, Connolly, & Steen, 2015). Hence,
White flight was not deemed unconstitutional, which created an inadvertent, detrimental de facto
segregated school system. In the Milliken vs. Bradley (1974) case, the lower courts developed a
proposal to coalesce all students of Detroit by reassigning inter-city students to suburban schools
(Wasserman, Connolly, & Steen, 2015).

In opposition, the Supreme Court judgment overruled the lower courts’ desegregation
resolution, which dwindled the likelihood of integrating intercity pupils of color with their White
counterparts (Wasserman, Connolly, & Steen, 2015). As a result, major cities (e.g., Philadelphia,
Atlanta, and New York) remained segregated, which asserted the inextricable connection
between race and educational inequity (Brown & Jackson, 2013). It appeared that America’s
legal system seemed to only reinforce an oppressive social order benefiting the dominant race
more than the oppressed race (Brown & Jackson, 2013).
GRE AS A PREDICTOR OF GRADUATE SUCCESS

Due to unjust verdicts against African Americans ruled by the Supreme Court, scholars of color participating in the *critical legal studies* (CLS) movement convened in Madison, Washington (Taylor, Gillborn, & Ladson-Billings, 2016). These CLS scholars of color felt that civil rights for African Americans were regressing; as a consequence, the work done in the 50s and 60s that advanced African Americans, appeared to be unraveling. This stall in civil rights for African Americans led to the rise of a new scholarship, CRT.

**Theoretical Framework**

The theoretical framework of this research is CRT. Brown and Jackson (2013) described the intent of CRT scholarship to be:

…aimed at revealing that facets of racism and racial subordination that are apparent within society; further, traditional legal discourse is insufficient to transcend how a long history of racial oppression has affected, and continues to affect, people of color. Indeed, when colorblindness and neutrality are employed it is often to disguise the influence and centrality of White views and dominance. (p. 14)

I will use CRT to explain the challenges and obstacles that African Americans have faced in accessing higher education. Scholars have used CRT on racial analysis to deepen their understanding of barriers that minorities have faced in education while exploring how to resist and overcome these barriers (Taylor, 2016).

The roots of CRT were embedded in a legal movement called CLS. Tate (1997) asserted that researchers could not grasp CRT fully without understanding the connection to the CLS movement (p. 206). Additionally, Ledesma and Calderón (2015) suggested that emergent CRT scholars should ground their work based on the legal basis of CLS: “Ignoring the legal roots of such scholarship weakens its impact” (p. 206). Therefore, researchers should have a rich account
of the origins of CRT to understand the CRT framework (Brown & Jackson, 2013; Ledesma & Calderon, 2015; Tate, 1997).

CLS was a 1970s movement that emerged to address the injustices that occurred in the legal system around the nation. As a result of this movement, CLS scholars exposed the Supreme Court and federal courts’ unconstitutional decisions in legal cases by successfully confirming the personal biases of judges’ verdicts in legal cases (Tate, 1997). Unfortunately, race was not a central idea for the predominately White CLS scholars, mainly due to their lack of trust in liberalism and the U.S. legal system.

At the national conference for CLS scholars in downtown Los Angeles, a group of law professors of color presented their work about race and the legal system. Their presentation led to the publication of their work in the Harvard Civil Rights-Civil Liberties Law Review. These publications would soon become the key writings of the CRT movement. “The CRT movement is a collection of activists and scholars interested in studying and transforming the relationship among race, racism, and power” (Delgado & Stefancic, 2001, p. 5). Non-White CLS scholars used a critical race lens to reveal discriminatory acts that African Americans have endured within the legal system.

The core tenets of CRT that arose from CLS include permanence of racism, interest convergence, critique of liberalism, Whiteness as a property, and counter storytelling. These tenets are explained in greater detail throughout the remainder of this chapter.

Permanence of racism and interest convergence. Derrick Bell (1980), considered the founding father of CRT, revealed two notions that later became part of the core CRT tenets: the interest convergence principle and racial realism. Bell explained his interest convergence principle as, the only way for African Americans to make noteworthy advancements towards
racial equality is when the interest of White elites converges with the interests of African Americans. Bell (1980) asserted that the verdict of *Brown v. Board of Education* (1954) was not for protecting the constitutional rights of African Americans; conversely, the decision was made to advance the elite Whites. Bell noted that the verdict to abandon segregation and integrate schools resonated globally, concurrently improving the credibility of America in its struggle against communism (Brown & Jackson, 2013)—a benefit to the White elite.

While justifying his interest convergence principle theory, Bell (2008) developed an alternative rationale for why President Lincoln issued the *Emancipation Proclamation*. Bell argued that, contrary to popular belief, Lincoln’s main objectives were not to free African Americans from centuries of slavery (Klingaman, 2001). Rahter, Lincoln’s plan to end slavery was only in his interest to save the Union. Lincoln wrote a letter to Horace Greenly, editor of the *New York Times* in 1862 (Klingaman, 2001):

> My paramount object in this struggle is to save the Union, and is not either to save or destroy Slavery. If I could save the Union without freeing any slave, I would do it, and if I could save it by freeing all the slaves, I would do it, and if I could save it by freeing some and leaving others alone, I would also do that. What I do about Slavery and the colored race, I do because I believe it helps to save this Union, and what I forbear, I forbear because I do not believe it would help to save the Union. (p. 20)

Bell (2008) argued that the three reasons why President Lincoln issued the *Emancipation Proclamation* were:

1. To disrupt the southern economy, which relied heavily on enslaved laborers;
2. To prevent foreign governments from allying with the Confederacy and providing them with finances and firearms; and
3. To enlist formers slaves into the Union army to fight in the war.

Building on Bell’s theory of interest convergence, Brown and Jackson (2013) postulated that slavery did not end until slavery was in the best interest of the White elites, coinciding with the interest of African Americans. Evidently, racism is ubiquitous and everlasting due to the archaic views of the White elite (Brown & Jackson, 2013). Further, it has been suggested that periods of social progress, which result in increased equality for African Americans, are a part of a pattern, which, over time, equalizes to continue supporting White dominance (Brown & Jackson, 2013, p.12). Consequently, if African Americans were never meant to gain full equality, Whites could control the destiny of African Americans in every facet and aspect of African American lives, including educational attainment.

**Critique of liberalism.** Gilborn (2016) recently offered a critique of liberalism as it pertains to educational theory, and specifically educational attainment, using a CRT framework. Gilborn’s (2016) article centered on discussion and consideration of recent anti-racist educational policies and research conducted in the United Kingdom. Overall, Gilborn (2016) highlighted how many liberal anti-racist policies pertaining to diversity, tolerance, and affirmative action can become meaningless in practice when the racially biased implications of other policies are ignored or unnoticed. Further, many anti-racist educational policies in the UK were developed to lend the guise of progressive policy development; when the language of such policies and changes that result are analyzed, however, there is more positive press for institutions than there are significant improvements for affected stakeholders (Gilborn, 2016).

Crenshaw (2016) highlighted how liberalism and critiques of liberalism developed in the 1980s as opposing sides to arguments concerning how racial justice could be achieved within higher education and other sectors. Crenshaw (2016) argued that unlike more apparent battles for
racial equality during the civil rights era, issues such as who produced knowledge and academia in higher education contexts were often overlooked by many self-professed liberal and progressive individuals. Critiques of those seeking to address more blatantly racist issues while remaining blind to the causes of more systematic or institutional issues with equally serious implications turned to critical race discourse in order to analyze how unequal power distribution manifested in a myriad of ways even within educational institutions that professed a devotion to liberal and progressive values.

CRT analysis extended to post-secondary education, including examination of the impacts of colorblindness, campus racial climate, and selective admission policies (Ledesma & Calderon, 2014). For example, Harper et al. (2009) modeled how to use the central tenets of CRT to assess policy decisions that nullified African Americans’ advancements to access higher education. This early scholarship in higher education supported court cases affiliated with admission policies and colorblindness in their assessment of affirmative action policies, which either reverted or rectified the advancement of African Americans in higher education (Yosso, Parker, Solorzano, & Lynn, 2004).

In the case of Regents of the University of California v. Bakke (1978), an anti-affirmative action lawsuit was filed against the University of California Davis Medical School when a White male applicant was denied admissions due to the school’s affirmative action admissions policy; this policy permitted the university to reserve 16 vacancies for underrepresented minority students (Yosso et al., 2004). Consequently, the U.S. Supreme Court justices ruled in favor of Bakke, citing that denying Bakke admittance to the University of California Davis Medical School was an act of discrimination based on race, which violated the Civil Rights Act of 1964.
Colorblindness refers to the notion that individuals can “turn off” their capacity for judging people based on their race or ethnicity in an effort to treat everyone equally (Crozier, 2018). While this may, on the surface, appear as a solution for the mistreatment or marginalization of people of color in the academic sphere, colorblindness involves a lack of understanding of how race affects the experiences of people of color. Further, ignoring how one’s skin color has affected and shaped their life experiences is to ignore White privilege and the historic legacy of racism, which continues to shape individuals’ experiences (Boske & Elue, 2017). Steps toward social progress for minorities, such as affirmative action, have been used to argue a post-racial perspective, where colorblindness is the last step needed toward racial equality; however, ample research and modern lived experiences have indicated otherwise (Byrne-Jimnez, Monica, & Borden, 2015). “Indeed, when colorblindness and neutrality are employed it is often to disguise the influence and centrality of White views and dominance” (Brown & Jackson, 2013, p. 14).

Conversely, in the case of *Grutter v. Bollinger* (2003), a White female was denied admissions to law school due to the use of affirmative action in higher education; nevertheless, this case did not obtain an advantageous outcome (Wasserman et al., 2015). The U.S. Supreme Court ruled in favor of the University of Michigan’s law school race-based admissions policy due to the diversity rationale (Wasserman et al., 2015). CRT scholars may assert that the White female was less likely to be admitted due to her gender but more likely to be admitted based on her race (Ghose, Ali, & Keo-Meier, 2018; Squire et al., 2018).

Currently, there is an ongoing debate on whether the use of affirmation action in college admissions is a form of discrimination (Patton, 2016). Because of different court cases, an ongoing debate currently exists as to whether university admission policies admit minorities
using affirmation action policies (Delgado & Stefancic, 2017). The outcome of the former court case supported Bell’s (1980) theory of the interest convergence principle, stating that as long as Whites’ interests are not threatened, Whites will support the advancement of African Americans (McCoy & Rodricks, 2015).

**Whiteness as a property.** Harris (1993) pioneered the concept of Whiteness as a property. Harris rationalized how her grandmother used “Whiteness” to her advantage to work and provide for her family. Harris deduced that the concept of Whiteness is built on both “exclusion and racial subjugation” (p. 1737). White privilege is a concept that describes protections, opportunities, advantages, or benefits in terms of social status and identity that are associated with being perceived as a White person that people of color do not experience (Wise, 2014). Harris (1993) theorized that Whiteness, by definition of property (the right to possess), was a form of property. Harris specified the rights embedded in the idea of Whiteness as a property: rights of disposition, rights of use and enjoyment, Whiteness as reputation and status property, and the absolute right to exclude. The scholar also implied that White privilege and property were intertwined and cannot be separated from each other. Therefore, the idea of Whiteness as a property became valuable to Whites in which only Whites could possess. Hence, Whiteness as a property has functionality. According to Harris (1993):

> In addition to the theoretical descriptions of property, Whiteness also meets the functional criteria of property. Specifically, the law has accorded “holders” of Whiteness the same privileges and benefits accorded holders of other types of property. The liberal view of property is that it includes the exclusive rights of possession, use, and disposition. It attributes are the right to exclude others. Even when examined against this
limited view, Whiteness conforms to the general contours of property. It may be a “bad” form of property, but it is property, nonetheless. (p. 1731)

Applying the CRT tenet Whiteness as a property, specifically the absolute right to exclude, education was considered a property of Whites (Cole, 2017). Throughout history, Whiteness and White people have been a determinant of Black people’s ability to procure education in the United States (Ledesma & Calderon, 2015).

**Counter storytelling.** Solorzano & Yosso (2002) defined counter-storytelling as “a method of telling the stories of those people whose experiences are not often told” (p. 32). Counter-stories are used to take control of the narrative and to challenge the dominant discourse on race (Solorzano & Yosso, 2002). Critical race scholars use counter-storytelling to contradict racist accounts in every-day life. The dominant narrative, called majoritarian stories, is opposed to counter-stories. Majoritarian stories can have a negative effect by silencing the experiences of the oppressed.

**The GRE as a Predictor of Success**

Many research studies have been conducted to determine the predictive validity of the GRE (Wao et al., 2016). However, academic disciplines, measures of graduate school success, and predictor variables differed among GRE validity studies. Some researchers focused on one academic discipline, while others focused on several academic disciplines (Calisir, Basak, & Comertoglu, 2016; Liu et al., 2016; Sternberg, 2018; Sternberg & Sternberg, 2017). Some researchers used only first-year graduate GPA as a measure of graduate school success, while others used both first-year graduate GPA and overall graduate GPA (GGPA). Along with the GRE, there are other factors used in admission selection, such as prior performance (Benham & Hawley, 2015; Geisinger, Hawley, & McCormick, 2017; Zimmermann, von Davier, Buhmann,
& Heinimann, 2018). In prior research, Kuncel, Hezlett, and Ones (2001) examined the relationship between undergraduates’ GPA, GRE scores, and graduate school performance (Kuncel, Hezlett, & Ones, 2001). Researchers analyzed undergraduate GPA to determine its predictability. Most researchers did not disaggregate the data based on race or gender, thereby creating a gap in the literature.

Predicting graduate school success using the Graduate Record Examination. Of all criteria considered upon admission, the GRE is one of the most heavily-weighted variables (Petersen, Erenrich, Levine, Vigoreaux, & Gile, 2018; Zimmermann et al., 2018). Ingram (1983) examined GRE correlational studies published in psychological journals from 1961 to 1978 and concluded there existed a significant problem with using the GRE as an admission criterion, due to the inability to determine the predictive validity of the GRE.

Existing GRE research had two flaws: only students with high GRE scores were accepted to graduate school, creating a range restriction for GRE validity studies, and/or students with low GRE scores who excelled in a different admission criteria (e.g., UGPA) created a negative correlation between GRE and other admission criteria (Baggs, Barnett, & McCullough, 2015; Grillo, Ghoneima, Garetto, Bhamidipalli, & Stewart, 2019). Ingram (1983) summarized these GRE studies and noted a difference between a high and low GRE score. Ingram considered a low GRE score a score of average or above average. An average score was around 1,000, and an above average score was around 1,200. Some leaders of colleges and universities used GRE cutoff scores for selecting applicants for admission. If a student fell below the cutoff score, then that student’s application was disregarded even if the student had good letters of recommendation and a high UGPA. Using cutoff scores confirmed that the GRE was discriminating against
applicants, and since the GRE was not being disregarded as an admission criterion, using GRE scores in admission should be handled with care (Ingram, 1983).

To determine which previous GRE researchers to select in a more in depth review of the literature, I examined variables used in past GRE validity studies. In this study, I will use predictor and criterion variables. Researchers defined a predictor variable as “the variable upon which the prediction is based” (Gay, Mills, & Airasian, 2009, p. 623) and the criterion variable is “the variable that is predicted” (p. 619). Therefore, the predictor variables in this study will include GREV, GREQ, and UGPA, while graduate school success measured by first-year graduate GPA, final graduate GPA (GGPA), and degree attainment as the criterion variables.

Therefore, literature was selected from 1959 to 2010 that investigated the use of GRE-V and GRE-Q scores as predictor variables and GGPA or degree attainment as criterion variables. More specifically, 32 GRE validity studies were reviewed, 23 of which are included in this review of literature. Six studies were meta-analyses; eight studies were focused on students who majored in education; four research studies were based on marginalized groups disaggregated by race, gender, and/or age; and five were recent GRE validity studies. The review of literature starts with a review of the meta-analyses that were based on White students. Next, studies that focused on students who majored in education are discussed. Finally, literature that focused on minority students are examined.

Recently, Moneta-Koehler, Brown, Petrie, Evans, and Chalkley (2017) examined the limitations of how the GRE is used to predict biomedical graduate school success. The authors specifically were interested in seeing if findings for biomedical students differed from existing inconclusive findings concerning the GRE’s predictive validity. The researchers collected data from the biomedical program at Vanderbilt University Medical School, especially focusing on a
broadened set of indicators or benchmarks of success. They found that, overall, the important benchmarks of passing qualifying exams, graduating with a PhD, publishing first author papers, delivering presentations at conferences, short defense time, or obtaining individual fellowships or grants were not predicted by GRE scores. However, first semester grades were moderately predicted by GRE scores. Further, faculty evaluation results and graduate GPA had a weak to moderate association with GRE scores. While the GRE was associated with some measures of graduate school success, the varied nature of the findings reinforced the inconclusive nature of studies concerning the predictive validity of the GRE.

During another recent study, Anderson, Hayes, Massey, and Brownell (2017) examined the GRE and other predictor variables of speech-language pathology graduate student success. The specific admission requirements in question relied heavily on the GRE and cumulative GPA. The authors examined the records of fifty students from Louisiana State University Health Sciences Center Shreveport (LSUHSCS) who had completed their master’s programs. The researchers considered the measures of final GPA, cumulative UGPA, GRE score, and Praxis score in their correlational analysis. The researchers found that academic probation status was associated with comprehensive exam results; however, the predictive measures were not associated with student success. Anderson et al. (2017) recommended further investigation of graduate student success predictors to benefit both students and learning institutions.

Wao et al. (2016) sought to determine whether the success and performance of construction management graduate students were predicted by GRE scores. Variables that were considered included the GRE verbal and quantitative scores, total GRE scores, and student success measured as a binary function. The researchers collected student records for graduate students attending a school in the Southeastern Central United States. The researchers found no
association between the considered GRE scores and student success, thus prompting additional uncertainty about the predictive validity of the GRE (Wao et al., 2016).

Some leaders of schools began using a composite score for student success prediction in an effort to address the limitations of the GRE (Pacheco, Noel, Porter, & Appleyard, 2015); however, inclusion of GRE scores may contradict the intent of using composite scores (MacLachlan, 2017). Pacheco et al. (2015) recently explored the use of composite scores for PhD program admission for all students participating in a Biomedical PhD program in Puerto Rico. Measures that were considered in the composite score included GRE, GPA, advanced degrees or coursework, research experience, existing publications, and presentations. Pacheco et al. found that graduates were far more likely to have a high composite score than dropout; further, composite scores were associated with fellowship success and shorter thesis defense time. In light of these findings, the researchers concluded that composite scores that significantly consider students’ scholastic experiences and accomplishments outside of GPA and GRE may be better predictors of graduate student success (Pacheco et al., 2015). This finding is consistent with other recent research concerning the predictive validity of the GRE (Fedynich, 2017; Geisinger, Wai, Worrell, & Chabris, 2017; Niessen, Meijer, & Tendeiro, 2016).

**Meta-analyses of Graduate Record Examination studies.** An ETS researcher, Lannholm (1968), summarized 38 published and unpublished GRE validity studies written from 1952 to 1967. The report was divided into four major sections summarizing the findings based on major field of study, studies employing GPA as a criterion, studies employing various criteria of success, and studies predicting graduate school success for foreign students. Twenty-three different major fields of study were analyzed, but for the purpose of the present study, only the results for education majors are considered. Lannholm discussed 13 studies that involved
students from departments of education. Researchers in 10 of the 13 studies used GRE-V and GRE-Q as predictors of graduate school success measured by graduate GPA. Correlations ranged from as low as .23 to as high as .69. Rupiper (1959) used degree attainment as a measure of graduate school success and the researcher found that GRE-V was significantly correlated with graduate GPA.

In conclusion, four broad generalizations were formed based on the results of this meta-analysis:

1. Students with higher test scores perform at a higher level in graduate school than those with lower scores.
2. The verbal ability score is more highly related to performance in subjects of a descriptive nature, for example, the humanities, while the quantitative ability score is usually more predictive in the physical sciences.
3. Advanced test scores in the appropriated subject were useful predictors and improve the correlations when used along with the aptitude test scores.
4. Best prediction was obtained when undergraduate grades and test scores were used in combination. (Lannholm, 1968, p. 1)

However, Lannholm (1968) stated several persistent problems with the reviewed studies. The first problem was the small number of cases available thus, validity studies should be carried out by individual departments. Another problem was the different analysis technique researchers used to analyze their respective data. Most researchers used correlation coefficient as their main statistic, however Lannholm suggested that caution should be taken when interpreting results using a correlation coefficient because it is sensitive to restriction range. That is, for criterion
values such as grades, where grades have very little dispersion, and for highly selected groups, high correlation coefficients are rarely produced.

Another major issue is the measures of graduate school success. Majority of the studies used graduate GPA as their criterion, however, the range of grades are typically only As and Bs and only represent courses actually taken (Lannholm, 1968). Lastly, very few of the studies used UGPA as a predictor variable. Lannholm cautioned future researchers and stated that “it would not be safe to assume that the results of any of these studies would apply in all subjects in all graduate schools” (p. 7). Lannholm suggested that researchers use the results of the review to help design and conduct their own studies in their individual departments.

Thacker and Williams (1974) conducted a meta-analysis including twelve GRE validity studies published from 1957 to 1970. Master’s and doctoral student data were sampled from the education and psychology departments. Predictors of graduate school success were GRE-V and GRE-Q scores, and the criterion variables included graduate GPA, faculty ratings, degree attainment, doctoral comprehensives, and success after six years. The five studies that used graduate GPA as a criterion variable yielded similar results. Either the correlation coefficients were extremely low, or the results of the studies were statistically insignificant. Two studies used faculty ratings as the criterion variable and the results were similar to the previous findings in the other studies; the GRE was a weak predictor of faculty ratings. The other study concluded that the GRE-V was a valid predictor of faculty ratings but, found no significant relationship between GRE-V and GPA or between GRE-Q and faculty ratings or GPA. The remaining four studies involved several different criterion variables. One study used level of success and first-year graduate GPA as their criterion variables. No significant correlations were found between the GRE-V, GRE-Q, and GPA. Another study used degree attainment and GPA as measures of
graduate school success. The correlation coefficients obtained were low enough to raise concerns about the whether or not the GRE was a valid predictor of graduate school success when measured by GPA and degree attainment in their particular program. Finally, the last study reviewed found a significant correlation only with GRE-Q and graduation.

Thacker and Williams (1974) concluded that the use of the GRE as an admission criterion to graduate school should be questioned due to inconsistent and inconclusive results. In their review, the majority of the studies found that the GRE was not a valid predictor of graduate school success due to low correlations.

More GRE validity studies need to be conducted to solidify the use of the GRE as an admission criterion. Goldberg and Alliger (1992) examined 27 GRE research studies published from 1950 to 1990. A total of 2,754 students in psychology and counseling departments were included in the sample, with each study having a sample size that varied from 23 to 582 students. The predictor variables were GREQ, GREV, and GRES (graduate record examination subject test) scores and the criterion variables were GGPA, course letter grades, and comprehensive exam scores. Only the predictor and criterion variables relevant to the present study are discussed.

The results of Goldberg and Alliger’s (1992) study indicated that the GRE was not a valid predictor of GGPA. Validity coefficients of the GRE-V and GRE-Q for all criteria combined were 0.03 and .145, respectively. For the criteria specific course grades, the GRE-V and GRE- Q validity coefficients were 0.030 and .177, respectively. For comprehensive scores, the validity coefficients were 0.371 and 0.283 for GRE-V and GRE-Q, respectively. Finally, for GGPA, the validity coefficients for GRE-V and GRE-Q were 0.154 and 0.148, respectively.
Goldberg and Alliger’s (1992) overall findings indicated that the GRE was not a valid predictor of GGPA, as both the GRE-V and GRE-Q scores only accounted for 2% of the variance in GGPA. That is, 98% of the variance in GGPA is accounted for by other moderating variables. The research concluded that even though the GRE may not be a valid predictor of GGPA, the conclusion on whether or not the GRE is a valid predictor of graduate school success is still up for debate (Goldberg & Alliger, 1992). Goldberg and Alliger made this claim because GGPA might not be the best measure of graduate school success, even though the GRE was originally developed to measure first-year GGPA. Goldberg and Alliger stated that GGPA might not be the best measure of graduate school success for two reasons: The range of grades given in graduate school is restricted, and it is difficult to distinguish between “superior” and “inadequate” students (p. 1019). Additionally, grades do not reflect a student’s ability to conduct research, concluding that grades may not be an adequate measure of graduate school success.

Morrison and Morrison (1995) conducted a meta-analysis investigating the predictive validity of the GRE. A total of 22 studies published from 1955 to 1992 with 5,186 students were analyzed. These studies used GRE-Q and GRE-V as the predictor variables and GGPA as the measure of graduate school success. Morrison and Morrison used the following statistical tools to infer conclusions: weighted averaged effect size \((d)\), correlation coefficient \((r)\), and variance. Morrison and Morrison weighted-average effect size into a correlation coefficient for a meaningful interpretation. The \(r\)-value for GRE-Q, GGPA was .22 and .28 for GRE-V and GGPA, and the variance was 0.06. That is, approximately 6% of the variation in GGPA was accounted for by GRE-Q and GRE-V scores. Morrison and Morrison concluded that the GRE’s predictive validity was very small. The findings were even smaller when age, gender, and race were taken into consideration. Morrison and Morrison stated that if these findings were paired
with findings that disaggregated data based on race, gender, and age, one should question the use of the GRE for graduate school admission.

In a more recent meta-analysis, Kuncel et al. (2001) conducted a comprehensive meta-analysis that examined the predictive validity of the GRE and UGPA as predictors of graduate school success. Kuncel et al. analyzed data from 1,753 independent samples of students using eight different criteria, which included 82,659 graduate students. The eight criteria examined were faculty ratings, publication citation counts, comprehensive examination scores, first-year graduate GPA, overall GGPA, degree attainment, time to degree attainment, and research productivity. The disciplines analyzed in the study included humanities, social sciences, life science, and math-physical sciences. GRE tests scores examined included the verbal, quantitative, analytical, and subject scores. To determine the predictive validity of GRE and UGPA, the criterion variable considered were first-year graduate GPA, overall graduate GPA, and degree attainment. Kuncel et al. (2001) concluded that the GRE and UGPA were both valid predictors of graduate school success measured by first-year graduate GPA and graduate GPA and that these results are generalizable to other graduate programs.

Kuncel et al. (2001) found the subject tests were better predictors of graduate school success than the verbal, quantitative, and analytical tests. Overall, GRE tests were a valid predictor of graduate school success measured by the eight dependent criteria analyzed. Results from this meta-analysis that were relevant to this study include the predictor variables of GRE component scores and UGPA and the criterion variables first-year graduate GPA, overall graduate GPA, and degree attainment. The researchers concluded that the GRE was a valid predictor of GGPA. The correlation coefficients for the total sample predicting first-year graduate GPA, overall graduate GPA, and degree attainment are represented in the table below.
Table 1

*Correlation Coefficients for the Total Sample Predicting First-Year Graduates*

<table>
<thead>
<tr>
<th>Predictor</th>
<th>First-year graduate GPA</th>
<th>Graduate GPA</th>
<th>Degree attainment</th>
</tr>
</thead>
<tbody>
<tr>
<td>GRE-V</td>
<td>.24</td>
<td>.23</td>
<td>.14</td>
</tr>
<tr>
<td>GRE-Q</td>
<td>.24</td>
<td>.21</td>
<td>.14</td>
</tr>
<tr>
<td>UGPA</td>
<td>.30</td>
<td>.28</td>
<td>.12</td>
</tr>
</tbody>
</table>

*Note.* Adapted from “A comprehensive meta-analysis of the predictive validity of the graduate record examinations: Implications for graduate student selection and performance,” by Kuncel et al. (2001).

Kuncel et al. (2010) also conducted a large meta-analysis investigating the validity of the GRE to predict graduate student performance in both masters and doctoral programs. The meta-analysis consisted of approximately 100 studies and 10,000 students that analyzed GRE scores to predict first-year graduate GPA, overall graduate GPA, and faculty ratings. For the purpose of this study, the results for the FGPA and GGPA are of interest. It is important to note that the researchers did not provide any information on the location of schools represented in the meta-analysis, along with any demographic information about the students, thus white majority is assumed.

Kuncel et al. (2010) concluded that the GREV and GREQ are valid predictors of first-year graduate GPA and graduate GPA for masters and doctoral students regardless of discipline. Programs of study included humanities, social sciences, life sciences or math/physical sciences. Kuncel et al. strongly suggested that the GRE-V and GRE-Q are valid measures of graduate school success, and these criterions should be requirements in the admission decision-making process in both degree levels. Kuncel et al. found the GRE and UGPA were both valid predictors of graduate school success measured by first-year graduate GPA and graduate GPA and that these results are generalizable. Specifically, colleges and universities should continue to use the
GRE as a predictive tool for predicting graduate school success among students applying for masters and doctoral level programs.

These meta-analyses validity studies were chosen because they demonstrate a pattern of inconsistent results related to GRE validity studies and this pattern continues to persist today. None of these earlier meta-analysis studies analyzed took into consideration race, gender, or age. From a CRT standpoint, race should be accounted as the GRE may be serving as a gateway and barrier to graduate school for this marginalized group. The researchers in prior GRE predictive studies did not take into consideration that GRE scores and UGPA may differ significantly depending on an applicant’s subgroup such as race, gender, age, social economic status, degree level, and degree major. Maybe for example about the racial differences in GRE scores, and the critique that these differences are (intended?). Maybe this is coming? Something more is needed here. CRT, and specifically QuantCrit, suggests that we must examine whether statistics may be being used in a way that benefits the White majority, as majority of the GRE validity studies focused on the White population. The results of these studies may not be generalizable to subgroups outside those most prominent in prior studies, including subgroups identified by race.

**Graduate Record Examination and education.** In this subsection, literature reviewed were GRE validity studies that focused on students who majored in education. Researchers who have focused solely on students who majored in education were chosen because in the present study, all the students are education majors. These studies are relevant to the current study and are presented in chronological order.

Rupiper (1959) conducted a study to examine the predictive validity of the GRE and the Miller Analogies Test (MAT). Only results from the GRE were reported, as those results were pertinent to the current study. The GRE was administered to students after a full year of graduate
study. GRE scores were then used to determine whether or not a student should remain in the doctoral program. The predictor variables were the GRE-Q and the GRE-V, while the criterion of success was degree attainment. The researcher ran descriptive statistics and found that the GRE-V was important to determining whether or not a student completed a doctoral degree in education.

Borg (1963) conducted a GRE validity study to determine the predictive validity of the GRE-V and the GRE-Q scores on GPA. All graduate students in a department of education who had taken the GRE within the previous five years and students who had completed at least 15 quarter hours were included in the study. The study included students who were master degree candidates enrolled in educational administration, secondary education, or elementary education. The sample included 175 students. The results showed that the validity coefficient for GRE-V and GRE-Q was .36 and .37, respectively. Borg (1963) concluded that the GRE had very low predictive validity and that the use of the GRE to predict graduate school success in their graduate program in education has little value. The researcher explored the idea of using GRE cut-off scores and found that if a GRE-V cut-off score was used, the cutoff score would have eliminated 21 unsuccessful students along with 41 successful students. A student was considered successful if he or she maintained a 3.00 GPA or higher, thus concluding that a cut-off score for the GRE would be invaluable.

Roscoe and Houston (1969) examined GRE scores for students who either graduated or did not graduate from a doctoral program in education over the previous three-year period. Two hundred and thirty-one students graduated from the doctoral program while 21 students did not graduate. The predictor variables included the GRE-V and GRE-Q scores, and the criterion variables were GGPA and degree attainment. The correlation coefficients obtained for GRE-V
and GRE-Q predicting GPA were 0.32 and 0.21, respectively. For predicting degree attainment, the correlation coefficients for GRE-V and GRE-Q were 0.21 and 0.28, respectively. That is, for predicting GPA, the GRE-V only accounted for 10% of the variance and the GRE-Q only accounted for 4% of the variance. That means other moderator variables besides the GRE-V and GRE-Q accounted for the remaining 90% and 96%, respectively. The results are similar for predicting degree attainment. Four and seven percent of the variance in predicting degree attainment is accounted for by GRE-V and GRE-Q, respectively. Thus, 96% and 93% of the variance for predicting degree attainment is accounted for by other moderator variables. The researchers concluded that the correlation coefficients were low, doubting the predictive validity of the GRE for this doctoral program in education. The researchers also stated that the GRE is not useful for identifying potential candidates for their doctoral program in education.

Williams, Harlow, and Gab (1970) also investigated the predictive validity of the GRE for students enrolled in a doctoral program in the education department. Data were collected on all students admitted into the doctoral program between June 1962 and June 1967. Two groups of students were included in the study: students who received a doctorate degree and students who had not received a doctorate degree, who also had not registered for any classes in the preceding 21 months. Basically, data from students who graduated and did not graduate from the doctoral program were examined. Thirty-three students graduated from the program and 51 student did not graduate. Fifteen predictor variables and two criterion variables were considered. The predictor variables relevant to the present study included area of concentration, UGPA, GRE-V score, GRE-Q score, and sex. Both criterion variables (GGPA and degree attainment) were relevant to the present study. Descriptive statistics, including the mean and standard deviation, along with zero-order correlation coefficients were calculated for the fifteen predictor
variables. The zero-order correlation coefficients between GRE-V, GRE-Q, and UGPA with doctoral GPA were -.01, -.01, and .13 respectively. The zero-order correlation coefficients between GRE-V, GRE-Q, and UGPA with degree attainment were .08, .34, and .02 respectively. The researchers concluded that degree attainment of masters’ degree from the university conducting the study had the highest zero order correlation for degree attainment for a doctoral degree from this university ($r = .36$). GRE-Q and GRE-V failed to correlate with doctoral GPA ($r = -.01$), however GRE-Q correlated with doctoral degree attainment ($r = .34$).

When all fifteen predictor variables were considered, the multiple correlation was $r = .65$ and $r^2 = .423$ for predicting degree attainment and $r = .506$ and $r^2 = .256$ for doctoral GPA (Williams et al. 1970). That is, all fifteen predictor variables combined were better at predicting degree attainment opposed to doctoral GPA. After a stepwise regression procedure was conducted, while predicting doctoral GPA, GRE-Q was the first variable eliminated, but when predicting degree attainment, GRE-Q was the next to last variable eliminated. Thus, depending on which criterion variables are selected for predicting graduate school success, GRE-Q scores may or may not be useful in predicting graduate school success. Williams et al. found that the GRE-V and UGPA failed to be valid predictors of graduate school success measured by either criterion.

Bean (1975) examined the predictive validity of the GRE for 91 students enrolled in a master’s degree program in a Department of Educational Psychology. GRE-V, GRE-Q, and UGPA were the predictor variables and GGPA and grade obtained in two research-based courses were the criterion variables. Descriptive statistics such as the mean and standard deviation were analyzed along with the correlation coefficient. The results indicated that the correlation coefficients for GRE-V, GRE-Q and UGPA correlating with GGPA were .31, .10, and .05,
respectively. The correlation coefficient for the total GRE score (GRE-V + GRE-Q) correlated .25 with GGPA. The correlation coefficient for GRE-Q and the Research Methods course was .45 and the correlation coefficient for the Survey Research course was .59. The researcher concluded that the GRE-V was better for predicting GGPA than the GRE-Q or the total GRE score. The researcher also stated that GRE-Q was a useful predictor of grades in courses that emphasized quantitative analysis. UGPA was not a valid predictor of GGPA. Overall, the GRE-V was better for predicting GGPA and the GRE-Q was better for predicting performance in research courses. Again, these findings were similar to Hebert and Holmes.

Hebert and Holmes (1979) studied the predictive relationship between GRE scores and GGPA. The predictor variables were GRE-V, GRE-Q, and GRE-T, also the criterion variable was GGPA. Data were collected from 67 students admitted into and graduating from a M.Ed. program in the Department of Education. A Spearman rank-difference correlation was carried out along with a Kendall test of significance. The results indicated that there was statistically significant relationship between GRE-V and GGPA (.348) \( (p < .005) \). GRE-T scores and GGPA also showed a statistically significant relationship (.342) \( (p < .005) \). The correlation between GRE-Q and GGPA was not significant (.175). The researchers determined the GRE-V and GRE-T were valid predictors of GGPA. No significant relationship was determined for GRE-Q scores and GGPA. Thus, GRE-V scores has the potential to predict GGPA while GRE-Q scores seem to not have predictive abilities for GGPA.

Thornell and McCoy (1985) examined the predictive relationship between GGPA and GRE scores for graduate students in various academic disciplines. Since majority of the students in this study were education majors, only the results for education majors are presented. A total of 462 students who majored in education and who finished their master’s program in the last
five years were included in the study. It is important to note that GRE scores were not considered for admission to the program, so restriction range was not a factor. Pearson product-moment correlation validity coefficients were calculated with alpha set at the 0.05 significance level. The results indicated for students majoring in education, the correlation coefficients for the GRE-V, GRE-Q, and GRE-T predicting GGPA were .49, .30, and .44, respectively. The researchers concluded that the GRE-V was a better predictor of GGPA than GRE-Q.

Kluever and Green (1992) analyzed associations among GRE scores, GGPA, and faculty ratings of success for students enrolled in a doctoral program in education. Data were collected for 305 doctoral students in education. It is important to note that 90% of the students were White and 90% of the students were women. Descriptive statistics and correlations were computed for the sample. The correlation coefficients for GRE-V and GRE-Q predicting GGPA were .26 and .27, respectively. The researchers concluded that the GRE scores predict GGPA just as well as the faculty ratings. The researchers also stated that the moderate correlations indicated that there are other unknown variables that account for the association between predictor variables and criterion variables that are not identified in this study. The researchers concluded that the GRE is a useful screener for identifying potential successful candidates in their doctoral program in education.

These studies are relevant to the current research because the researchers discussed the predictive validity of the GRE in the field of education. The present study will also focus on data in the field of education. However, the current study will involve disaggregating data concerning the predictive validity of the GRE based on race and gender, a step that was not taken by the aforementioned researchers. However, some GRE studies have done this dissagregatation.
Minority students and the Graduate Record Examination. This subsection includes discussion of research studies concerning the predictive validity of the GRE that disaggregated data based on ethnicity. Whitworth and Barrientos (1990) studied the predictive validity between the GRE and UGPA with GGPA for Hispanic and Anglo students. Data collected included student’s age, sex, ethnicity, graduate major, UGPA, GGPA, GREV, and GREQ and number of graduate hours completed. Students who majored in business, engineering, liberal arts, nursing, science and education were included in the study. Data was collected over a five-year span with a total of 952 students included in the sample. Of the 952 students included in the sample, 352 were Hispanic and 632 were Anglo. The researchers chose to conduct a multivariate analysis of variance with sex and ethnicity as the independent variables and the dependent variables were UGPA, GGPA, GREQ, GREV and GREA. The researchers computed mean and standard deviations for grades and GRE scores.

Whitworth and Barrientos (1990) found a significant difference between Hispanic and Anglos students, with Anglo students scoring higher than Hispanic students in all five independent variables. Ethnicity was shown to be significant in predicting___? while sex was not; however, the interaction between sex and ethnicity was significant. The difference between the means for UGPA between Hispanic students and Anglo students was relatively small, but the difference between GGPA was a little higher. GRE score differences were as high as 86 points on the GREV and as low as 59 points on the GRE-Q. The researchers conducted multiple regression analyses for both groups of students separately. The predictor variables were GRE scores and UGPA, and the criterion variable was GGPA. For the Hispanic group, the multiple correlation coefficient was .19, which resulted in an $r^2 = .036$. That is, less than 4% of the variance in GGPA was accounted for by GRE scores and UGPA. When the predictor variables
were analyzed separately, UGPA was the best predictor of GGPA even though the t-test results considered the standardized regression coefficient ($\beta = .279$) as not significant. The standardized regression coefficient ($\beta$) for GREV, GREQ, and GREA was zero for all of three of the GRE scores. For Hispanic students, the results indicate that the three GRE scores when analyzed collectively or separately have no predictive validity for GGPA. For the Anglo group, the multiple correlation coefficient was a little better, with $r = .271$ and $r^2 = .073$. That is, about 7% of the variance in GGPA was accounted for by GRE scores and UGPA. Similar to the Hispanic group, UGPA had the most predictive validity on GGPA with a standardized regression coefficient $\beta = .249$ and the GRE scores had little predictive validity, as the GREQ standardized regression coefficient was $\beta = .001$ and GREV along with GREA result was $\beta = .000$. Whitworth and Barrientos (1990) concluded that the GRE scores were not valid predictors of graduate school success measure by graduate GPA for either Hispanic students or Anglo students. The researchers explained that using the GRE as an admission criterion might discriminate against Hispanic students compared to Anglo students.

Hughey (1995) examined GRE scores and UGPA for students admitted into a master’s degree program over a 10-year period. Data was collected on 218 students that included UGPA, GRE scores, race and gender. Eighty-eight students were men and 130 were women, also 44 students were African American and 117 were Caucasian. Student ages ranged from 21 to 53 years old. The researcher calculated descriptive statistics for each variable and Pearson product moment correlation coefficients were computed to assess the relationship between GRE scores and UGPA for the total group, disaggregated by race and gender. An analysis of variance was conducted to assess whether the observed differences between the mean scores on the GRE and UGPA were statistically significant. Hughey (1995) found the mean scores on the GRE and
UGPA were higher for Caucasian students compared to African American students. Also, men’s GRE scores were consistently higher than women’s GRE scores, but the analysis of variance showed that the results were not statistically significant. The correlation coefficient between GRE scores and UGPA for the total group were statistically significant, but weak. The GRE-Q score and UGPA showed the highest correlation with men. For white students, the correlations with UGPA were statistically significant. On the other hand, for African American students, none of the correlations were statistically significant. Hughey (1995) concluded that the GRE alone is not a valid or reliable measure of graduate school success and the use of the GRE as an admission criterion warrants further scrutiny.

Ji (1998) investigated the predictive relationship among GRE scores, graduate GPA, academic major, ethnicity, and nationality combined with UGPA, degree pursued, and gender. One hundred and seventy students accepted into a graduate degree program over a three-year period were included in the study. Students had either graduated or finished one year of coursework. Fourteen students were African American, 29 were Hispanic, 19 were Asian and 116 were Euro-American. Also, 28 were considered international students and 142 were considered American students. Thirty-four students majored in educational administration, 40 in counseling psychology, 14 in educational psychology and 78 were in the curriculum and teacher preparation program. The researcher conducted a three-way analysis of variance determine whether the relationship among GRE scores and UGPA were statistically significant with GGPA. The researcher found that even though the relationship among GRE scores and GGPA were statistically significant, the correlations were low. Ji (1998) also performed a three-way analysis of variance to determine whether the relationship between GRE scores with ethnicity, nationality, and academic majors was statistically significant. A three-way analysis of variance
was also used to determine whether the relationship between GGPA and ethnicity, nationality, and academic major were statistically significant. A hierarchical stepwise regression analyses was conducted to determine the predictive validity of gender, age, ethnicity, UGPA, academic and degree pursued predicting GGPA.

The results indicated that Pearson correlation coefficients were not significant among age, UGPA and GGPA (Ji, 1998). Although correlations among GGPA with GREQ, GREV, and GREA were low, the results were statistically significant. To determine the best variable, Ji performed a set of regression analyses between GGPA and the independent variables (GRE scores, academic major, ethnicity, nationality, gender, age, UGPA, and degree pursued in education). The results showed that GREQ was the best predictor explaining 16% of the variance, age explained 11% of the variance, and GREV explained 7% of the variance in GGPA. The remaining variables explained less than 7% of the variance in GGPA. The researcher conducted another set of regression analysis using a two-variable model. The results indicated that GREQ and age accounted for 26% of the variance in GGPA. The three variable model using GREQ, GREV, and age accounted for 33% of the variance in GGPA.

Ji (1998) concluded that GRE scores were not a valid predictor of GGPA for students majoring in education. The researcher also indicated that the GRE was a weak predictor of graduate school success for minority students. Other findings include that there was a significant mean difference in GRE scores among ethnic groups. That is, Euro-American students had higher GRE scores than African American students and Asian students. In fact, GRE scores had weaker correlations with GGPA for African American and Asian students compared to Euro-American students. In conclusion, caution should be used when using GRE scores as a predictor of GGPA for African American and Asian students.
Sampson and Boyer (2001) examined the predictive validity of GRE scores with first year GPA (FGPA) at several research I institutions. The sample included minority students who earned a doctoral, specialist, or master’s degree during a nine-year period who had also received a fellowship from the school. Included in the sample were 160 minority students (144 African American students, 13 Hispanic students; two Native American students; and one Pacific Islander student. Of the 160 students, 57 were men and 103 were women. Descriptive statistics and Pearson product-moment correlations were calculated and the researcher conducted a linear regression model to determine which predictor variables (age, UGPA, GREV, GREQ, GREA, gender, major, undergraduate institution and degree conferred) were significantly associated with FGPA. Students majored in the field of social sciences (67), behavioral sciences (33), humanities (29), physical sciences (18), and biological sciences (12). There were two classifications for undergraduate institution: predominantly White institution (PWI) and historically Black colleges and universities (HBCU). Only predictor variables that correlated with FGPA were included in the linear regression model.

The results from Sampson and Boyer’s (2001) correlation analysis indicated that GREV, age, majors, UGPA and undergraduate institution were significantly correlated with FGPA. The correlation coefficients for the predictor variables correlating with the FGPA were .39 (GREV), .21 (Age), -.15 (majors), .15 (UGPA), and .19 (undergraduate institution). The correlation coefficient between GREA, GREQ, gender, and degree conferred associated with FGPA were not statistically significant. The researchers used a multiple regression method to determine which predictor variables were significant in predicting FGPA. The predictor variables included in the linear regression model were GREV, age, majors, UGPA, and undergraduate institution. The results indicated that the predictor variables included in the linear regression model
accounted for 25% of the variance in FGPA. Sampson and Boyer (2001) also calculated standardized regression coefficients ($\beta$) for age ($\beta=.23$), major ($\beta=-.16$), GREV ($\beta=.35$), UGPA ($\beta=.18$), and undergraduate institutions ($\beta=.12$). A t-test was conducted and revealed that the beta weights for age, UGPA, GREV, and major were statistically significant but not undergraduate institution. The beta weight for GREV was the highest and considered the best predictor of FGPA. The researchers stated that the reason why GREV was considered the best predictor of FGPA was because the study included students who majored in verbal fields.

Sampson and Boyer (2001) concluded that age, UGPA, GREV, and major were significant at predicting graduate school success measured by FGPA at this particular Research I university. The researchers stated that this research differs from other research studies focusing on minority students because this study focuses on minority students who earned degrees. Other studies focused on students who both have earned and have not earned degrees. This study did reveal that using GRE scores only, some students should not have been admitted to the program or even graduated (Sampson & Boyer, 2001). Thus, the researchers suggested that other factors, such as non-cognitive variables, should be considered for admission to graduate school. Non-cognitive variables include “individual persistence, motivation, reasoning skills, creativity, interpersonal skills, writing skills, and prior achievement” (p. 277).

Wao et al. (2015) examined whether GRE scores predicted graduation GPA scores for both international and domestic graduate students. Variables that were considered were GRE verbal and quantitative scores, total GRE scores, and GPA at graduation. While all associations that were found were weak, GRE quantitative scores were the best predictor of GPA. In line with the authors’ hypothesis, associations were consistent when comparing domestic and international
students. The researchers recommended that GRE be reconsidered as a required consideration (Wao et al., 2015).

Very few studies disaggregated data and analyzed subgroups such as race/ethnicity, gender, social class, and age, to determine predictors of graduate school success. Those that did found that the GRE was not a valid predictor of graduate school success among marginalized groups.

What variables are useful predictors of graduate school success among different subgroups? A gap in the literature exists for analyzing predictor variables for graduate school success among subgroups. In particular, a limited number of researchers presented findings using disaggregated data by ethnicity/race, gender, and age. The findings in the literature were inconsistent when determining which variables are valid predictors of graduate school success for minority students. The inconsistencies of research study outcomes related to predicting graduate school success raise questions as to what independent variables are valid predictors of success. Therefore, due to limited research on predictors of graduate school success disaggregated among subgroups coupled with the inconsistent results of previous studies, research in analyzing disaggregated data for different subgroups is needed.

Conclusion

Today, leaders of colleges and universities use the GRE heavily to predict graduate school success, due to the supposedly objective nature of the GRE serving as a way to compare students equally without the criteria being subject to bias, like other forms of admission criteria (ETS, 2013). Most colleges and universities required students to submit their GRE Verbal and GRE Quantitative score along with their undergraduate GPA to be considered for admissions.
In general, standardized tests like the GRE are an important factor in the decision-making process ranging from receiving a scholarship to admissions to various programs at different levels of a student’s academic career, including grade-level promotions, gifted/magnet programs, undergraduate programs, graduate programs, MBA programs, medical programs, and law school programs (Ford & Helms, 2012). For example, the SAT or ACT are used to predict undergraduate success, the LSAT is used to predict success in a law program, the MCAT is used to predict success in a medical program, and the GMAT is used to predict success in a business program. In addition, leaders of primary and secondary schools use standardized tests as an objective measure to determine whether a student is performing below grade level, on grade level, or above grade level. Standardized tests are considered a viable, objective measure for predicting future academic success of students at a variety of academic levels (Ford & Helms, 2012).

However, my conceptual framework opens some concerns about these assumingly objective and colorblind measures of the potential of a person. Thus, the validity of standardized tests to predict such outcomes should be challenged.

With this study, I further examine the validity of the GRE to predict success in graduate school at a large, public, diverse university in the Southeast United States. The following chapter included details pertaining to the research methods that will be used during this study. Details provided include the research design, methodology, and data analysis technique. A summary will conclude the chapter.
Chapter 3: Methodology

The main goal of this research study is to investigate the predictive validity of the GRE. This chapter will summarize the methods used to address the following research questions and hypotheses:

<table>
<thead>
<tr>
<th>Research Question</th>
<th>Hypothesis</th>
<th>Hypothesis</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 To what extent do GRE scores predict graduate school success among Black students as measured by their GGPA?</td>
<td>( H_{0a} ): GREV does significantly predict graduate school success among Black students.</td>
<td>( H_{0b} ): GREQ does not significantly predict graduate school success among Black students.</td>
</tr>
<tr>
<td>2 To what extent does UGPA predict graduate school success?</td>
<td>( H_{2a} ): UGPA significantly predicts graduate school success.</td>
<td>( H_{0b} ): UGPA does not significantly predict graduate school success.</td>
</tr>
<tr>
<td>3 How do the relationships between GGPA, UGPA, GREV, and GREQ vary when disaggregated by race/ethnicity, gender, and degree level?</td>
<td>( H_{3a} ): The effect of UGPA and GRE scores on GGPA varies significantly when disaggregated by race/ethnicity, gender, and degree level.</td>
<td>( H_{0b} ): The effect of UGPA and GRE scores on GGPA does not vary significantly when disaggregated by race/ethnicity, gender, and degree level.</td>
</tr>
<tr>
<td>4 How can a CRT theoretical framework be applied to contextualize whether or not the GRE is a valid predictor of graduate school success?</td>
<td>How can a CRT theoretical framework aid in explaining the challenges and obstacles that African Americans face when accessing higher education?</td>
<td>How can a CRT theoretical framework facilitate deeper understanding of barriers that minorities have faced in education, particularly those related to admission to higher education institutions?</td>
</tr>
</tbody>
</table>

Research Methodology and Design

To determine if the GRE is a valid predictor of graduate school success I created several regression models to determine the extent in which several independent predictor variables contribute to graduate school success measured by final graduate GPA and degree attainment disaggregated by race, gender, and degree level at a large, public diverse university.
Creswell (2014) defined quantitative research as “an approach for testing objective theories by examining the relationship among variables” (p.4). Creswell explained theory in quantitative research as “the use of an interrelated set of constructs (or variables) formed into propositions, or hypothesis, that specify the relationship among variables (typically regarding magnitude or direction) and predicts the outcome of a study” (p. 249). I will use a non-experimental correlational research design. This research design is chosen to determine the association between two or more predictor variables. The methodology for this research will be split into two distinct phases: Phase One will involve the exploration of predictive relationships between variables, while the second phase will entail applying principles of CRT to the research context and findings for critical analysis.

**Phase 1.** In this research study, the researcher will explore the relationship between several predictor variables and criterion variables. Specifically, given race, gender, and degree level and how well the predictor variable or a composite score based on multiple predictor variables (undergraduate GPA, GREV, or GREQ) is associated with graduate school success. Success will be measured by final graduate grade point average (GGPA) and degree attainment. To determine the association between the predictor variables and the criterion variables, Pearson’s correlations, binary logistic regression, multiple linear regression, and hierarchical regression models will be calculated.

**Phase 2.** Phase two of this research will involve applying principles of CRT for critical analysis. CRT will inform analysis in multiple ways: 1) to help explain the challenges and obstacles that African Americans face when accessing higher education, 2) to deepen understanding of barriers that minorities have faced in education, particularly those related to admission to higher education institutions, and 3) to improve understanding of the relationship
between White supremacy and African American’s access to/exclusion from higher education (Taylor, 2016).

Data Collection

Data from one of the leading producers of teachers in Georgia was obtained from a large university data department. Permission was sought from department leaders to collect existing data. Upon approval, the requested data was sent securely to the researcher. To ensure data was kept anonymous, I used existing data purged of all individually identifiable information. IRB approval was not be required, as no human subjects participated (Creswell, 2014). All collected data was stored on a password-protected computer accessible by the researcher alone. The data received included de-identified academic records and demographic data for graduate students who started a teaching graduate degree between the years of 1979 and 2010.

The original sample size was n=12,416, from which 7,217 were dropped because they were missing data for the dependent variable (GGPA). Of the n=5,199 left, those who had GGPA<1.00 were dropped because these were considered wrong inputs (GGPA=0.0) or outliers (0.0<GGPA<1.00). The same types of wrong inputs and outliers were dropped from the UGPA variable (59 dropped). The final sample used for the data analysis included 5,106 observations.

Data for the dependent variable GGPA was left-skewed. A high number of students achieved a 4.0 GPA. Normality tests post-regression analysis showed that errors were normally distributed and p-values could be used to decide if the coefficients were different from zero to test the study’s hypotheses.

The following data was requested from the university:

- Degree level for all teacher programs (master, specialist, doctoral)
- Ethnicity/race (Black, White, other)
- Gender (male, female)
- Undergraduate GPA
- Final graduate GPA
- GRE Verbal
- GRE Quantitative
- GRE Total
- Degree Attainment (yes or no)
- Semester and year started (from 2000–2010)
- Semester and year graduated

**Population and Sampling**

The population included students enrolled at a large public university in Georgia in the teacher education programs at the doctoral, specialist, and master’s degree level from 2000 to 2010. The data was disaggregated based on race, gender, and degree level. One possible limitation is there may not be enough data for each group that I am interested in studying, specifically minority students. To select the students that would be subjects of the study, a preset list of qualifiers was established. To be eligible, a student had to have in their university record UGPA, GRE scores, GGPA, and degree attainment status. GRE scores ranged from 250—800 and 230—800 for verbal and quantitative, respectively. The original sample size was n=12,416, from which 7,217 were dropped due to missing data for the dependent variable (GGPA). Of the n=5,199 left in the sample, those who had GGPA<1.00 were dropped (had wrong inputs (GGPA=0.0) or outliers (0.0<GGPA<1.00). The same types of wrong inputs and outliers were dropped from the UGPA variable (59 dropped). The final sample used for the data analysis was 5,106 observations.
Tabachnick and Fidell (2007) provided a method for determining sample size. The researchers stated the sample size must satisfy explicit equations for a full regression model and for testing individual independent variables. There must be at least $50 + 8(k)$ for a full regression model or $104 + k$ for testing independent variables. Therefore, $n$ must be at least $50 + 8(3) = 74$ for a full regression model and $104 + 3 = 107$ for testing independent variables. Data from a total of 5,106 students will be included in this research, a number which satisfies Tabachnick and Fidell’s (2007) equations for determining sufficient sample size.

**Data Analysis**

To answer each research question, the data was divided into subgroups disaggregated by race and gender. Then, data will be analyzed by degree level (masters, specialist, and doctoral). Statistical procedures will be conducted to answer the research questions. Specifically, descriptive statistics, Pearson’s correlation coefficients, and regression models will be used. Several regression models will be created to determine how much each predictor variable contributes to the regression model. To address the first research question posed in the study, a regression analysis was conducted using race variable for the first block, gender for the second block, GRE scores for the third block and undergraduate GPA for the fourth block. The regression model is presented in Table 3. As observed, the final model included black, other, female, GRE-V, GRE-Q and undergraduate GPA. The model was determined to be significant in predicting the GGPA except for GRE-Q.

**Variables and measures**

The predictor variables chosen for analysis were UGPA, GRE scores (Verbal and Quantitative). The criterion variables are graduate GPA and degree attainment. GRE scores and UGPA were chosen because the majority of previous researchers studying graduate school
success analyzed these two variables the most. GRE scores ranged from 250–710 and 230–800 for verbal and quantitative respectively. Usually, research studies used first year graduate GPA as an indicator of graduate school success. Moreover, I would need to analyze this data disaggregated by race to determine whether or not minority students are graduating at a rate comparable to white students. To answer research question one and two, Pearson’s correlation coefficients (r) was calculated to determine the association between the GRE scores and graduate GPA. Cohen’s (1988) definition of magnitude for correlation coefficients were used to interpret significance of correlation. A small correlation was considered .10, medium .30 and large .50, regardless of direction of correlation.

To answer research question three a block design was used. Pearson correlation coefficients was calculated to determine the relationship between UGPA and graduate school success measured by GGPA. Positive significant correlations was interpreted as high UGPA associated with high GGPA.

There is a significant gap in the literature examining the use of the GRE through a critical race lens. Very few studies have combined quantitative research and CRT (QuantCrit) in general. This study will use CRT to analyze the results of this study in order to determine any inequalities when using the GRE an admission criterion.

**Data assumptions**

The assumptions for a logistic model are not as strict as the assumptions for the multiple regression models. The outcome variable must be dichotomous to use the regression model. Other assumptions are large sample size, 20 cases per association or minimum of 60 cases, independent, mutually exclusive and no outliers. These assumptions are the same for the multiple regression models. Thus, the conditions for the logistic model are satisfied. The outcome
variable, degree attainment, is dichotomous with either the student earning a degree or not earning a degree.

To explain effect size, $R^2$ will be analyzed. According to Shieh (2013), “the sample squared multiple correlation coefficient $R^2$ is a prevailing strength of association effect size measure for the population squared multiple correlation coefficient $\rho^2$ between the criterion variable and the set of predictor variables” (p. 402–403). Descriptive statistics for each continuous predictor variables will be calculated and analyzed. Statistics include the mean and standard deviation. Dot plots, histograms, box-and-whisker plots and normal probability plots will be the graphical displays reviewed for continuous predictor variables. The researcher will check assumptions for significance tests and prediction models. The researcher will compare the overall prediction model to subgroup prediction models to determine best predictor variables for predicting graduate school success. For each subgroup, the researcher will determine to what extent each predictor variable (defined in this study) contributed to the regression model.

Multiple Regression Analyses: A Descriptive Model

The researcher will conduct multiple regression analyses along with the respective statistics for the analysis. Multiple regression analysis methods are applied to answer research questions related to the outcome variable, final graduate GPA. To minimize the probability of a Type I error, the significance level, alpha, is set at 0.05. Multiple regression requires two or more independent variables that are continuous and a dependent variable that is continuous. The researcher will calculate and discuss descriptive statistics for each independent variable such as the mean and standard deviation. The p-value will be calculated to determine if we can reject or fail to reject the null hypothesis.
Validity

Steps will be taken to ensure the validity of this research. The statistical methods selected for examining relationships between predictive variables will help to determine the nature of the relationships among variables; however, the researcher will ensure that analysis remains focused on potential predictive relationships and not on the causality of these relationships. This will reinforce the alignment of the research questions and purpose of the study with the research methods that are used (Creswell, 2014). Additionally, the perspectives of other expert researchers in the field will be gathered in order to ensure alignment between essential facets of the study and the research methods that will be used. Further, the necessary sample size needed to ensure effective representation will be calculated and compared with the number of subjects whose data is made available for this study (Creswell, 2014).

Conclusion

The research design was discussed in Chapter 3, specifically, population and sampling, data collection, and how data was analyzed. Graduate students’ data from a large public diverse university was collected and analyzed. Data was collected from the Office of Institutional Research at this large public university. Data was analyzed using Pearson’s correlation coefficients and multiple regression. Statistical analyses will be conducted to determine the predictive relationship among the GRE and UGPA and the association with graduate school success. The remaining chapters of this paper include a presentation of the findings, discussion of the findings, and a conclusion.
Chapter 4: Results

This study challenges the validity of the standardized GRE test to predict future academic success of minority students. The dependent variable is graduate grade point average (GGPA); the independent variables of interest are undergraduate GPA (UGPA), GRE Verbal test scores (GREV), and GRE Quantitative test scores (GREQ) and being a black student; additional independent variables include sex, race/ethnicity, degree sought, and degree attained status.

The sample was comprised of 77.5% (n=3,959) females and 22.5% males (n=1,147), most who identified as White (83%) (n=4,236), and most (87.5%) were pursuing a master’s degree (n=4,467) in education (Table 1). This dataset showed that 15% of them had been categorized as having attained their degree, while 85% were categorized as still attending or having dropped out of their program.

Descriptive Statistics

The mean GGPA for the total data analysis sample was 3.89 ranging between 1.87 and 4.00 (s.d.=0.22) (Table 2). The same students had an average UGPA of 3.29 [range:1.87-4.00], GREV of 467, and GREQ of 534. For the same variables, descriptive data was disaggregated by the two races of highest interest: Black (n=407) and White (n=4,236). Both GPA variables and both GRE score variables were higher among the White students compared to the Black students.

Correlations were considered small (.10-.29), except for medium (.30-.49) correlations between GREV and GREQ. Pearson’s correlation analyses were also executed for student race subgroups (White and Black) of the sample. Among White students, the correlations were very similar to the ones from the total sample, with the exception of the relationship between GGPA and GREV, which was significant at the p<.01 level, not p<.001 level. The relationship between GGPA and GREQ was not significant but was negative. On the other hand, the correlations for
the Black student subgroup had more differences from the full sample results. The relationships among the GRE scores were still significant and high, however GGPA did not have a statistically significant correlation with GREV, and GGPA relationships with GREV and GREQ were negative, and its relationships with UGPA and GREQ were significant but only at the $p<.05$ level.

Table 1

*Demographic information of total 5,106 students*

<table>
<thead>
<tr>
<th>Variable</th>
<th>Category</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sex</td>
<td>Female</td>
<td>3,959</td>
<td>77.5%</td>
</tr>
<tr>
<td></td>
<td>Male</td>
<td>1,147</td>
<td>22.5%</td>
</tr>
<tr>
<td>Race/ethnicity</td>
<td>Black</td>
<td>407</td>
<td>8%</td>
</tr>
<tr>
<td></td>
<td>White</td>
<td>4,236</td>
<td>83%</td>
</tr>
<tr>
<td></td>
<td>Asian</td>
<td>137</td>
<td>2.7%</td>
</tr>
<tr>
<td></td>
<td>Hispanic</td>
<td>145</td>
<td>2.8%</td>
</tr>
<tr>
<td></td>
<td>American India or Alaskan Native</td>
<td>12</td>
<td>0.2%</td>
</tr>
<tr>
<td></td>
<td>Multiracial</td>
<td>76</td>
<td>1.5%</td>
</tr>
<tr>
<td></td>
<td>Undeclared</td>
<td>93</td>
<td>1.8%</td>
</tr>
<tr>
<td>Degree</td>
<td>Doctoral</td>
<td>536</td>
<td>10.5%</td>
</tr>
<tr>
<td></td>
<td>Specialist</td>
<td>103</td>
<td>2%</td>
</tr>
<tr>
<td></td>
<td>Masters</td>
<td>4,467</td>
<td>87.5%</td>
</tr>
<tr>
<td>Major</td>
<td>Early Childhood Education</td>
<td>474</td>
<td>9.3%</td>
</tr>
<tr>
<td></td>
<td>Educational Leadership</td>
<td>695</td>
<td>13.6%</td>
</tr>
<tr>
<td></td>
<td>Individualized General</td>
<td>397</td>
<td>7.8%</td>
</tr>
<tr>
<td></td>
<td>Master of Arts</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>In Teaching Concentrations</td>
<td>1,119</td>
<td>52.6%</td>
</tr>
<tr>
<td></td>
<td>Traditional</td>
<td>569</td>
<td>11.2%</td>
</tr>
<tr>
<td></td>
<td>Adolescent/Inclusive Ed</td>
<td>70</td>
<td>1.4%</td>
</tr>
<tr>
<td></td>
<td>MED-AE</td>
<td>1,746</td>
<td>34.2%</td>
</tr>
<tr>
<td></td>
<td>Teaching English to Speakers of Other Languages(TESOL)</td>
<td>16</td>
<td>0.3%</td>
</tr>
<tr>
<td>Degree attainment</td>
<td>Other</td>
<td>19</td>
<td>0.4%</td>
</tr>
<tr>
<td></td>
<td>Yes</td>
<td>763</td>
<td>15%</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>4,343</td>
<td>85%</td>
</tr>
</tbody>
</table>

*Note.* Source of degree attainment data unsure about whether a “No” response was a dropout or someone who had not completed their degree at time of data collection.
Table 2

Undergraduate/graduate GPA and GRE scores between black and white students

<table>
<thead>
<tr>
<th>Variable</th>
<th>Black students (n=407)</th>
<th>White students (n=4,236)</th>
<th>Total students (n=5,106)</th>
</tr>
</thead>
<tbody>
<tr>
<td>GGPA</td>
<td>Mean [range]</td>
<td>Std. Dev.</td>
<td>Mean [range]</td>
</tr>
<tr>
<td></td>
<td>3.77 [0.38]</td>
<td></td>
<td>3.90 [0.19]</td>
</tr>
<tr>
<td>UGPA</td>
<td>3.10 [0.45]</td>
<td></td>
<td>3.31 [0.42]</td>
</tr>
<tr>
<td>GREV</td>
<td>407 [75]</td>
<td></td>
<td>477 [91]</td>
</tr>
<tr>
<td>GREQ</td>
<td>477 [112]</td>
<td></td>
<td>542 [126]</td>
</tr>
<tr>
<td>GRE T</td>
<td>884 [205]</td>
<td></td>
<td>1019 [226]</td>
</tr>
</tbody>
</table>

Table 3

Pearson’s correlation coefficients and significant levels for Black graduate students

<table>
<thead>
<tr>
<th>Variables</th>
<th>GGPA</th>
<th>UGPA</th>
<th>GREV</th>
<th>GREQ</th>
</tr>
</thead>
<tbody>
<tr>
<td>GGPA</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>UGPA</td>
<td>0.118*</td>
<td>1.000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>GREV</td>
<td>-0.082</td>
<td>0.037</td>
<td>1.000</td>
<td></td>
</tr>
<tr>
<td>GREQ</td>
<td>-0.102*</td>
<td>-0.104*</td>
<td>0.148*</td>
<td>1.000</td>
</tr>
</tbody>
</table>

Findings

Results for RQ1 (to what extent do GRE scores predict the graduate school success of Black students as measured by their GGPA?) and RQ2 (to what extent does UGPA predict graduate school success measured by GGPA?) were analyzed simultaneously in a series of regression analyses. The adjusted R-squared for the first model is .028, for the second model is .067, for the third model is .071 and finally for the fourth model is .082. The predictor variables explain 8.2% of the variance in the GGPA scores in the final model. As observed, the variable Black was not a significant predictor of GGPA scores. Therefore, GRE scores do not predict graduate school success of Black students as measured by their GGPA. To address the second
research question, a block design regression analysis was also conducted using race and gender as predictors for the first block and UGPA score as the predictor for the second block. The result of the regression analysis is presented in Table 4. The result of the analyses determined that UGPA scores does not significantly predict the GGPA scores of participants because the adjusted R-squared is low.

Table 4

Regression Analysis Result on Predictive Relationship of UGPA Scores on GGPA

<table>
<thead>
<tr>
<th>Model</th>
<th>R-squared</th>
<th>Beta</th>
<th>t</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Constant)</td>
<td>1090.730</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Black</td>
<td>- .16</td>
<td>-11.424</td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td>r=.028</td>
<td>-.071</td>
<td>-5.079</td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Constant)</td>
<td>554.094</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Black</td>
<td>-.153</td>
<td>-11.125</td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td>-.070</td>
<td>-5.083</td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>r=.067</td>
<td>.197</td>
<td>14.408</td>
</tr>
<tr>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Constant)</td>
<td>176.359</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Black</td>
<td>-.142</td>
<td>-10.087</td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td>-.070</td>
<td>-5.083</td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>.201</td>
<td>14.494</td>
<td></td>
</tr>
<tr>
<td>GRE V</td>
<td>.070</td>
<td>4.701</td>
<td></td>
</tr>
<tr>
<td>GRE Q</td>
<td>r=.071</td>
<td>-.021</td>
<td>-1.626</td>
</tr>
<tr>
<td>4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Constant)</td>
<td>125.072</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Black</td>
<td>-.131</td>
<td>-9.354</td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td>-.062</td>
<td>-4.491</td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>.179</td>
<td>12.741</td>
<td></td>
</tr>
<tr>
<td>GRE V</td>
<td>.057</td>
<td>3.843</td>
<td></td>
</tr>
<tr>
<td>GRE Q</td>
<td>-.036</td>
<td>-2.455</td>
<td></td>
</tr>
<tr>
<td>UG GPA</td>
<td>r=.082</td>
<td>.112</td>
<td>7.918</td>
</tr>
</tbody>
</table>
Being a Black student is the second most common race/ethnicity among this student sample. The results from these regressions indicate similar coefficients and statistical significance for the variables associated with GGPA between the full sample and the sample with only White students. UGPA, GREV or GREQ, gender, degree sought, and degree attainment status were significant for white student samples. In the Black student sample UGPA and GRE scores did not show any statistically significant relationships to GGPA, whereas gender and degree sought categories had statistically significant relationships with GGPA. For RQ1, we fail to reject both null hypotheses saying that GREV and GREQ do not significantly predict graduate school success (GGPA) among Black students. For RQ2a, the null hypothesis states that UGPA does not significantly predict graduate school success, as measured by the GGPA. We can reject that hypothesis from Table 3, which has the full sample.

In addition to UGPA, GRE scores and their relationships with GGPA also varied when data was analyzed post-disaggregation by race/ethnicity, gender, and degree level. We can reject the null hypothesis for RQ3 that the effects of UGPA or GRE scores on GGPA do not vary significantly when disaggregated by race/ethnicity, gender, and degree level. Table 5 shows statistically significant relationships with GGPA for most of the independent variables except for GREQ among master’s degree students, whereas doctoral and specialist students’ UGPA and GRE scores do not have statistically significant relationships with GGPA.
Table 5

Summary of regression analysis for variables predicting graduate GPA for doctoral students, graduate students, and specialist students

<table>
<thead>
<tr>
<th>Variable</th>
<th>Doctoral students n=478</th>
<th>Master students n=3,561</th>
<th>Specialist students n=103</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Coef. Robust SE t</td>
<td>Coef. Robust SE t</td>
<td>Coef. Robust SE t</td>
</tr>
<tr>
<td>UGPA</td>
<td>.0490 .0348 1.4</td>
<td>.1338 .0210 6.4***</td>
<td>.0132 .0426 .31</td>
</tr>
<tr>
<td>GREV</td>
<td>.0038 .0136 .28</td>
<td>.0277 .0100 2.8**</td>
<td>.0008 .0208 .04</td>
</tr>
<tr>
<td>GREQ</td>
<td>-.003 .0075 -.34</td>
<td>-.010 .0063 -1.6</td>
<td>.0238 .0172 1.4</td>
</tr>
<tr>
<td>GRET</td>
<td>.051 .0215 2.3</td>
<td>.047 .012 1.2</td>
<td>.0351 .0274 1.1</td>
</tr>
</tbody>
</table>

*p < .05. **p < .01. ***p < .001.

Conclusion

This chapter included the descriptive data analysis and results from the regression analysis to challenge the validity of the standardized GRE test as a predictor of future academic success for minority students. In Chapter 5 we will discuss how the CRT theoretical framework could be applied to contextualize whether or not the GRE is a valid predictor of graduate school success as part of the discussion surrounding the results described in Chapter 4.
Chapter 5: Discussion

The purpose of this quantitative study was to investigate to what extent the GRE predicts graduate school success across race, gender, and different majors in education at a large, public diverse university. The impetus was to understand, and therefore potentially mitigate, differences that might exist among variables as they relate to GRE scores among different student groups. Four research questions were used to guide the study and are as follows:

RQ 1. To what extent do GRE scores predict the graduate school success of Black students as measured by their GGPA?

RQ 2. To what extent does UGPA predict graduate school success?

RQ 3. How do the relationships between GGPA, UGPA, GREV, and GREQ vary when disaggregated by race/ethnicity, gender, and degree level?

RQ 4. How can a CRT theoretical framework be applied to contextualize whether or not the GRE is a valid predictor of graduate school success?

a) How can a CRT theoretical framework aid in explaining the challenges and obstacles that African Americans face when accessing higher education?

b) How can a CRT theoretical framework facilitate deeper understanding of barriers that minorities have faced in education, particularly those related to admission to higher education institutions?

Summary of the Findings of the Quantitative Study

Data used to answer the first research question failed to reject all three null hypotheses, suggesting that GREV and GREQ do not significantly predict graduate school success (GGPA), among Black students. The results from these regressions indicate similar coefficients and statistical significance for the variables associated with GGPA between the full sample and the
sample with only White students. Undergraduate GPA, GREV or GREQ, gender, degree sought, and degree attainment status were significant for all students and white students’ samples. Additionally, the Black student sample UGPA and GRE scores did not show any statistically significant relationships to GGPA, whereas all gender and degree categories had statistically significant relationships with GGPA.

Data used to answer the second question indicated the findings failed to reject the null hypothesis stating that UGPA does not significantly predict graduate school success (GGPA). The conclusion drawn from this is that UGPA significantly predicts graduate school success (GGPA). Research findings for the third question revealed that UGPA did not have a statistically significant relationship with GGPA in the sample only with Black students. Further, results showed that UGPA had a statistically significant relationship with GGPA among non-White students, female students, and male students, whereas UGPA had statistically significant relationships with GGPA only among students seeking a master’s degree. In addition to these findings, GRE scores and their relationships with GGPA also varied when data was analyzed post-disaggregation by race/ethnicity, gender, and degree level. The hypothesis stating that UPGA or GRE scores on GGPA would not vary significantly when disaggregated by race/ethnicity, gender, and degree level was therefore rejected. In summary, the analyses rejected the null hypothesis that the effects of UGPA or GRE scores on GGPA do not vary significantly when disaggregated by race/ethnicity, gender, and degree level.

**Insight Provided by a Critical Analysis of this Quantitative Research**

The fourth research question in this study show that GRE is not a valid predictor of graduate school success among Black students. CRT is therefore important to understand the meaning and implications of these findings. CRT says the GRE is used as a barrier to access
higher education among Black students. The GRE is one of the challenges and obstacles that Black students face when accessing higher education. Specifically, despite the fact that the GRE is not a predictor of graduate school success among Black students, the GRE is used for admission into graduate schools for fellowships and for scholarships.

The QuantCrit analysis utilized to address this research question has been woven throughout the manuscript. In this study, the data collected was divided into subgroups disaggregated by race and gender. Then, data was analyzed by degree level (masters, specialist, and doctoral). Statistical procedures were conducted to answer the research questions. The results of this analysis were described in Chapter 4.

Counter-Storytelling. As a first examination of the RQ4, I invoke the CRT of counter-storytelling. Counter-storytelling is when students in higher education are encouraged to share their stories and personal experiences, rather than relying on the master narrative that White faculty, students, or other stakeholders may provide for them (Hiraldo, 2010). As an African American doctoral student, I am able to contribute my own stories and personal experiences, rather than relying on those that master the narrative of White students. I am able to thereby share my story and personal experiences in higher education to contribute to the existing narrative. Furthermore, looking back upon my brother’s experiences, I am able to share his story to better understand the personal experiences that prevent students, particularly Black male students from completing this high school education and pursuing higher education. Counter-storytelling provides insight into this study by challenging the master narrative by sharing stories that differ from the traditional experience of pursing and completing higher education.

Permanence of Racism. The permeance of racism is reflected in the fact that the local schoolteacher population is primarily White. The development of the GRE was established for a
student demographic in higher education that is predominately White. However, as reflected in the study results, the GRE, is not only a barrier to graduate school entry for Black students but is not an accurate predictor of graduate school success among Black students. Based on CRT, this may be due to the fact that the GRE is developed by predominately White professionals for a predominately White student demographic. Due to this mismatch, Black students continue to be disadvantaged by GRE as a barrier to graduate school entry, reflecting the permeance of racism.

In addition to counter-storytelling, other variables were noted. These include the following, according to Hiraldo (2010):

1. The permanence of racism: Recognizing that racism permeates all spheres of society, including the political, social, and economic spheres, and understanding how this impacts higher education (Hiraldo, 2010). Acknowledging that racism still exists in a systematic way is what this tenet is about. Standardized tests like the GRE can create a barrier for access to higher education among Black students and can be seen as a systematic way to keep Black students out of graduate school.

2. Whiteness as property: Understanding the privilege and property-like advantages that Whiteness holds, specifically in higher education (Hiraldo, 2010). Higher education can be viewed as property of Whites. Specifically, the absolute right to exclude. Use of the GRE can be viewed as a way to exclude Black people from higher education.

3. Interest conversion: Understanding that supposed civil rights gains only occurred due to White interest, and this includes higher education issues, like affirmative action (Hiraldo, 2010).

4. Critique of liberalism: Recognizing colorblindness and its harmful effects for students of color in higher education (Hiraldo, 2010).
**Limitations of the Study**

The main limitations for this study proved to be those that are common to quantitative research in general. The first limitation was that, although the research findings adequately showed the connection, or lack thereof, between GRE scores and success in graduate school, they did not offer human experiences and observations. It should be noted that this is an understood fact for quantitative research studies, though, because of this, it is difficult to draw verifiable conclusions from the statistical data in light of the third research question (a limitation that QuantCrit aims to address). Another limitation of this study was that it was not possible to confirm what the answer, “no,” meant for degree attainment (students still in their program or students who have dropped out). Another limitation of this study was the unequal distribution of male and female students, which could not have been determined until the final sample was collected.

The primary limitation of the study was that the variable of degree attainment was difficult to interpret, in terms of understanding exactly what “degree attainment” meant. In this study, the aim for this variable was to know whether a student graduated with their degree or dropped out of school. However, in the data set, there was no way to know if the lack of degree attainment was associated with dropouts or with those still in pursuit of their degree. Although the research findings adequately showed the connection, or lack thereof, between GRE scores and success in graduate school, they did not offer human experiences and observations. It should be noted that this is an understood fact for quantitative research studies, though, because of this, it is difficult to draw verifiable conclusions from the statistical data in light of the third research question (a limitation that QuantCrit aims to address).
Relationship of Findings to Previous Literature

The findings revealed that GRE test scores do not significantly correlate with Black students’ performance in graduate school. The findings, therefore, provided a much-needed perspective to existing literature on the topic. As noted in the literature review, existing GRE research had two flaws. First, only students with high GRE scores were accepted to graduate school, creating a range restriction for GRE validity studies. Second, the existence of students with low GRE scores who excelled in different admission criteria (e.g., UGPA) created a negative correlation between GRE and other admission criteria (Baggs, Barnett, & McCullough, 2015; Grillo, Ghoneima, Garetto, Bhamidipalli, & Stewart, 2019). The findings of these researchers indicate on the topic was limited at best. Following is a discussion on the interpretation of the findings as they relate to research about each finding. Research proved similar for each finding and findings are presented and followed by a review of the literature on this subject. The first finding of the study failed to reject all three null hypotheses, saying that GREV and GREQ do not significantly predict graduate school success (GGPA) among Black students. Moreover, research revealed that although there was a correlation between scores and performance for White students in graduate school, there was not much of a correlation for Black students in graduate school. The findings from the first research question were especially interesting because it revealed, to a degree, there are other and perhaps better predictors of success for Black students in graduate school.

The second finding for this study failed to reject the null hypothesis stating that UGPA would not significantly predict graduate school success (GGPA). The research findings also showed that UGPA did not have a statistically significant relationship with GGPA in the sample with Black students. The findings from the second research question were significant because it
demonstrated that test scores on these entrance exams might not ultimately predict success for Black students. The results for the third research question ultimately revealed that while CRT may not necessarily be required to demonstrate a correlation between actual scores and success in graduate school, it could provide further support that entrance exams, such as the GRE, could deter Black students from pursuing graduate school. Nevertheless, from a CRT standpoint, race should, indeed, be considered as a potential gateway and barrier to graduate school for Black students in education. In fact, as a result of racism and CRT, researchers Ladson-Billings and Tate (1995) stated that African American students are more likely to find academic success outside of the public school system. As the review of research revealed, the studies examined did not take into consideration that GRE scores and UGPA may differ significantly depending on factors such as race, gender, age, social economic status, degree level, and degree major. Moreover, statistics have been largely used and applied in a way that benefits the White majority, as the majority of the GRE validity studies focused on the White population. This same notion was supported by Ladson-Billings and Tate (1995), who stated that CRT in education is one better designed to serve White students. As such, the results of these studies are not generalizable to other subgroups regarding race.

The findings revealed in the three questions of the research regarding Black students and entrance exams were supported in the literature review. In one study, Moneta-Koehler, Brown, Petrie, Evans, and Chalkley (2017) studied the correlation between GRE scores and biomedical graduate school success. The researchers wanted to see if the results for biomedical students varied from existing inconclusive findings concerning the GRE’s predictive validity. Upon the collection of research from the biomedical program at Vanderbilt University Medical School, the researchers discovered the standards of passing qualifying exams, graduating with a PhD,
publishing first author papers, delivering presentations at conferences, short defense time, or obtaining individual fellowships or grants were not predicted by GRE scores. Additionally, they found first semester grades were moderately predicted by GRE scores and faculty evaluation results and graduate GPA had a weak-to-moderate association with GRE scores. The results ultimately proved inconclusive as it related to the predictive validity of the GRE (Moneta-Koehler et al., 2017).

In another study, Wao et al. (2016) explored whether GRE scores predicted the success and performance of construction management graduate students. The researchers considered GRE verbal and quantitative scores, total GRE scores, and student success measured as a binary function. Student records for graduate students attending a school in the Southeastern central United States were also collected as part of their study. Ultimately, the researchers found no correlation between the exam scores and student success (Wao et al., 2016). In a similarly focused study, Anderson, Hayes, Massey, and Brownell (2017) assessed success for speech-language pathology graduate students and GRE exam scores. As part of their research, the researchers examined the records of 50 students from Louisiana State University Health Sciences Center Shreveport (LSUHSCS) who completed their master’s programs. The researchers revealed that academic probation status was associated with comprehensive exam results; however, the predictive measures were not associated with student success.

In a study conducted by Lannholm (1968), the researcher reviewed 38 published and unpublished GRE validity studies written from 1952 to 1967. The areas explored by the review consisted of studies employing GPA as a criterion, studies employing various criteria of success, and studies predicting graduate school success for foreign students. There were ultimately four broad generalizations formed based on the results of this meta-analysis.
According to Lannholm (1968), students who achieved high marks on tests were superior, academically, to students with lower test scores. Students with higher verbal skills scores performed better in subjects that were descriptive by nature, i.e. English or the humanities, while students with higher ability scores performed better in physical sciences classes (Lannholm, 1968). Predictors of students’ success could, therefore, be predicted by using advanced test scores in their respective subject, and the associations could be improved when involving the scores of students’ aptitude tests (Lannholm, 1968). The most reliable predictors used to improve students’ test scores was when undergraduate grades and the students’ test scores were equally considered (Lannholm, 1968). Lannholm (1968) found the research examined to be insufficient. Due to the methods normally used in the reviewed studies, Lannholm (1968) contended that caution should be used when grasping a deeper understanding of how test scores affect student performance. Also supporting this sentiment was Thacker and Williams (1974), who determined that GRE as an admission criterion to graduate school should be questioned due to inconsistent and inconclusive results. The research findings were that majority of the researchers in this review found the GRE was not a valid predictor of graduate school success due to low correlations (Thacker & Williams, 1974). Not only did Thacker and Williams (1974) come to this conclusion, but so did others.

Examining 27 GRE research studies between 1950 and 1990, Goldberg and Alliger (1992) came to the same conclusion as Thacker and Williams (1974). The findings revealed the GRE was not a valid predictor of GGPA (Goldberg & Alliger, 1992). Moreover, validity coefficients of the GRE-V and GRE-Q for all criteria combined were 0.03 and .145, respectively. Therefore, the overall results revealed that the GRE was not a valid predictor of GGPA, as both the GRE-V and GRE-Q scores only accounted for 2% of the variance in GGPA (Goldberg &
Alliger, 1992). The researchers concluded that even though the GRE may not be a valid predictor of GGPA, the conclusion on whether the GRE is a valid predictor of graduate school success was still up for debate (Goldberg and Alliger, 1992). Finally, Goldberg and Alliger contended that GGPA might not be the best measure of graduate school success for two reasons: the range of grades given in graduate school is restricted, and it is difficult to distinguish between “superior” and “inadequate” students (p. 1019).

There was a study that showed different results from the current research study and the studies examined here. In one of the most recent studies on this topic, Kuncel et al. (2010) performed a large meta-analysis examining the legitimacy of the GRE as a predictor of graduate student performance in both masters and doctoral programs. The meta-analysis of about 100 studies and 10,000 students analyzed GRE scores to predict first-year graduate GPA, overall graduate GPA, and faculty ratings (Kuncel et al., 2010). These researchers revealed the GREV and GREQ were valid predictors of first-year graduate GPA and graduate GPA for masters and doctoral students regardless of discipline. Spanning across disciplines, programs of research consisted of humanities, social sciences, life sciences or math/physical sciences. Kuncel et al. (2010) therefore argued the GRE-V and GRE-Q were accurate predictors of graduate school success, and these criterions should be requirements in the admission decision-making process in both degree levels. Kuncel et al. (2010) also stated the GRE and UGPA were both valid predictors of graduate school success measured by first-year graduate GPA and graduate GPA and these results are generalizable. Their case was that colleges and universities should continue to use the GRE as a predictive tool for predicting graduate school success among students applying for masters and doctoral level programs. As previously noted, the research examined in the literature review in addition to the findings of this research study show a pattern of
inconsistent results concerning GRE validity research; a pattern that continues to persist today. The results were therefore based on majority (if not all) White males.

**Implications**

**Research question number one.** The findings of the first research question failed to reject both null hypotheses suggesting GREV and GREQ would not significantly predict graduate school success (GGPA) among Black students. Prior research helped shed light on these findings and suggested why this might be the case. Using CRT as a framework to underpin this study, there are other factors that may prove appropriate in predicting the success of Black students in graduate school. For instance, according to Ladson Billings and Tate (1995), CRT supports that when there are higher proportions of students under-performing academically, poverty tends to be an issue. However, there is an imbalance of African Americans living in poverty in the United States, more so than Whites (Ladson Billings & Tate, 1995). According to the U.S. Census Bureau (2019), there are some 327 million Americans living in the United States, and 76.5% of this population of White, while 13% are Black or American America. Further, 11.8% of Americans live in poverty, but 21.2% of the total African American population is living in poverty, compared to 10.7% of White (Fontenot, Semega, & Kollar, 2018). In other words, there are more than three-and-a-half times the population of Whites than there are African Americans in the United States, but the population of African Americans living in poverty is double that of Whites. According to CRT, racism is present outside of the school system, and has graduated to such a presence that it has now involved students’ prospects of success. This is even more evident by the difference in mean salary between Whites and Blacks in the U.S. In 2017, Whites identified as “White, not Hispanic” earned an annual household income of $68,145, while Blacks earned an annual income of $40,258; a difference of nearly $30,000 (Fontenot et
al., 2018). Since the U.S. Census Bureau started tracking household income in 1967, Whites have earned a significantly higher income, on average, than Blacks (Fontenot et al., 2018). It is important to understand this finding has implications that reach beyond the academy, as being accepted into graduate school could ultimately impact job and earning opportunity, especially for Black students; a population that has, historically, lagged behind other races in terms of earning potential. The findings of this study could ultimately influence entrance exams and predictions of Black students’ graduate school success, or it could lead to the adaptation of these tests so as not to place Black students at a disadvantage. This implication is significant, because its suggests the use of GRE does not serve the best interests of all students and, thus, ultimately serves as an added roadblock to Black students’ pursuit of graduate school.

Arguably, the use of a test that does not best serve or best measure all students is aligned with a few of the five tenets of CRT’s framework, which are the permanence of racist and Whiteness as a property. As stated previously, the permanence of racism is the notion that racism essentially dictates the U.S.’s political, social, and financial climate (Hiraldo, 2010). When looking at the statistics surrounding the Black and White populations, specifically the incidence of people in poverty and the difference in salaries, it is apparent that Whites, at least historically, have had an advantage over Blacks, which has not affected the incidence of Blacks pursuing graduate school. Whiteness as a property is a similar concept, in that by simply being White, people are entitled to certain pleasures and enjoyments (Hiraldo, 2010). This definition has since evolved, as it once described how being White entities people to enjoyments, and how, during slavery, African Americans were seen as property, conveying a sense of ownership (Hiraldo, 2010). These findings indicate that two of the tenets of CRT are present in relation to the choice of tests use, and, as a result, there is a slight advantage for one race to succeed over another.
Another major finding as related to the first research question was a significant correlation between GRE scores and graduate school success for White students. Prior research indicated the reform of tests aimed at better predicting the success of Black students are being avoided in exchange for the continued self-serving use of GRE to benefit White students. Understanding these findings have implications from the standpoint that it is wrong to continue the use of the GRE unless it is known that the GRE scores can predict success in all graduate students. In addition to the findings of this study, this conclusion can be drawn by looking at statistical data. According to the National Center for Education Statistics (2019), some three million students were enrolled in graduate programs in 2017, which include master’s and doctoral programs, and professional doctoral programs. In the fall of 2017, 63% of graduate students nationwide were White, but only 14% were Black (National Center for Education Statistics, 2019). Although there are certainly other variables that may influence these numbers, it is evident that the use of the GRE is not equalizing the number of Black and White students pursuing graduate school.

**Research question number two.** The findings for the second research question showed the null hypothesis was rejected. The null hypothesis stated that UGPA does not significantly predict graduate school success (GGPA). The results showed that UGPA had statistically significant relationships with GGPA among non-White students, female students, and male students. These findings were also aligned with the research on GRE scores suggesting there was no link to success in graduate school for non-White students. A review of the literature revealed that existing research demonstrates insufficient evidence that such scores are reliable predictors of success.
**Research question number three.** The research also rejected the null hypothesis that the effects of UGPA or GRE scores on GGPA would not vary significantly when disaggregated by race/ethnicity, gender, and degree level. These discoveries were especially interesting and can potentially be explained by not only the conflicting evidence provided in research, but also because the research mostly supports the presence of bias regarding entrance exams for enrollment into graduate school. The research findings for this question suggest the importance of CRT as a potential answer for what best predicts success for Black students entering graduate school. Moreover, in doing so, stakeholders may be more likely to effectively remedy the issue of representation.

**Research question number four.** As it relates to the fourth question of whether CRT should be used as a predictor of success in graduate school, the evidence is clear. As for the implications, it would seem that other factors should be considered outside of the traditional entrance exam scores, and that doing so could potentially lead to opportunities for non-White students to achieve success in higher education. To assume that factors such as face and gender do no play a role would be inaccurate, based on the findings. Therefore, a primary implication is that these characteristics are necessary for researchers to conduct more research on measures that can improve opportunities for more students to enter graduate school and achieve success. The results of this research could reveal the potential to tremendously impact the individual, the family, and society.

Individually, this research could help increase the opportunities for Black students to enter the academy at the graduate level and achieve success. Considering factors outside of entrance exams could ultimately help these students achieve personal success. The family could be largely impacted by the findings of this research similarly to how the individual may be
impacted. In knowing that students can benefit from more opportunities to pursue education, families will be affected due to the student being able to pursue education and career advancements, which can ultimately lead to a higher earning potential and lifestyle for the family. Students could ultimately experience opportunities that spillover into their home lives, which affects their families. According to Tamborini, Kim, and Sakamoto (2015), the return on investment that a person gains from higher education is noteworthy, so much so that it is one of the causes of household inequality. Tamborini et al. (2015) conducted a 10-year longitude study of people born in the same generation. The results of the study indicated that, on average and over a lifetime, men with a high school diploma earn $1.54 million, while those with a bachelor’s degree earn $2.43 million and those with a graduate degree earn $3.05 million (Tamborini et al., 2014). Over their lives, women with a high school diploma earn $811,000, while those with a bachelor’s degree earn $1.44 million and those with a graduate degree earn $1.87 million (Tamborini et al., 2014). If obtaining a higher degree has the position to earn someone a higher salary and, perhaps, help pull them out of poverty, then the impact of the results of this study may have life-changing implications for families in this position. Lastly, socially, there are benefits to society when students successfully enter graduate school and advance the workforce. Not only may underrepresented student groups be more prevalent in roles that improve diversity within companies, but they will also be able to add value with their diverse ideas and experiences.

This research question pertains to the application of CRT to determine whether the GRE is a valid predictor of graduate school success, specifically for African Americans. In this study, the data was operationalized to determine whether the GRE was a valid predictor of graduate school success for Black, with the premise that the GRE was a barrier to graduate school entry
for Black. According to CRT, the GRE would serve as a means of controlling Whiteness as property, which is one of the theory’s five tenets (Hiraldo, 2010). In other words, CRT would support that if the test was well received by White students, but not by Black students, then the test was purposely designed to benefit the White students while hindering the Black students. This also applies to the tenet of the permanence of racism (Hiraldo, 2010). According to CRT, racism inherently exists in all tentacles of society, which, whether directly or indirectly, influence the political, social, and financial areas of life (Hiraldo, 2010). Therefore, CRT would also support that the GRE, as it exists today, is structured in such a way that it is intended to keep intact the divide between White students and Black students who attend and graduate from graduate school. Currently, the U.S. statistics of White students with a graduate degree versus Black students with a graduate degree reflect this gap.

This finding connects directly with the fourth tenet of CRT, which is interest convergence. Historically, there has been an interest in helping White people to get ahead, at least in the government, more so than Blacks (Hiraldo, 2010). This can be seen in the instance of affirmative action, and according to Hiraldo (2010), White people essentially benefiting from a system that was supposed to create equality for Blacks and Whites. When considered in the context of the research findings, the system of education in the United States does, indeed, support diversity and equality, however, the GRE is not showing respect for this diversity or acknowledging equality by providing White students with an advantage to succeed over Black students; the very inherent flaw of the assessment. This also directly aligns with how CRT theory serves to override the dominating idea, which is that African Americans in the school setting cannot achieve success (McGee & Stovall, 2015).
By considering the results of this study in alignment with CRT, it is clear that the use of the GRE as a predictor of Black students’ success when, it is, indeed, not an accurate predictor is a way for a system to continue upholding or prioritizing White people, or students, over Blacks. Specifically, the results of the analyses failed to reject two null hypotheses, which means that GREV and GREQ, do not significantly predict GGPA among Black students. Moreover, the analyses rejected the null hypothesis that the effects of UGPA or GRE scores on GGPA do not vary significantly when disaggregated by race/ethnicity, gender, and degree level. With CRT supporting the racism is inherent within the United States in all tenets of life, it is presumed that it has leaked into education as well. When coupled with the notion that education can elevate one’s financial status and lifestyle, and with the high population of Black people living in poverty, it can be presumed that Black students were not gaining access to the education they sought, which resulted in a lifestyle of poverty that perpetuated. If more Black students had the opportunity to be accepted into graduate school and persist education through completion, the conclusion would be for the poverty rate of Black people to decline. In the following section, the relevance of these implications as related to CRT will be described.

**Reflections and Implications based on Critical Race Theory**

The significance of this study is that no GRE studies have used CRT as a theoretical framework to analyze GRE data. The findings of this study were that the GRE was not an accurate predictor of the academic success of Black students, despite the fact that GRE scores are used for graduate school admission as well as for scholarships and fellowships based on the claim that they are a predictor of student success in the United States (Colarelli et al., 2012). Therefore, this section includes a reflection on the implications of the findings of this current study in the consideration of CRT. With the presentation of subsections, the specific components
that will be addressed in this section are: (a) counter-storytelling, (b) permanence of racism, (c) whiteness as property, (d) interest conversion, and (e) critique of liberalism.

**Counter-storytelling.** As has been previously described, counter-storytelling involves encouraging students of color in higher education to tell the story of their experiences, rather than relying on the narrative provided by White faculty, students, or other stakeholders (Hiraldo, 2010). In the previous section, it was established that the implications of the findings of the current study are that it is wrong to continue the use of the GRE unless it is known that GRE scores can predict success in all graduate students. The results of the current study were that GRE scores were not a predictor of success for Black students. For this reason, additional research is needed to tell the story of Black students and other non-White students, beyond GRE and traditional entrance exam scores.

Specifically, more evidence is needed to understand what mechanisms beyond the GRE could be used as a predictor of academic success in high education. In consideration of the CRT aspect, counter-storytelling, the narrative must include the experiences of non-White students to understand their experiences with GRE exams and other traditional entrance exams. Such topics may include understanding the challenges associated with taking these exams and the experiences of non-White students in graduate school. Information from the non-White perspective may help to improve knowledge of how traditional entrance exams may be improved and what mechanisms may be used as improved predictors of non-White student success in graduate schools.

Reflecting on my own personal experiences, there were many factors in my life that impacted my academic achievement later in life. Instead of the A’s and B’s, I achieved in my early life, my grades began to suffer as a result of these circumstances throughout high school,
which ultimately impacted my GPA and my pursuits of higher education. My story is that I was able to overcome my circumstances and eventually did very well in my undergraduate education. I was also able to successfully continue on to higher education, despite these circumstances. Unfortunately, my experiences are not often shared by other students in my situation. As supported in evidence and in CRT, non-white students are disproportionately impacted by the structure of higher education. I am fortunate to be able to share my narrative and to integrate this narrative into my research and components of higher education. My own narrative sheds light on the challenges faced by others and the divide that persists between White and Black students in higher education. I am therefore able to use my own narrative, through counter-storytelling to urge the need for future research and to demonstrate, using evidence and the CRT framework, of the implications of these findings.

Additional studies are essential given that, as mentioned previously, CRT would support that if entrance exams, such as the GRE, were well received by White students, but not Black students, then the test was purposely designed to benefit White students and may hinder Black students. Therefore, because the results of the current study were that GRE scores were not predictors of success of Black graduate students, the current study would support the claim that entrance exams are designed to benefit White students and are not in favor of Black students. Furthermore, if CRT would support that that GRE in its current structure is intended to continue the divide between White students and Black students who attend and graduate from graduate school, additional studies are needed to understand how the GRE could be redesigned in a way that overcomes this divide. Alternatively, entrance examinations could be eliminated and replaced with mechanisms that would be more favorable to Black students to create improved equality for Black and Whites in higher education, particularly on the graduate level. Additional
studies are needed to confirm the findings of the current study and to broaden the understanding of the non-White student narrative, in consideration of CRT. Future research could benefit from obtaining insight from non-White input to advance current evidence beyond the traditional narrative that has been developed by White faculty, students, and stakeholders and that is prevalent in the present structure of higher education.

**Permanence of racism.** Based on this tenet of CRT, the concept of the permanence of racism is that racism permeates all spheres of society including the political, social, and economic spheres (Hiraldo, 2010). The current study supported that, according to CRT, because the GRE was not a predictor of Black student success in graduate school, racism may be institutionalized within graduate school entrance exams such as the GRE. In other words, because racism permeates all spheres of society according to CRT, it also permeates the sphere of higher education. Therefore, based on the results of the present study, CRT would support that racism does, in fact, permeate higher education. If racism permeates higher education, non-White students are at a disadvantage in higher education. This disadvantage is reflected in the fact that Black students face disadvantages in academic attainment and rates of graduation in higher education and graduate school, with the GRE being an additional barrier to graduate school admission (Cahn, 2015). Therefore, racism may be said to exist at the level of standardized testing such as the GRE acts as a barrier that disproportionately impacts the ability of minority students to obtain higher education, when compared to White students.

The enrollment of more minority students and students from marginalized groups into graduate schools may help to improve equity and equality of the system by increasing diversity within the higher education system. Increasing diversity an increasing the enrollment of students from minority and marginalized groups is important because increased graduate school
attendance among these groups may indirectly reduce crime rates and/or poverty, improve social mobility, and boost the economy (Squire et al., 2018). To use my brother’s personal life as an example, growing up, he found that although school was important, many of his friends were less focused on school, likely due to their underprivileged background. As I mentioned before, it is difficult to focus on advancing academically when you are struggling financially to obtain basic necessities. His siblings demonstrate the challenges that come with a disadvantaged background. His sister, Sebirana, struggled in high school, which resulted in her dropping out and becoming pregnant as a teenager. His brothers, Dwayne and Dion, also struggled in school, like his sister. Like his sister, his brothers’ circumstances also led to their decision to drop out of high school. His peers and members of his own family were therefore negatively impacted by circumstances potentially associated with racism on the social level. Although they each made their own decisions, they were not supported by a background that provided them with a supportive education or role models that encouraged them to progress academically by overcoming their challenges to finish high school, much less pursue graduate education. CRT would likely support the statement that his brothers and his sister, as African-American teenagers from a low-economic background, were impacted by the racism that permeates each sector of society and ultimately allows the cycle of racism to continue.

Drawing a connection between my brother’s own personal experience and the benefits associated with graduate school education in marginalized groups, increased rates of graduate school enrollment among minority groups, such as Black students, may help to reduce the permeation of racism within society described in this tenet of CRT. By addressing the disadvantages faced by these groups on the level of higher education, marginalized groups may be able to progress in society through the indirect benefits described by Squire et al. (2018). In
other words, by eliminating or at least reducing the racism that permeates higher education, racism in one aspect of society may be addressed. Addressing racism in higher education specifically may also help to reduce the divide between Whites and non-Whites in society in general if non-Whites are able to obtain greater social mobility and other advantages associated with pursuing higher education. The following subsection will include a further discussion on the topic of advantage.

**Whiteness as property.** An additional tenant of CRT is that Whiteness holds privilege and property-like advantages (Hiraldo, 2010). In the present study, GRE was not a predictor of graduate success for Black students. Therefore, CRT may support that Black students do not have the privilege and property-like advantages of White students as it relates to their GRE scores. The advantage of Whiteness in GRE testing is supported by the evidence that standardized tests are based on White norms (Guinier, 2015), as will be discussed further.

Drawing again on my brother’s own experience, as an African-American male from a low-income home, he does not hold the privilege and property-like advantages of Whiteness. He was instead able to overcome my circumstances through my academic achievement and persistence in pursuing my education. Based on the findings of the current study, from the perspective of CRT, in addition to not having the advantages of Whiteness, he, like other non-White students may have faced additional disadvantages in the entrance process of graduate school. Although he was able to enter graduate school and continue to succeed in his graduate education, there are many other Black students that either were unable to enter graduate school due to the disproportionate structure of the GRE and other entrance exams or may have not succeeded academically due to other factors associated with underprivilege, upon entering graduate school.
I stated previously that anything is possible, as reflected by my brother’s own academic achievement. However, CRT provides framing for the fact that, although possible, success in higher education is less likely and requires more effort due to the disproportionate advantages held by Whiteness and not by non-Whites. Therefore, with the evidence of the current study, there is a need to identify a means of developing equality and equity considering the advantages experienced by White students and the underprivilege and disadvantages often faced by non-White students seeking to pursue higher education. There is evidence that non-White students may be placed at a disadvantage when testing (Cahn, 2015).

Researchers have also found that standardized tests may be oriented toward White upper- and middle-class norms (Guinier, 2015). Thus, evidence supports the CRT tenet of Whiteness as property. Specifically, because standardized tests, such as the GRE and other traditional exams are developed according to White upper- and middle-class norms according to Guinier, Whites, particularly Whites from upper- and middle-class backgrounds are likely to have greater advantages in taking standardized exams. Therefore, referring to CRT, Whites hold the privilege and property-like advantage of taking standardized exams that have been designed to reflect their norms. On the other hand, non-Whites may be disadvantaged because they do not hold the same advantages as Whites as it pertains to standardized testing.

In addition to admission to graduate schools, GRE scores are also used for scholarships and fellowships. Therefore, non-White students that take the GRE may not only be disadvantaged in taking the exam itself but may also face disadvantages in being considered for fellowships and scholarships in comparison to White students. Noting this disparity is important because many minority students already come from underprivileged backgrounds and are in need of financial support for their graduate education. Coming from a background of disadvantage,
non-White students, specifically Black students as is the topic of the current study, may, therefore, be faced with a dual barrier of both graduate admission and financing associated with their GRE scores. In other words, based on CRT, because Black students lack the White advantage pertaining to achievement on the GRE, they may be less likely not only to gain admission to graduate school but in obtaining the support from scholarships and fellowships needed to finance their graduate education. One way of achieving greater equality, therefore, would be to address the GRE as a barrier to graduate education for minority groups (Cahn, 2015). Addressing the GRE as a barrier would require the elimination of the advantage of Whiteness and developing standardized testing that is more reflective of non-White norms.

**Interest conversion.** In CRT, interest conversion refers to the understanding that supposed civil rights gains in the United States only occurred due to White interests (Hiraldo, 2010). These supposed civil rights gains also include higher education issues such as affirmative action. Therefore, based on this tenet of CRT, additional advancements in civil rights may only occur due to White interests. Interest conversion is therefore difficult to analyze in the context of the current study because the implications are that, even if there is evidence that the GRE is not a predictor of graduate school success for Black students, changes may only be made to the GRE if the changes are part of White interests. If advancements in higher education related to civil rights are only likely to occur if they are in White interests, there must be a better understanding of how changes to standardized testing, such as the GRE can be placed within this interest.

Part of the issue associated with interest conversion is that even if changes are made, Brown and Jackson (2013) argued that periods of social progress are part of a pattern that equalized to continue supporting White dominance. Furthermore, the link has been made that if African Americans were never meant to gain full equality, their destiny, including educational
attainment could be controlled by Whites due to the structure of society. Therefore, applying this tenet of CRT, even if changes to the GRE are made to increase inequality between Blacks and Whites and potentially increase the enrollment of Black and minority students in graduate education, this progress may act as another means to continue inequality through White dominance.

Considering the tenet of the permanence of racism within CRT, it is possible that White dominance may continue even with changes to standardized testing such as the GRE. Because racism under CRT permeates multiple facets of society, including but not limited to higher education, there is much progress that must be made in order to overcome the institutionalized racism that has long existed in society. However, one of the first steps in overcoming White dominance is to bring attention to its presence and persistence in society and in higher education. The current study is significant in contributing to this initiative because it highlights the evidence that a divide continues to exist in higher education between Blacks and Whites.

The current study also contributes to the existing literature to demonstrate that the traditional standardized testing, the GRE, not only acts as a potential barrier to graduate school admission for minority students but is not an adequate measure for Black student success in graduate education, as intended and claimed by other researchers. In the current study, the CRT was also applied as a means of addressing a gap in the literature and to draw attention to a persisting issue within society. By demonstrating the applicability of CRT, the theory may be used to frame future studies and provide additional evidence and implications for further change to overcome the issues of racial divides and disparities that exist in higher education and persist in society in general. The current study, therefore, challenges the current status of the GRE by providing quantitative data. This data from this study may be used as evidence to progress the
social agenda, by demonstrating the need to make changes to the current structure of graduate school admission in higher education. The argument for changes in higher education that may appeal to the interest of Whites would be that increased enrollment of minority students in graduate schools can be drawn from Squire et al. (2018) in that an increase of students from marginalized backgrounds with a graduate school education may reduce crime, contribute to the economy, and bring other benefits to society.

On the other hand, an increase in marginalized students in higher education may result in a larger number of individuals from minority groups in positions of authority. Higher education provides individuals the possibility to influence and potentially permeate the political, social, and economic spheres of society that are currently dominated by Whites. For example, my brother has used his opportunity to overcome the challenges associated with his disadvantages as an African-American man to obtain a higher education. He is now able to use this opportunity as an educated African-American man from a disadvantaged background to encourage others to overcome their circumstances, by telling his own story to demonstrate that higher education is attainable. Similarly, I have used my brother’s opportunity in higher education to study the issues that may have led to the disparities he experienced and learn how we may overcome these issues as a society. Recognizing the need for data and evidence to back these claims, I have invested my brother’s education to bring attention to an issue that his siblings and him experienced in their youth and that he fought to overcome. Although society may continue to be White-dominated and may only change due to White interests, as suggested by this tenet of CRT, I am able to use my brother’s education to bring attention to the tenets of CRT, their implications, and ways to potentially change the status quo. My contribution to the dialogue through research and
in academia may indirectly influence future work by building a platform for the use of CRT in research and the use of research for positive change in higher education.

Higher education provides individuals, such as myself, the opportunity to bring more awareness and generate rigorous research pertaining to the issue of inequality and inequity in society. Additional research on these topics has the potential to inform and place increased pressure on policy decisions that would benefit non-Whites in society. Equally important, an increase of marginalized individuals in higher education also provides the potential for these individuals to serve as role models for others, encouraging them to remain in high school, pursue higher education, and minimize the divide that exists in higher education.

**Critique of liberalism.** The final tenant of CRT addressed in this study was the critique of liberalism that involves recognizing colorblindness and its harmful effects (Hiraldo, 2010). The critique of liberalism was applied specifically in this study to recognize and understand the harmful effects of colorblindness for students of color in higher education. As applied to the current study, a basic premise was that the GRE is used as a standardized test for students for admission to graduate schools and for students to be considered for scholarships and fellowships. In other words, the GRE as a standardized test that does not consider the unique backgrounds of minority and marginalized students is a colorblind exam within higher education. Furthermore, the GRE is an exam that is a barrier to graduate school education for many minority students and is, therefore, has harmful effects for minority and marginalized students.

Moreover, although the GRE was intended to be a standardized and therefore colorblind exam to assess the academic success of students in higher education, the results of the current study are that the GRE does not accurately predict success for students of all colors. Specifically, the GRE was not a predictor of success for Black students in the present study. Although
additional research is needed to confirm the findings of this study, a conclusion that can be made from the results of the present study is that the GRE is not a valid standardized indicator across all groups. The importance of the critique of liberalism in the current study is that by drawing attention to colorblindness and its harmful effects, as done by using CRT to analyze the results of this study, evidence can be generated to understand the effects of standardized or colorblind practices and structures in society. By addressing the principle of colorblindness by applying CRT in future studies, additional research may be generated to inform higher education in a way that may improve outcomes and enrollment for non-White students. In the next section, additional suggestions for future research are described, drawing on results from this study as well as existing research.

**Recommendations for Future Research**

This study was significant because it addressed issue of conflicting data on the relevance of research suggesting that GRE scores are the best predictors for success in graduate school. This was especially significant due to the fact that most colleges and universities require students to submit their GRE verbal and GRE quantitative score, along with their undergraduate GPA, to be considered for admissions. Therefore, this current study sought to investigate how well the GRE predicts graduate school success across race, gender, and different degree majors in education at a large public diverse university. With this being said, the hope is that future research studies will offer rigorous research methods to validate and build upon the results of this investigation. Forthcoming research might consider the following questions:

- What factors best predict academic success in graduate school for non-White students?
• To what extent do non-cognitive factors predict success in graduate school for non-White students?
• What are the perceptions among non-White students of entrance exams into graduate school?
• What impact, if any does the requirement of entrance exam cutoff scores impact a student’s decision to apply for graduate school?
• To what extent does entrance exam cutoff scores impact the representation of non-White students at the graduate level?
• In what ways, if any are entrance exam test scores predictive of student success in graduate school?
• In what ways do academic institutions benefit from entrance exam cutoff test scores for graduate school acceptance?
• To what extent do GRE entrance exam cutoff scores impact the diversity and representation of non-White student in graduate schools across the United States?

Numerous questions remain concerning the predictive nature of entrance exam scores for success in graduate school, however research demonstrates a need to include other factors when examining research on the subject. Moreover, this research study makes these findings a potential springboard to other research like it. It is, therefore, necessary that future research is conducted to explore other factors that may predict the success of non-White students in graduate school. Without such endeavors, it is only assumed that there will continue to be an underrepresentation of these students in graduate schools across the world.
Conclusion

This chapter offered a descriptive discussion of the implications and meaning of the research, with a focus on the interpretation of the data as it concerns a review of the literature, the limitations of the study, the implications, and recommendations for future research. This proposed quantitative study consisted of an investigation of how well the GRE predicts graduate school success across race, gender, and different degree majors in education at a large public diverse university. This proved especially significant provided the common practice among institutions to have GRE cutoff scores for admission into their graduate programs. What the literature review and research findings revealed, however, is that there are other factors that possibly best predict success for non-White students in graduate school. This research is valuable to stakeholders who desire to help programs and institutions become more diverse and representative as it concerns non-White students in graduate schools across America.
References


Boske, C., & Elue, C. (2017). Are you qualified to be a member of this “elite group”? A school leadership preparation program examines the extent “diverse” candidates are admitted to graduate school. *Journal of Cases in Educational Leadership, 20*(2), 145-162.

https://doi.org/10.1177/1555458916686645


Retrieved from https://journals.sagepub.com/home/REF


https://doi.org/10.1111/j.1464-0597.2011.00480.x


doi:10.1080/01425692.2018.1523354


Educational Testing Service. (2019). *When people can demonstrate their potential, the possibilities are endless*. Retrieved from [https://www.ets.org/](https://www.ets.org/)


https://doi.org/10.2466/PMS.74.2.419-423


https://doi.org/10.1037/0033-2909.127.1.162


https://doi.org/10.1177/0013164409344508


https://doi.org/10.1177/1077800414557825


Plessy v. Ferguson, 163 U.S. 537 (1896).


