A CAUSAL-COMPARATIVE STUDY BETWEEN GPA DUAL ENROLLED COLLEGE SENIORS AND ACCEPTANCE INTO A GRADUATE PROGRAM

by

Heather Noelle Hewitt

Liberty University

A Dissertation Presented in Partial Fulfillment

Of the Requirements for the Degree

Doctor of Education

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ABSTRACT

Graduate enrollment has been a major concern in higher education. The purpose of this study is twofold to determine if a difference in GPA scores between those who were accepted and not accepted into the program. The second is to determine if there are differences in matriculation rates and GPA between students who have participated in dual enrollment programs and those who have not. A causal-comparative design was used to determine if difference in GPA scores between those who were accepted and not accepted into the program. A causal-comparative design was also used to determine if there differences in matriculation rates and final GPA between dual enrolled and non-dual enrolled college seniors. The sample was derived from the application process for graduate programs at a private university and it will identify full time, dual enroll, undergraduate students and full-time graduate students. The population will be selected from graduate students who have entered as a full time student in a graduate program. A Mann-Whitney U test was selected to determine if there was difference in GPA scores between those who were accepted and not accepted into the program. Mann-Whitney U tests were also used to determine if there were differences in GPA scores and matriculation rates between dual enrolled and non-dual enrolled college seniors. Results indicated that there was no significant difference in GPA score between those who were accepted and not accepted into the program. Additionally, there was no significant difference in GPA scores and matriculation rates between dual enrolled and non-dual enrolled college seniors.

Keywords: dual-enrollment, full-time, graduate, student

Dedication

This journey began with a calling to step out in faith and follow a heartfelt desire to invest in the education of future generations. I would like to dedicate this work to my Lord and Savior, Jesus Christ. He brought encouragement and support through friends and family along the way. To my husband, Jonny, thank you for all your support and love throughout this journey.

Acknowledgement

I would like to acknowledge Dr. Kuhne for all his guidance throughout this journey. I am grateful for his encouragement and insight along the way. Additionally, I would like to acknowledge Dr. Watson for his wisdom and guidance. His foresight and understanding brought direction and clarity while writing this study.

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CHAPTER ONE: INTRODUCTION

Overview

This chapter provides an overview of the background in regard to historical, social, and theoretical context in this study. The gap in the literature is discussed along with the research question that will bring understanding to this correlational design study. The definitions of significance will guide the context throughout this study.

Background

As students enter graduate school in adult education, they are often confronted with a range of challenges, such as making connections between theory and practice, learning a new discourse, and making sense of a poorly defined field of study (Talyor & Nesbit, 2002). Recent literature in higher education argued that students who are exposed to higher achieving and better prepared peers will have enhanced academic outcomes as they have access to peer networks that provide a combination of social, human, and cultural capital resources (Booij, Leuven, & Oosterbeek, 2015; Conley, Mehta, Stinebrickner, & Stinebrickner, 2015; Estell & Perdue, 2013; Nechyba, 2006).

Current research falls short in explaining how master's students feel about delays in their educational journey and their expected transition into new stages of life (Silvester, Loibl, & Roosen, 2014). The research has found that a motivating factor in taking a dual enrollment (DE) course was how college credits influence a quicker time to degree completion and a lower financial burden (Myers & Myers, 2017). Crede and Borrego (2014) stated that funding for graduate school falls short which explains the majority of the variance in graduate school attrition. The literature does not completely address the dual enrolled, full time, undergraduate college student acceptance into a graduate program.

The historical overview of graduate enrollment will demonstrate the past to the present-day issue. Graduate enrollment management has long suffered from the perception that it is trailing behind mainstream (undergraduate) enrollment management (Williams, 2008). Over the past decade, graduate education has become more market responsive with schools developing and reconfiguring curricula and credentials to meet the needs of new prospective student populations and working to articulate programs' differentiating characteristics and brand promise.

During the first half of the twentieth century, higher education was mainly about shaping character (Karabel, 2005). After the World War, education for the sake of employment has become the main role of higher education (Kerr, 2001). With the coming of the new knowledge economy, higher education has increasingly been tied into the world of work (Levy & Murnane, 2004; Trow, 2007). Getting students to graduate and becoming more skilled workers is an important matter for policy makers (Borgen & Borgen, 2016).

According to the report Investing in Graduate Education, over 100,000 new applications were made in 2009 for master's or doctoral degree programmes in biological or agricultural sciences (Investing in Graduate Education, 2012). This represents an 8.1 percent increase in applications and a 7.8 percent increase in first-time enrollment from 2008 (Investing in Graduate Education, 2012). During the year immediately after receiving their baccalaureate degrees, only five percent of those who aspired to pursue a doctoral degree actually enrolled in a doctoral degree program, while 21 percent enrolled in a master's degree program, four percent enrolled in a first professional degree program, and 70 percent did not enroll in a graduate or first professional degree program (Millett, 2003).

The retention of college and university students has been a major concern for educators and administrators in higher education over the past four decades (Kerby, 2015). Tinto (1975) argues that integration to university at both the academic and social level is a key element in students' withdrawal decisions. This ranks above and beyond an individual's personal attributes and background characteristics such as gender and social economic status, all of which have been identified as important variables in student withdrawal. Admission is, to a great extent, a prediction task, where admissions committees aim at estimating a candidate's chance of future study success (Zimmermann, Von Davier, & Heinimann, 2017).

According to Bandura's (1986) social cognitive theory, self-referent thought will evaluate a person's own experiences and thought process. Bandura's (1977) explained that social cognitive theory suggests that human behavior is a function of both the environment (social) and person (cognition) with recursive relationships among the environment, person, and behaviors. Self-efficacy has served as a primary determinant of task-motivated behavior and performance (Harrison, Rainer, Hochwarter, & Thompson, 1997; Linsdley, Brass, & Thomas, 1995; Mitchell, Hopper, Daniels, George-Falvy, & James, 1994; Saks, 1995).

Seidman (2012) explained that students receiving higher education can increase social mobility and provide the specialized intellect and skills required in the 21st century, however, these skills and abilities are undermined by high levels of student attrition. Williams (2008) explained the primary function of enrollment management is to recruit and retain an optimal student population that meets an institution's interests and needs. The rather large gap between the high degree expectations of recent bachelor's degree recipients and their low rate of enrolling in graduate school raises questions about how accessible graduate education is to recent college graduates within the United States (Millett, 2003).

Graduate enrollment has increased and will continue to increase over the next couple of years. The acceptance of graduate students from an undergraduate program has continued to shift in recent years. Dual enrollment provides full time undergraduate college seniors the opportunity to experience graduate school while still finishing an undergraduate degree. The factors influencing the graduate admissions process have brought insight into the importance of dual enrollment for full time undergraduate students seeking a graduate program.

Problem Statement

Research has found that students who enter college with DE credits have better college outcomes and selection effects including higher GPAs, one year persistence rates, and, most importantly, six year graduation rates (Myers & Myers, 2017). Higher education institutions are increasingly being held accountable for institutional level graduation rates that are assessed as indicators of best practices, institutional success, and major inputs in performance funding models (Heck, Lam, & Thomas, 2014; Rabovsky, 2014). DE courses provide students the opportunity to gain college experience and earn college credit (Speroni, 2011). The literature has not completely addressed the dual enroll, full time, undergraduate college senior acceptance into a graduate program.

Improving student retention within higher education is perceived as vital to the cost effectiveness of the education system (Borgen & Borgen, 2016). Borgen and Borgen (2016) stated that the single best predictor of student persistence and degree completion is academic performance. Students who obtain higher grades are more likely to persist and receive financial aid (Borgen & Borgen, 2016). Tinto (1975) defined retention as a longitudinal process incorporating both the academic potential of the student and institutional social systems by creating a directional model based on continual variance in social commitments that influence

academic performance. Tinto (1975) argues that integration to university at both the academic and social level is a key element in students' withdrawal decisions above and beyond an individual's personal attributes and background characteristics such as gender and social economic status, all of which have been identified as important variables in student withdrawal. The problem is determining if there is a difference in GPA scores between those who were accepted and not accepted into the program. The second is to determine if there are differences in matriculation rates and GPA between students who have participated in dual enrollment programs and those who have not.

Purpose Statement

The purpose of this study is twofold to determine if there is a difference in GPA scores between those who were accepted and not accepted into the program. The second is to determine if there are differences in matriculation rates and GPA between students who have participated in dual enrollment programs and those who have not. The independent variable is the GPA of full time dual enrolled undergraduate college seniors. The dependent variable will be the non-dual enrolled students with matriculation rates into a graduate program. Graduate school admission committees in the universities in the United States face difficulties each year in discovering, selecting, admitting, and funding the education of exceptionally good graduate students (Wao, Ries, Flood, Lavy, & Ozbek, 2016). The committees usually screen for applicants who they believe will excel in their graduate educational pursuit, if given the chance (Wao et al., 2016). The importance of retention in higher education is reflected in the wide range of locations in which research on retention has been carried out in recent years (Dewberry & Jackson, 2018). The population will be full time, dual enrolled, undergraduate college seniors who have entered as full time students in a graduate program.

Significance of the Study

This study will contribute to research of dual enrollment of full time undergraduate student and their transition into a full time graduate program. Myers and Myers (2017) stated that the relationship between DE and college behaviors and outcomes suggests that those who enter college with DE credits were more college ready, motivated, and successful than those without DE credits and could fit the label of higher-achieving peers. McCracken, Currie, and Harrison (2016) stated the literature on graduate recruitment, development, and retention has been dominated with concerns related to the employability of graduates. Accepting college seniors into a graduate program is the mission of graduate enrollment. Dual enrollment is an opportunity for full time undergraduate seniors to experience graduate school. This study will contribute, theoretically and empirically, to higher education graduate enrollment.

The importance of this study is the provision of research into graduate enrollment and acceptance into a graduate program. Malcolm (2019) stated that institutions of higher education and individual academics have long been concerned with trying to ensure that students remain in their degree program and successfully complete their studies. The importance of retention in higher education is reflected in the wide range of locations in which research on retention has been carried out in recent years (Dewberry & Jackson, 2018).

Such a diverse and large pool of applications requires a high quality admission process that supports the selection of students who have a high probability of successfully completing the program within a reasonable time while ensuring the equal treatment of equally well-prepared applicants (Zimmermann et al., 2017). Dual enrollment provides full time undergraduate students the opportunity to gain experience with graduate school along with establishing a graduate GPA. Through this experience, graduate admissions will be able to identify students

who will continue their enrollment into a full-time graduate program. The importance of this study will determine is there a difference in GPA scores between those who were accepted and not accepted into the program; and, to determine if there are differences in matriculation rates and GPA between students who have participated in dual enrollment programs and those who have not.

Research Question

RQ1: Is there a difference in GPA scores between those who were accepted and not accepted into the program?

RQ2: Is there a difference in matriculation rates between dual enrolled and non-dual enrolled college seniors?

RQ3: Is there a difference in final grade point average (GPA) between dual enrolled and non-dual enrolled college seniors?

Definitions

1. *Grade Point Average (GPA)* – The measurement of grades for academic performance (Reisig & Dejong, 2005).
2. *Dual Enrolled* – The institution accepting college credits for a degree program (Myers & Myers, 2017).
3. *Graduate Enrollment* – The primary function of enrollment management is to recruit and retain optimal student population that meets an institution's interests and needs (Williams, 2008).

CHAPTER TWO: LITERATURE REVIEW

Overview

The purpose of this study is to determine a difference in GPA scores between those who were accepted and not accepted into the program; and, to determine if there are differences in matriculation rates and GPA between students who have participated in dual enrollment programs and those who have not. This chapter will provide insight into the history and context of graduate enrollment with related theories. The focus of this literature review will examine the factors in graduate admissions and acceptance of graduate students into a graduate program.

Theoretical Framework

Graduate enrollment management has long suffered from the perception that it is trailing behind mainstream (undergraduate) enrollment management (Williams, 2008). Over the past decade, graduate education has become more market responsive, with schools developing and reconfiguring curricula and credentials to meet the needs of new prospective student populations and working to articulate programs' differentiating characteristics and brand promise. The following will identify the philosophy and its resulting theories for engagement and retention theory.

Retention Theory

Tinto. The retention of college and university students has been a major concern for educators and administrators in higher education over the past four decades (Kerby, 2015). Tinto (1975) defined retention as a longitudinal process incorporating both the academic potential of the student and institutional social systems by creating a directional model based on continual variance in social commitments that influence academic performance. Tinto's (1987) engagement theory focuses on student retention on two solitudes regarding students' perception

of transition. Tucker (1999) explained the two solitudes include academic and social systems. Tinto (1975) argues that integration to university at both the academic and social level is a key element in students' withdrawal decisions above and beyond an individual's personal attributes and background characteristics such as gender and social economic status, all of which have been identified as important variables in student withdrawal.

The engagement theory has advanced throughout the years in various studies. The effects of mentoring on students' grades and GPA and or academic benefits indicated positive improvements in five studies (Budney, Paul, & Bon, 2006; Chester, Burton, Xenos, & Elgar, 2013; Fox & Stevenson 2006; Thile & Matt 1995; Twomey 1991) whereas two studies failed to find a significant effect of mentoring on grades (Durkin & Main 2002; Quintrell & Westwood 1994). Collings, Swanson, and Watkins (2014) explained peer mentoring moderated the impact of transitional stress on perceived social support, self-esteem, and positive affect.

Engagement Theory

Bandura. Bandura's (1977) explained that social cognitive theory suggests that human behavior is a function of both the environment (social) and person (cognition) with recursive relationships among the environment, person, and behaviors. According to Bandura's (1986) social cognitive theory, self-referent thought will evaluate a person's own experiences and thought process. Pajares (1996) explained knowledge, skill, and prior attainments are often poor predictors of subsequent attainments because of the beliefs that individuals hold about their abilities and about the outcome of their efforts powerfully influence in which they will behave. Pajares (1996) explained his view is consistent with that of theorists who have argued that the potent nature of beliefs makes them a filter through which new phenomena are interpreted and

subsequent behavior mediated (Abelson, 1979; Dewey, 1933; James, 1975; Mead, 1982; Nisbett & Ross, 1980; Pajares, 1992; Posner, Strike, Hewson, & Gertzog, 1982; Rokeach, 1960).

The social cognitive theory has developed in recent theory and research. Self-efficacy has served as a primary determinant of task-motivated behavior and performance (Harrison, Rainer, Hochwarter, & Thompson, 1997; Linsdley, Brass, & Thomas, 1995; Mitchell, Hopper, Daniels, George-Falvy, & James, 1994; Saks, 1995). Self-efficacy is a major component of Bandura's (1986) social-cognitive theory which contends that behavior is strongly stimulated by self-influence. Self-efficacy is also related to goal setting (Locke & Latham, 1990), as well as work in self-regulation (Kanfer & Kanfer, 1991), particularly with respect to leadership (Manz, 1986).

Locke and Latham. The goal-setting theory showed that specific, high hard goals lead to a higher level of task performance than do easy goals or vague, abstract goals such as the exhortation to do one's best (Locke & Latham, 2006). Goals are related to affect in that goals set the primary standard for self-satisfaction with performance (Locke & Latham, 2006). Locke and Latham (2006) explained self-efficacy with goals, like task specific, will bring confidence and often effects as motivating variables.

The goal-setting theory has developed over the decades to expound on the idea of self-knowledge. According to Festinger (1954), self-evaluation occurs via objective and nonsocial means. Martin, McNally, and Taggar (2016) explained in other words, people have a basic desire to evaluate their abilities relative to some standard to learn about themselves like self-knowledge. Zimmerman and Campillo (2003) have shown that self-evaluations significantly influence the forethought phase of the goal performance relationship, during which individuals are expected to set their performance goals and their level of difficulty on their own.

Knowles. The adult learning theory connects self-directedness or direction to a need of the learner (van der Walt, 2019). Knowles does not support a mechanistic or transmission type of learning theory; instead, he proposes a more dynamic approach in which the learner takes center-stage and the teacher a supportive role (van der Walt, 2019). Van der Walt (2019) explained self-directed learning is seen as self-teaching, whereby learners are capable of taking control of the mechanics and techniques of teaching themselves in a particular subject. The adult learning theory has developed throughout the decades to bring insight into the concept of adult learners. Shannon (2003) explained the move from pedagogy to andragogy may be more of a reflection of educational context-from organized school curriculum to learning as an adult alongside professional and personal responsibilities. Worth and Stephens (2011) explained even students pursuing a traditional postsecondary education can take advantage of a growing number of evening and weekend courses that allow them to continue to work and care for a family while attending college. Joseph and Chen (2014) explained adult learners are self-directed and their learning is optimized when their experience is recognized and utilized in the learning process.

Supporting Theories

Baxter-Magolda's. Baxter-Magolda's (2004) self-authorship model identified four phases of student development. Joseph and Chen (2014) explained the model begins with following formulas, which is following and accepting externally defined life plans, and ends with developing a firm, self-grounded, internal foundation. Baxter-Magolda's (2004) model of student development shares a similar trajectory with Perry's (1970) and Marton and Säljö's (1976) models of learning. Joseph and Chen (2014) explained all three models involve students beginning with a more concrete, simplistic, and unevaluated understanding of knowledge with

little personal significance and progressing through to a more abstract, relative, and meaningful understanding of knowledge.

Student development has advanced in the last couple of years to identify models for higher education students. Knefelkamp, Widick, and Parker (1978) synthesized the student development research literature as noting what they did not find, nor could they create, and the comprehensive model of student development. Magolda (2009) explained the five clusters: psychosocial theories, cognitive developmental theories, maturity models, typology models, and person environment interaction models. Research within clusters to create theory in the context of gender, race, ethnicity, and sexual orientation typically resulted in separate silos rather than interconnected possibilities (Magolda, 2009). Magolda (2009) explained higher education in general and student affairs in particular lack a holistic, theoretical perspective to promote the learning and development of the whole student.

Theoretical Framework Theories

The above theories discuss the importance of retention, social cogitative theory, and goal setting theory. By researching the use of dual enrollment during undergraduate work will relate to the engagement retention of students in graduate school. Williams (2008) explained the primary function of enrollment management is to recruit and retain an optimal student population that meets an institution's interests and needs. The rather large gap between the high degree expectations of recent bachelor's degree recipients and their low rate of enrolling in graduate school raises questions about how accessible graduate education is to recent United States college graduates (Millett, 2003).

This study will demonstrate the academic success of graduate students through graduate dual enrollment using Baxter-Magolda's (2004) model of student development to achieve a

holistic, theoretical perspective to promote the learning and development of the whole student as demonstrated with Bandura's (1986) social cognitive theory. This study will contribute to research of dual enrollment of full time undergraduate college seniors and their transition into a full time graduate program. The literature supports the understanding that recruiting an optimal student population should be viewed as holistic approach may be found through dual enrollment for academic success for graduate students.

Related Literature

Two major trends affecting higher education in the twenty-first century have been identified (Zimmermann, Von Davier, & Heinimann, 2017). The first trend is the massification or widening participation in higher education, which denotes the shift from higher education for the elite to higher education for the masses (Gumport, Iannozzi, Shaman, & Zemsky, 1997). The second one is the increasing international mobility of students and scholars (Altbach, Reisberg, & Rumbley, 2009). This literature will provide an existing knowledge of the research, identify the gaps in the literature, and findings on the application process and dual enrollment in graduate admissions.

Graduate Admissions

The independent variable is the GPA of full time dual enrolled undergraduate college seniors. The dependent variable will be the acceptance of these student into full time graduate program. Scholars have attempted to understand this inextricable connection and results are inconclusive, but most point to the need to contextualize studies in sociohistorical and sociopolitical ways in order to understand the complexities and intersectionality of race, gender, and academic achievement (Van Overschelde & López, 2018).

Graduate admissions is the first step that students will take to begin the journey of a graduate degree. Roberts and Ostreko (2018) stated that graduate directors and faculty ostensibly seek to improve the diversity in higher education by increasing the size of the pool of applicants and number of those who are accepted into their graduate programs. Graduate educators often report that the most sought-after qualities in graduate students include academic abilities, creativity, flexibility, leadership, critical thinking, writing abilities, persistence, motivation, and determination (Kent & McCarthy, 2016). The goal is to gain from the significant talent an inclusive perspective to graduate student recruitment and to prepare a workforce capable of serving an increasingly diverse American public (Roberts & Ostreko, 2018).

Programs can move toward accomplishing the important goal of diversity through strategic activities to increase the pool of applicants and through what is called holistic review or holistic admissions practices (Roberts & Ostreko, 2018). Admission is competitive for a limited number of graduate school openings (Halberstam & Redstone, 2005). Prospective students are at a disadvantage since there is very little information available to them regarding procedures used by admissions committees to evaluate their applications (Steffani & Slavin, 1997). It appears that an efficient way to determine the best fit between the prospective graduate student and the graduate program would be for each program to make available the pre-admission criteria it uses to evaluate applications and make that information easy to find for prospective students (Ellen Koay, Lass, Parrill, Naeser, Babin, Bayer, Cook, Elmore, Frye & Kerwood, 2016).

Admitting applicants is a major investment, committees tend to minimize the risk by admitting those who appear to be the most prepared applicants (Totonchi & Glass, 2017). The growth in demand for graduate degrees is beneficial for graduate programs, it also creates

challenges (Darolia, Potochnick, & Menifield, 2014). A graduate degree is simply required in order to obtain salary increases or promotions (Darolia, Potochnick, & Menifield, 2014). A particular concern is the admissions criteria, such as standardized tests may not reflect the abilities and skills of the burgeoning mid-career professional applicant pool (Darolia, Potochnick, & Menifield, 2014). Sedlacek (2004) has developed non-cognitive measures that appear to have had success in enhancing the university-admissions process. Sternberg and Sternberg (2017) explained that the Graduate Management Admission Test and undergraduate GPA were significant predictors of first year GPA. Nadelson (2018) stated that often being fit for graduate school is incorrectly related to admissions testing scores, which do not always reflect weather a person is smart or not. Through recent studies found a positive association between undergraduate GPA and graduate school performance (Halberstam & Redstone, 2005; Leavitt, Lombard, & Morris, 2011; Menifield, Clay, Carruth, Cheever, Norris-Tirrell, & Roberts, 2007; Ragothaman, Carpenter, & Davies 2009).

Graduate programs will set standards that should encourage only students who are likely to succeed to apply and enroll in a graduate program (Darolia, Potochnick, & Menifield, 2014). As a result of the increased and diversified applicant pool, graduate and professional programs are struggling to develop strong admission criteria to assure that students of all backgrounds are admitted into the program and have skills to be successful (Darolia, Potochnick, & Menifield, 2014). Brink (1999) stated that graduate programs are more likely to be successful in this admission process when the mission and objectives of the program are clearly delineated, when the prerequisites required to meet the objective are met.

Graduate admissions is, indeed, a key threshold and the research on it is miniscule (Bauerlein, 2016). Studies over the last three decades have consistently found a positive

relationship between college selectivity or prestige and admission to graduate school (Attiyeh & Attiyeh, 1997; Lang, 1987; Zhang, 2005). Bourdieu's (1977, 1986) theory of social reproduction offers a related perspective. He identified a homology between the patterns of privilege that promote ascension through the French educational system and the patterns of privilege that reproduce social stratification (Bourdieu, 1977, 1986). From his perspective, professors in elite educational programs narrowly define which affiliations, relationships, and degrees should count as valued social capital and institutionalized cultural capital (Bourdieu, 1977, 1986). Bourdieu (1977, 1986) stated they do so in order to limit mobility, reinforce their own continued elite status, and uphold cultural qualities of the academy.

At the organizational level, graduate programs are embedded in trust networks composed of graduate programs that are regarded at least as highly as one's own (Posselt, 2018). Danowitz Sagaria's work (2002) implies that recommendations from individuals and institutions in the trust network may be deemed more reliable. Burris's (2004) findings suggest that graduate programs' patterns of exchanging students may be a process by which programs build social capital and reinforce discipline-specific status hierarchies. At the individual level, the need for trust in an applicant is directly tied to the tacit understanding that each student is a potential investment, comes with a profile of financial and reputational risk for the department or program (Klitgaard, 1985; Posselt, 2016).

Biological Sex. In the past four decades, the United States has witnessed a reversal in the biological sex gap in college enrollment. Today, approximately 57 percent of United States college students are women and the National Center for Education Statistics projects that enrollment increases for women will continue to outpace those for men in the coming years (National Center for Education Statistics, 2014). The largest biological sex imbalance in United

States colleges is found among black enrollees, where roughly 63 percent are female (NCES, 2014).

There may be unintended gender consequences to a heavier reliance on GPAs given that females tend to earn much higher grades than males while they score similarly on college entrance exams, such as the ACT and the SAT (Becker, Hubbard, & Murphy, 2010; Conger & Long, 2010; Diprete & Buchmann, 2006; Goldin, Katz, & Kuziemko, 2006; Jacob, 2002). Dynarski (2008) finds larger impacts of the program on the college completion rates of women than men. Other recent studies also find that women tend to be more responsive to and benefit more from interventions aimed at increasing educational attainment than men (Angrist, Lang, & Oreopoulos, 2009; Deming, Hastings, Kane, & Staiger, 2014; Rodríguez-Planas, 2012).

In the United States, several higher education officials have expressed concern over the growing gender imbalance because they fear that it will reduce the ability of their institutions to attract the highest-performing male and female secondary school graduates (Tierney, 2006). Some officials have also reported that they employ strategies to increase the male share of applicants and that they weigh male applicants differently from female applicants in the admissions process (Britz, 2006; Gibbs, 2008; Lewin, 2006).

The biological sex gap in the workforce can be linked to education. Fan and Sturman (2019) stated the one key reason for the why the gender wage gap may be declining with time has to do with education. Human capital deficiency once greatly hindered women from getting the same level of payment as men (Blau & Kahn, 2007; Autor & Handel, 2013). Historically, women were not allowed to attain the same education or cognitive enhancement as men (Blau & Kahn, 2007; Autor & Handel, 2013). At its greatest prevalence in modern history, men outnumbered women 2.3 to one in colleges in 1947, since that time there has been an almost

unbroken trend of increasing female enrollments in higher education (Goldin, Katz, & Kuziemko, 2006).

Today, women are more likely than men to complete high school, attain bachelor's degrees and earn advanced degrees than men (Klesment, & Van Bavel, 2017). According to the data provided by the National Science Foundation (NSF 2014), women received 57 % of the bachelor's degrees that were awarded in 2012. Better socioeconomic background, often reflected by family income and parental educational attainment, is often a positive predictor for attending graduate school (Baird, 1976; Ethington & Smart 1986; Zhang 2005). Academic ability and undergraduate performance effectively increase individuals' likelihood of graduate enrollment (Sax 2001; Weiler 1991).

Creativity is often singled out as a particularly key non-cognitive construct that is mostly absent in college admissions (Kaufman, 2012). One reason is that the ethnic and gender differences that are present on standardized tests tend to not emerge in creativity test (Baer & Kaufman, 2008; Ivcevic & Kaufman, 2013; Kaufman, 2006; Pretz, & Kaufman, 2017). Keiser, Sackett, Kuncel, and Brothen (2016) stated that woman typically obtain a higher subsequent college GPA than men. This gender gap persists despite the reversal in the gender gap in college attendance and females generally achieving better freshman year grades than males (Saygin, 2019).

The literature on gender differences in social preferences and attitudes toward competition provides consistent evidence that females underperform in competitive environments (Gneezy, Niederle, & Rustichini, 2003; Paserman 2010; Niederle and Vesterlund 2007). These findings motivated other studies to explain gender differences in labor markets and educational outcomes (Croson and Gneezy 2009; Niederle and Vesterlund 2011; Buser,

Niederle. & Oosterbeek, 2014). Niederle and Vesterlund (2010) show that the persistent gender gap in mathematics performance at high percentiles may in part be explained by the differential manner in which men and women respond to competitive test-taking environments. Shurchkov (2012), Ors, Palomino, and Peyrache (2013), and Azmat, Calsamiglia, and Iriberri (2014) show that the competitive nature of evaluations explains a significant part of the gender gap in academic examinations.

Grade Point Average. Accurately predicting which students are best suited for post baccalaureate graduate school program benefits the programs, the students, and society at large, because it allows education to be concentrated on those most likely to profit (Kuncel & Hezlett, 2007). Standardized tests such as the Graduate Record Examination (GRE) are a reasonable alternative to the frequent use of undergraduate grade point average (U-GPA) in selecting graduate students (Kuncel & Hezlett, 2007). Given growing concerns over the correlation between students' race and ethnicity and socioeconomic status and their scores on college entrance exams, some institutions and states have implemented policies that place more weight on students' GPAs in the admissions process (Conger, 2015).

The GPA scores may be more of a function of students' level of motivation than their abilities to succeed in the graduate education (Wao, Ries, Flood, Lavy, & Ozbek, 2016). In the discussion of grade point averages, it is important to note that race and academic achievement have been linked for centuries (Ladson-Billings, 2012). The benefits in predicting GPA are twofold (Mandelman, Barbot, & Grigorenko, 2016). Firstly, the inherent value in predicting academic performance lies in the capability to offer academic provisions appropriate for a student, based on projected performance, either in terms of remediation or enrichment (Mandelman, Barbot, & Grigorenko, 2016). Going beyond immediate utility, predicting GPA

can allow us to estimate effects for what GPA can predict (Mandelman, Barbot, & Grigorenko, 2016). A recent analysis by French, Homer, Popovici, and Robins (2015) demonstrated that a one point increase in high school GPA significantly increases the probability of finishing college and that it translates into a significant increase in adult earnings.

The college GPA can influence the opportunities for future education or future career. Such as becoming a lawyer, getting a high GPA in college is important to get admission to a good law school (Diette & Raghav, 2016). Many students may choose a major where they are more likely to get a higher GPA instead of choosing a major, because they are more likely to earn higher salary down the road (Diette & Raghav, 2016). On average, 14.5% of men graduated with a range of GPA 3.7 or higher, while 24.1% of women attained this threshold (Beaudin, 2019). However, since graduating, women have experienced lower rates of promotion to the highest positions within their companies (Beaudin, 2019).

Academic success is the most important element of students' education and the main ingredient of educational institution's reputation which they keep protecting along their existence (Calisir, Basak, & Comertoglu, 2016). The desire of education institutions' been the focus of successful students and enthusiasm of attracting them is increasing day by day (Calisir, Basak, & Comertoglu, 2016). Academic achievement is particularly valued by their overall Grade Point Average (Yang & Lu 2001). GPA is seen as the indicator of the academic performance of the students in many studies (Ali, Mclnemcy, Craven, Seeshing Yeung, & King, 2014; Fish & Scott 2009; Grayson 2008; Hill, Hynes, Joyce, & Green, 2011; McKenzie & Scheweiter 2001; Oliver, Vanderford, & Grote, 2012; Sebok 1971; Talento-Miller, Siegert, & Taliaferro, 2011; Ragothaman et al. 2009; Reed, Kenett, Lewis, Lund-Lucas, Stallberg, & Newbold, 2009; Vu and Vu 2013).

Ethnicity. Institutions of higher education face at least two major challenges: first, to select and enroll those most likely to benefit from and succeed in advanced training; and second, to attract and enroll a diverse student body (Cole, 1998). Universities have faced substantial legal challenges to their efforts to increase racial and ethnic diversity in their enrollments (Conger, 2015). As an alternative to using an applicant's race and ethnicity in the admissions decision, some states have adopted policies that guarantee admission to public post-secondary institutions for students whose high school GPAs put them at the top of their graduating class (Conger, 2015).

The top ten percent law requires public universities to admit in-state students who graduate in the top ten percent of their high school class (Conger, 2015). In 1999, California and Florida implemented their versions of percent plans where students ranked high in the GPA distribution are guaranteed admission into the public university system, but not necessarily admission to a specific university or college within that system (Conger, 2015). In Texas, the high degree of racial segregation across high schools contributes to a racially-diverse pool of applicants in the top ten percent, thus providing a means for achieving some racial diversity in college applications and enrollments (Dickson, 2006; Long & Tienda, 2008; Long & Tienda, 2010; Tienda & Niu, 2006). First-generation, low-income, and minority student populations are less likely than their peers to earn a graduate degree (Morelon-Quainoo, Johnson, Winkle-Wagner, Kuykendall, Ingram, Carter, & Smith, 2009).

Arguably the most visible criticisms focus on the ever-widening gaps between African American and White students, potentially because of stereotype threat (Good, Aronson, & Inzlicht, 2003). Carnevale and Strohl (2013) argued that white students ultimately maintain higher graduate school enrollment because they tend to enroll in more prestigious undergraduate

institutions. College students of color are concentrated in less selective institutions, from which fewer students go on to graduate study (Carnevale & Strohl, 2013; Posselt, Jaquette, Bastedo, & Bielby, 2012). Specifically, whereas 16% of Asian American and 7% of white high school graduates in 2004 enrolled in the most selective institutions, just 2–3% of African American and Latino students did (Posselt, Jaquette, Bastedo, & Bielby, 2012).

As Garner (2007) states it is an important concept to further our understanding of how racism operates and can be challenged. White Privilege is not a theoretical exposition of whiteness, but rather, expertly reveals how whiteness operates through education and society more generally and impacts on both individuals and the collective Black and minority ethnic people (Crozier, 2018). Black American and Latino/a students in the United States are significantly under-represented at elite, selective universities (Crozier, 2018). The majority of white students at these two universities upheld the importance of meritocratic admissions and believed they had won their university place on this basis (Crozier, 2018). Crozier (2018) stated that 18% of applicants are admitted to doctoral programmes nationally; only six percent and seven percent of African Americans and Latino respectively were awarded a doctorate in 2010 (African Americans and Latinos comprised 13% and 16% of the population in that year).

Squire, Kelly, Jourian, Byrd, Manzano, and Bumbry (2018) stated that men of color are underrepresented in the United States graduate programs. The lack of men of color in graduate programs is problematic and inconsistent when compared with the growing racial and ethnic diversity at the undergraduate level (Squire et al., 2018). Black students are more likely to take out loans compared with their White or Hispanic counterparts, Hispanic students are more likely to take out larger loans (Boyer & Butner, 2011). Successful recruitment of graduate students of color must also attend to building community, decreasing invisibility, providing peer mentors,

and increasing academic and personal support and development (Gildersleeve, Croom, & Vasquez, 2011; Poon & Hune, 2009). Holistic recruitment practices move beyond traditional recruitment tools such as simple viewbooks, which present students of color to demonstrate diversity whether the diversity actually exists or not (Osei-Kofi, Torres, & Lui, 2013). Faculty and staff must also work toward reducing discrimination bias in all admission processes (Kezar, 2007).

Graduate Enrollment

History. The recent Survey of Graduate Enrollment and Degrees by the Council of Graduate Schools and Graduate Record Exam shows that the protracted economic slump in the US has coincided with a surge in graduate school applications and enrollment (Investing in Graduate Education, 2012). According to the report, Investing in Graduate Education, over 100,000 new applications were made in 2009 for masters or doctoral degree programmes in biological or agricultural sciences (Investing in Graduate Education, 2012). This represents an 8.1 percent increase in applications and a 7.8 percent increase in first-time enrollment from 2008 (Investing in Graduate Education, 2012).

The number of bachelor's degrees granted in academic year 2001-2002 was 42,060, up 9.4 percent from 2000-2001, while the number of graduate degrees granted increased 14.0 percent to 3,879 (Becker, Vlad, Huh, & Mace, 2003). Most of the graduate degrees (3,698) were at the master's level (Becker et al., 2003). Around 20 percent of the 1.1 million 1992-93 bachelor's degree recipients stated that they expected to earn a doctoral degree (Millett, 2003). There appears to be a large gap between the number who expected to attain a doctoral degree and the number who actually pursued either a graduate (master's or doctoral) or first professional degree within a year of receiving their bachelor's degree (Millett, 2003).

Recently published data from the National Center for Education Statistics (2009), the primary federal entity for collecting and analyzing data related to education in the USA, revealed that the enrollment of students aged 25 and over in degree-granting postsecondary institutions is not only rising, but it is growing at a faster pace compared to the traditional 18 to 24 year old (NCES). During the year immediately after receiving their baccalaureate degrees, only five percent of those who aspired to pursue a doctoral degree enrolled in a doctoral degree program, while 21 percent enrolled in a master's degree program, four percent enrolled in a first professional degree program, and 70 percent did not enroll in a graduate or first professional degree program (Millett, 2003).

Academic integrity is the key not only for progress within the university but also for upholding the trust granted by the community (Ansah, Aikhuele, & Yao, 2017). Unethical admission practices have become an increasing concern for the academy, students, and guardians (Ansah, Aikhuele, & Yao, 2017). Admission Fraud (AF) involves false information provided on an application with respect to experience and qualifications, fake certificates or references in the application process, deliberate omission or non-inclusion of relevant information or criminal convictions, or other acts of deception (Ansah, Aikhuele, & Yao, 2017). Fake students would finesse their way through university education; borrowing papers from others to prepare their class reports, paying for reports writing or even plagiarizing the work of others (Sorooshian 2016). This undermines the integrity of the universities and puts the entire scientific community in a very tenuous position (Ansah, Aikhuele, & Yao, 2017).

The academic rigors of graduate school are often highlighted in educational intervention programs, but for Black students, social factors are often an additional barrier (Peteet & Lige, 2016). Many academic institutions have diversity mission statements, and diversity

programming related to recruitment and retention is usually welcome (Peteet & Lige, 2016). The infrastructure within the university as a whole should demonstrate a long-term commitment to increasing diversity (Peteet & Lige, 2016). Institutions must strive to have a critical mass of culturally diverse administrators, faculty, and students to foster a sense of inclusion (Peteet & Lige, 2016). Program experts with experience in diversity recruitment and retention are useful in providing oversight of intervention programs (Peteet & Lige, 2016).

Each year, graduate school admissions applications are discarded due to stylistic issues (Peteet & Lige, 2016). Curriculum vitae and personal statement preparation is usually a brand new endeavor for undergraduate students (Peteet & Lige, 2016). Without extensive and direct feedback on their application materials, many students fail to prepare an appealing package (Peteet & Lige, 2016). All undergraduates considering graduate training in the sciences must participant in research (Peteet & Lige, 2016). Good research experiences should help students prepare for the rigorous demands of graduate school research and may pique interest in research topics (Peteet & Lige, 2016).

Application. Higher education institutions have the economic responsibility to produce graduates with the skills and attitudes that are highly regarded by employers and are considered valuable to the country's prosperity and human capital (Aquino, Mundo, & Quizon, 2015). The admissions review process represents the first opportunity for counselor educators to formally evaluate the suitability of applicants for the profession (McCaughan & Hill, 2015). Though controversial, GRE scores have been shown to possess small-to-moderate predictive validity, both across graduate programs in general (Kuncel, Hezlett, & Ones, 2001; Kuncel, & Hezlett, 2010; Morrison & Morrison 1995). Such a diverse and large pool of applications requires high quality admission that supports the selection of students who have a high probability of

successfully completing the program within a reasonable time and ensuring equal treatment of equally well-prepared applicants (Zimmermann et al., 2017).

Admissions systems can be categorized with respect to three dimensions: open verses selective, centralized verses decentralized, and the admissions instruments used (Zimmermann et al., 2017). Under an open admissions policy, students are entitled to enroll into study programs if the preceding educational level was completed successfully (Zimmermann et al., 2017). In a selective admissions system, which is organizationally more demanding, students must meet additional criteria in addition to holding a certificate from the preceding educational level (Zimmermann et al., 2017).

While centralized admission is considered more efficient, as students only apply once and waiting lists can be processed easily (Braun & Dwenger, 2009), decentralized admission has the potential of achieving a better matching between students and study programs, potentially reducing drop-out rates and enhancing effectiveness (Cremonini, Leisyte, Weyer, & Vossensteyn, 2011). The instruments used involve intellectual, interpersonal, and intrapersonal behavior by Oswald, Schmitt, Kim, Ramsay, & Gillespie (2001), down to simple single measures such as: completion of studies, grade point average (GPA), study duration, students' satisfaction, professional qualifications, and professional success (Zimmermann et al., 2017). The limited number of studies on admissions procedures and the fact that most of these examinations have been conducted in North America emphasize the need for further research (Zimmermann et al., 2017).

Graduate school is valued and viewed as advancement in career and education. Individuals possessing graduate degrees contribute more to the local, state, and federal governments in the form of higher tax payments (English & Umbach, 2016). Graduate degree

earners have also been shown to exhibit characteristics that lead to improved health, and they tend to have children who are better prepared for primary education and who subsequently attain higher levels of education over their lifetimes (Baum, Ma, & Payea, 2010). Graduate education also provides the key engine for innovation and the discovery of knowledge (English, & Umbach, 2016). The quality of education provided by higher education institutions may affect the quality the employability of its graduates (Butler, 2003).

Universities need to involve employers to identify these attributes since after graduation, the fate of the graduates to be employed lies in their hands and decision to hire them (Aquino, Mundo, & Quizon, 2015). Taking advantage of employer's feedback or evaluation results raises a number of challenges such as feeding information on performance back to those who provide educational services to the graduates (Aquino, Mundo, & Quizon, 2015). Through employers' feedbacks, universities are guided in enhancing their curriculum and estimating how they perform against the standards they set in consideration of their legal and educational mandates (Aquino, Mundo, & Quizon, 2015). There is a high gap value means a big disparity between the employers' perception of usefulness and their level of satisfaction of graduates proficiencies or performance (Aquino, Mundo, & Quizon, 2015).

Prospective students of these programs largely want to select the right program where they can gain admission and complete the program in a timely manner, leading to gainful employment and subsequent career and personal success (Berger, 2015; Dawes, 1971; Drisko, Hunnicutt, & Berenson, 2015; Royse, 1980). The importance of reputation effects in competitive markets was pointed out by Friedman (1962) and Akerlof (1970), who predict that firms with good reputations will expand and gain market share. Applicants are selected by admission committees for doctoral study because they have been successful in graded course

work (i.e., as determined by transcript review), among other past accomplishments (Cunningham-Williams, Wideman, Fields, & Jones, 2018). Using a holistic review process that moves beyond traditional admissions criteria, admissions committees for research-intensive doctorate programs want to predict which students have the highest likelihood specifically of research productivity and timely program completion (Cunningham-Williams, Wideman, Fields, & Jones, 2018).

An increasing number of these professionals have been guided by a foundation in knowledge, skills, and attitudes gained in higher education graduate degree programs (Underwood & Austin, 2016). It is estimated that between 15% and 20% of the current workforce in student affairs are new professionals coming directly from graduate preparation programs (Cilente, Henning, Skinner Jackson, Kennedy, & Sloan, 2006; Renn & Hodges, 2007). Graduate preparation programs are varied in their students, faculty, and characteristics but all strive to equip student affairs professionals with the competencies needed to aid today's college students (Underwood & Austin, 2016). There are also descriptive studies that examine factors related to who enrolls and who instructs in higher education graduate preparation programs (Amey, Lovell, King, Li, & Dannells, 2007; Taub & McEwen, 2006).

While all students must be prepared to attend graduate school with credentials recognizable to admissions committees, attention solely to preparation insufficiently explains student decision-making along educational and career trajectories (Brickhouse, 2001; Chang, Eagan, Lin, & Hurtado, 2011). Beyond preparation, students must feel ready for graduate school. The literature on persistence identifies a number of factors contributing to these patterns including educational affordability; admissions policies and practices; educational experience and quality; social and academic integration; and faculty–student mentorship (Proirier,

Tanenbaum, Storey, Kirshstein, & Rodriguez, 2009). As Barton, Kang, Tan, O'Neill, Bautista-Guerra & Brecklin (2013) argue, identity work offers a useful window into the study of identity and can fruitfully be considered as made up of individuals' actions (including relationship formation) and use of resources toward authoring an identity, taking into account the material, social, and cultural constraints of each context.

Financial. Tuition, fees, and cost of living are perceived to deter many potential students, particularly individuals from lower socio-economic backgrounds (Kane, 1995; Coelli, 2005; Neill, 2009). Typically, concern has been voiced about how undergraduate debt impedes student borrowers from buying cars, buying a home, having children, or moving out of their parents' home after graduating (The Education Resources Institute & The Institute for Higher Education Policy, 1995; Baum & Saunders, 1998). Understanding the consequences of such instruments of public policy as undergraduate educational loans and debt accumulation upon graduate school participation is yet another important indicator for informing policymakers about changes that may be necessary to address unintended negative outcomes of current financial aid policies (Millett, 2003).

Several prominent researchers (Ethington & Smart, 1986; Hearn, 1987; Isaac, Malaney, & Karras, 1992; Malaney & Isaac, 1988) in the 1980s and 1990s excluded the influence of undergraduate debt in their examination of student transitions from college to graduate school. The 1997 National Student Loan Survey (NASLS), Baum and Saunders (1998) reported that 43 percent of cases who did not go to graduate school cited the level of their undergraduate debt as extremely or very important in preventing them from going to graduate school, while 28 percent reported undergraduate debt being unimportant. Wilder and Baydar (1991) found that

undergraduate debt was a modest deterrent to people applying to graduate school, but not for being accepted or enrolling.

Velez, Cominole, and Bentz (2019) stated with the tuition prices rising faster than the rate of inflation and student loan debt in the United States topping $1.3 trillion, it is no wonder that families, administrators, and policy makers are so concerned about the effects of student loan debt. Velez, Cominole, and Bentz (2019) explained that two thirds of students receiving their bachelor's degree take out loans to fund their postsecondary education. By the time their degree was completed, 2007–08 college graduates who borrowed owed an average of $24,700 in federal and private loans (Woo, 2013), which is about $29,000 in 2018 dollars (Velez, Cominole, & Bentz, 2019). Elliott and Nam (2013) used data from the 2007–09 Survey of Consumer Finances and found that post-college net worth was significantly less for those with considerable student loan debt. Similarly, Thompson, and Bricker (2014) used the same data and found that families with student loans were more likely to exhibit signs of financial distress (e.g. late payments, difficulty obtaining credit). Velez, Cominole, and Bentz (2019) stated student loan debt shapes individuals' overall financial health after graduation.

Aronson, Callahan, and Davis (2015) explained given the long-term and recessionary changes in the economy, contemporary young adults face a transition to adulthood that is distinct from that of previous eras. Mortimer and Zimmer-Gembeck (2007) found that young adults who frequently changed career aspirations, or were unable to articulate them at all, exhibited lower educational attainment and greater distress in vocational development. Recent college graduates also need to exhibit career adaptability, which is the capacity to manage career transitions and includes career planning, control over one's career, career curiosity, and career confidence (Koen, Klehe, & Van Vianen, 2012). Research suggests that the successful pursuit of a graduate

degree is correlated with increased lifetime earnings and an increased quality of life (Baum, Ma, & Payea, 2010).

Dual Enrollment. At the individual level, research has found that students who enter college with dual enrollment (DE) credits have better college outcomes and selection effects including higher GPAs, one year persistence rates, and, most importantly, six year graduation rates (Myers & Myers, 2017). Further, the effects of DE were stronger for at-risk students and those in less selective institutions (An, 2013b, 2015; Lerner & Brand, 2006). The influence of DE is largely due to better college preparation, entering with college credits, the socializing and learning effects of a DE course, and greater academic motivation and engagement among these students (An, 2013a, 2015; Speroni, 2011a).

Recent literature in higher education argues students who are exposed to higher achieving and better prepared peers will have enhanced academic outcomes as they have access to peer networks that provide a combination of social, human, and cultural capital resources (Booij, Leuven, & Oosterbeek, 2015; Conley, Mehta, Stinebrickner, & Stinebrickner, 2015; Estell & Perdue, 2013; Nechyba, 2006). Myers and Myers (2017) explained the relationship between DE and college behaviors and outcomes suggests that those who enter college with DE credits were more college ready, motivated, and successful than those without DE credits, and thus could fit the label of higher-achieving peers. Research has found that a motivating factor in taking a DE course was how college credits influence a quicker time to degree pace and a lower financial burden (Myers & Myers, 2017).

Colleges have become more expensive, with tuition rising faster than wages, leaving many families unable to afford higher education (Gallup & Lumina Foundation, 2014; Stiglitz, Tyson, Orszag, & Orszag, 2000; The College Board, 2015). Low income students and first-

generation college students, whose parents have fewer financial and social resources to help them navigate college, have a lower likelihood of completing a college degree (Cabrera, Terenzini, & Bernal, 2001). Dual-enrollment courses have been suggested as a way to improve college enrollment and student completion rates (Lile, Ottusch, Jones, & Richards, 2018).

Knowledge about the aspects of DE students' experiences that help them to be more successful is crucial at a time when DE programs are gaining popularity and support at a federal level (Lile, Ottusch, Jones, & Richards, 2018). In order for the United States to be more competitive in the world market, it is increasingly necessary for young people to attain college degrees (Lile, Ottusch, Jones, & Richards, 2018). The U.S. has seen an increase in college aspirations among its citizens and in the need for a college-educated workforce (Goyette, 2008; Lumina Foundation for Education, 2010; National Center for Education Statistics, 2013).

Students are given early access to college courses, which some studies have associated with improved postsecondary outcomes (Allen & Dadgar, 2012; An, 2013). Many students face challenges enrolling and succeeding in college, particularly students who are the first in their families to attend college, are members of specific minority groups, or are low income (Grodsky & Jackson, 2009; Ross et al., 2012). Many do not enroll due to a lack of academic preparation or failure to complete the steps involved in applying for college and financial aid (Castleman, Owen, & Page, 2015; Tierney, Bailey, Constantine, Finkelstein, & Hurd, 2009). Other studies have found that students who are in a school environment that values academics and college do better in school and have better postsecondary outcomes (Koyama, 2007; Mehan, Hubbard, & Villanueva, 1994).

Many students face economic challenges to attending college (Bozick & DeLuca, 2011) and research has shown that providing explicit guidance on seeking out and

applying for financial aid can result in increased college enrollment (Bettinger, Long, Oreopoulos, & Sanbonmatsu, 2009). The actual process of applying to college includes multiple steps that students are often unable to navigate, such as taking appropriate placement exams, identifying colleges that are a good match for them, and completing applications (Roderick Nagaoka, Coca, & Moeller, 2008). Inadequate academic preparation prevents many students from entering college (Tierney et al., 2009).

Students who participate in DE programs show a greater likelihood of enrolling in college full-time, persisting through college, earning credits faster, earning a higher GPA, and less need for remedial coursework (Allen & Dadger, 2012; Giani, Alexander, & Reyes, 2014; Hughes, Rodriguez, Edwards, & Belfield, 2012; Jones, 2014; Karp, Calcagno, Hughes, Jeong, & Bailey, 2007; Swanson, 2008). Karp (2007) argued that exposure to the roles of a college student helped DE students feel comfortable and competent in the college setting and experience positive outcomes.

Retention. Retention in higher education continues to be the focus of policy makers and educational leaders. Thomas (2002) stated that mass higher education has been associated with increase in student withdrawal, although there is not a clear correlation between wider participation and early withdraw. Research has suggested that the more students interact with other students and staff, the more likely they are to persist (Astin, 1984; Tinto 1997). Thomas (2002) explained students from diverse backgrounds will find greater acceptance of and respect for their own practices and knowledge, and this in turn will promote higher levels of persistence in higher education. Relationship between student and teaching staff seem to be fundamental to attitudes toward learning and coping with academic difficulties (Thomas, 2002). Thomas (2002) stated that students seem to be more likely to feel that they are accepted and valued by staff if

lecturers and tutors know their names and exhibit other signs of friendship, are interested in their work and treat students as equals.

Student retention in higher education is typically defined as the continued enrollment of a student from the first year to the second year (Bean, 1980, 1982; Cotton, et al. 2017; Farrell 2009; Ishler and Upcraft, 2005; Spady, 1970; Tinto, 1975, 1993). Student retention is critical to the success of higher education institutions as the highest levels of student attrition are from year one to year two (Achinewhu-Nworgu, 2017; Blue, 2018; Tinto 1975, 1993). Burke (2019) stated the higher the retention rate an institution can achieve, the more students it will maintain who will pay the tuition and fees and generate academic achievement which are imperative to institutional success. Consistent factors for discontinuing higher education found in studies include wrong choice of course, lack of motivation, personal factors such as financial problems, health, and family circumstances, an unsatisfactory first-year experience, lack of university support services, and academic unpreparedness (Heublein, 2014; Nadelson, Semmelroth, Martinez, Featherstone, Fuhriman, & Sell, 2013; Thomas, 2002; Tinto 1993, 2012; Willcoxson, Cotter, & Joy, 2011; Yorke and Longden, 2008).

Malcolm (2019) stated that following the initial recognition of student retention, the relatively high proportion of students who were not successfully completing their course, attention turned to understanding and explaining the phenomenon, and then working out what could be done to improve matters. Tinto's model appears to have had the greatest impact, and there have been many follow-up studies that have applied, modified or re-assessed it (Braxton, Milem & Sullivan 2000; Kerby, 2015; Longwell-Grice & Longwell-Grice 2008; Pascarella & Chapman 1983; Pascarella & Terenzini 1980; Terenzini, Lorang, & Pascarella 1981). Many

studies have focused on the retention of particular kinds of students, including higher degree students (Pearson, 2012).

The literature shows academic goals and students' determination for staying in college correlates positively with retention (Robbins, Lauver, Le, Davis, Langley, & Carlstrom, 2004). One study found students' sense of belonging and institutional commitment to be positively associated with intent to remain (Crisp, Taggart, & Nora, 2015; Hausmann, Schofield, & Woods, 2007); however, meaningful relationships and perceived support appear to be intricately related to one's sense of belonging or school connectedness (Crisp et al., 2015). Pittman and Richmond (2007) found students with higher reported university belonging had better grades, higher levels of perceived academic competence, and reported more positive perceptions of their university environment.

Findings

The literature review identified the history, application process, and dual enrollment in graduate admissions. Higher education institutions are increasingly being held accountable for institutional level graduation rates that are assessed as indicators of best practices, institutional success, and major inputs in performance funding models (Heck, Lam, & Thomas, 2014; Rabovsky, 2014). Malcolm (2019) stated that institutions of higher education and individual academics have long been concerned with trying to ensure that students remain in their degree program and successfully complete their studies. The rather large gap between the high degree expectations of recent bachelor's degree recipients and their low rate of enrolling in graduate school raises questions about how accessible graduate education is to recent U.S. college graduates (Millett, 2003). The current research findings for graduate enrollment identifies three factors which include gender, GPA, and ethnicity. Research has found that students who take

well-structured and authentic DE courses are exposed to a potentially more rigorous, accelerated, and college level curriculum that prepares them academically and socially for college, reduces the need for remedial courses, accelerates the earning of credits, and lowers the financial costs (Allen, 2010; An, 2013a; Bound, Lovenheim, & Turner, 2012; Karp, 2012; Lerner & Brand, 2006).

The literature review identified the need to research dual enrollment for graduate school. Current research falls short in explaining how master's students feel about delays, and when they expect to realize specific life stages (Silvester, Loibl, & Roosen, 2014). While researchers largely agree that traditional life stages for young adults are increasingly being delayed (Arnett, 2000; Hartmann & Swartz, 2006; Kokko, Pulkkinen, & Mesiäinen, 2009), delays for master's students in particular have not been sufficiently described. Limited research is conducted on dual enrollment for graduate school, but the importance of dual enrollment has proven influential in acceptance. DE courses provide not only an accelerated college preparation and credit but also a potentially more authentic and socializing college experience (Speroni, 2011a).

This study will specifically address the gap in the existing literature for dual enrollment for graduate school. Graduate school admission committees in the universities in the United States face difficulties each year in discovering, selecting, admitting, and funding the education of exceptionally good graduate students (Wao, Ries, Flood, Lavy, & Ozbek, 2016). The committees usually screen for applicants who they believe will excel in their graduate educational pursuit if given the chance (Wao et al., 2016). In order to make the best admission and placement decisions, committees consider multiple sources of information about the students (Wao et al., 2016). The objective is student information such as prior Grade Point Average

(GPA) and Graduate Record Examination (GRE) scores for admissions (Reisig & Dejong, 2005). This research will use GPA of dual enrolled college seniors to determine the acceptance for graduate students.

Summary

The literature review examined the theoretical framework through retention theory, engagement theory, and supporting theories. Bandura (1986) considered self-reflection the most uniquely human capability because through this form of self-referent thought, people evaluate and alter thinking and behavior. As students enter graduate school in adult education, they are often confronted with a range of challenges, such as making connections between theory and practice, learning a new discourse, and making sense of a poorly defined field of study (Talyor & Nesbit, 2002). The need for dual enrollment for graduate student to support academic goals is essential.

The importance of retention in higher education is reflected in the wide range of locations in which research on retention has been carried out in recent years (Dewberry & Jackson, 2018). Students dropping out of college will miss the opportunity to afford the university experience to develop their critical thinking skills that will tend to earn less in their careers (Seidman, 2012). Seidman (2012) explained that students receiving higher education can increase social mobility and provide the specialized intellect and skills required in the 21st century, however, these skills and abilities are undermined by high levels of student attrition.

Reviewing the biological sex, GPA, and ethnicity has brought insight into the factors in graduate retention. Admission is, to a great extent, a prediction task, where admissions committees aim at estimating a candidate's chance of future study success (Zimmermann et al., 2017). Understanding the history, application process, and dual enrollment for graduate

admission brought insight to the need for providing students the opportunity to obtain graduate education for a changing world. Students with DE credits may be more likely to consider a college that accepts DE credits due to the lower cost and higher utility realized from the positive effects of entering college with college credits (Myers & Myers, 2017).

CHAPTER THREE: METHODS

Overview

This chapter will provide details about the design for the study through the research questions, hypothesis, and data analysis. Additional details will be provided in this chapter to bring insight to the participants, instruments, and analysis. The overall design will provide understanding to the methods employed in this study.

Design

A causal-comparative design was used to determine if difference in GPA scores between those who were accepted and not accepted into the program. A causal-comparative design was also used to determine if there differences in matriculation rates and final GPA between dual enrolled and non-dual enrolled college seniors. Archival data was used from incoming full time graduate program to determine full time, dual enrolled, undergraduate seniors across the fall 2014 through fall 2018. Gall, Gall, and Borg (2007) explain that correlational research refers to studies that seek to discover relationships between variables through the use of correlational statistics. Causal-comparative research was chosen because it collects data on two variables, one categorical and one continuous, and computes in this example, a Mann-Whitney U coefficient (Field, 2017; Pallant, 2016; Tabachnick & Fidell, 2018). In this study, the independent variables were matriculation status (accepted or not accepted into the program) and enrollment status (enrolled or not dual enrolled). The dependent variables were GPA scores and matriculation rates. The causal-comparative design was appropriate for this study because the independent variables, matriculation status, and enrollment status, have already occurred, and their impact on GPA and matriculation rates were assessed (Leedy & Ormrod, 2018). This approach aligned

with the retention-based research studies in higher education (Wao, et al, 2016; Myers, & Myers, 2017).

Research Question

RQ1: Is there a difference in GPA scores between those who were accepted and not accepted into the program?

RQ2: Is there a difference in matriculation rates between dual enrolled and non-dual enrolled college seniors?

RQ3: Is there a difference in final grade point average (GPA) between dual enrolled and non-dual enrolled college seniors?

Hypotheses

$H_0$1: There is no statistically significant difference in GPA scores between those who were accepted and not accepted into the program.

H_{02}: There is no statistically significant difference in matriculation rates between dual enrolled and non-dual enrolled college seniors.

$H_0$3: There is no statistically significant difference in final grade point average (GPA) between dual enrolled and non-dual enrolled college seniors.

Participants and Setting

The participants for the study will be graduate students located at a private institution in central Virginia for each fall semesters across 2014 through 2018. The institution is a private liberal arts university located in a suburban location. The population will be full time undergraduate seniors who dual-enroll in full time graduate programs.

According to Warner (2013), the effect size is 100 students is the required minimum for statistical power of .80 at the .05 alpha level. The sample will be derived from the application

process for graduate programs at a private university and it will identify full time, dual enroll undergraduate college seniors and full time graduate students. The students would have completed an application process that would be completed through a web-based, online portal. The information collected will provide the data for this study.

The population will be selected from graduate students who have entered as a full time student in a graduate program. According to Gall et al, (2007), data is collected from a sample of individuals who are randomly drawn from a defined population. The data will be assigned randomly since this will be archival data. The age will range from late twenties to mid-twenties since the population will be finishing, if not, completing the last semester of their senior year in undergraduate studies.

For the purpose of this study, the two groups are identified as full time, dual enroll, undergraduate seniors and non-dual enrolled full time graduate students. The GPA will help to identify any relationship between full time, dual enrolled, undergraduate seniors, and full time graduate students in a graduate program

Instrumentation

Archival data will provide the GPA of dual enrolled undergraduate students and this will be used as the independent variable. The dependent variable will be the acceptance to a graduate program. Turiano (2014) explains how the benefits of archival data analysis are now widely established, and there are thousands of researchers utilizing high-quality archival data in an array of research areas. Searcy and Mentzer (2003) state that archival research examines previous recorded facts. Several research studies using archival data have been used to predict higher education enrollment and retention (Eckles & Stradley, 2012; Bookallil & Rolfe, 2016; Aldowah, Al-Samarraie, & Fauzy, 2019). Searcy and Mentzer (2003) explain how the archival

method is the dominant method used in over fifty percent of all articles. The use of archival data from the institution has several benefits for this study such as determining the influence of dual enrollment for acceptance into a graduate program. The admissions application process provides consistency in the data collection. The admissions requirements during the application process will help to collect data points on students and ensure the sample consists of full time, dual enrolled, undergraduate students and determine whether or not the student was retained as a full time graduate student.

In this study, student acceptance is defined as students enrolling in a full time graduate program. The full time, dual enrolled, undergraduate students will be entering the admissions process with graduate classes while still enrolled in undergraduate courses. The GPA of dual enrolled college seniors will determine the acceptance into a graduate program. The data will be requested from the institution through a formal request. The data collected will be the measure by which Spearman's correlation coefficient will be analyzed.

Procedures

The independent variables were matriculation status (accepted or not accepted into the program) and enrollment status (enrolled or not dual enrolled). The dependent variables were GPA scores and matriculation rates. An application will be completed with an explanation and documentation about this study, and the variables will be sent to the Institutional Review Board (IRB) for approval. Receiving approval from the IRB to complete the study, the next detail is collecting the student information (See Appendix for IRB approval). A formal written request to the institution will seek permission to access the data required for this study. The information requested will only include the required data points, excluding personal identifying inform about the students.

The definitions of the data collection will be provided to identify the correct population of students which will include the GPA of dual enrolled college seniors and student that enrolled into full time graduate programs. Once receiving the data, the organization of the information is essential. The data field will include three terms coded as 201440 for fall 2014 cohort, 201540 for fall 2015 cohort, 201640 for fall 2016 cohort, 201740 for fall 2017 cohort, and 201840 for fall 2018 cohort. For the purpose of this study, the dependent variable will be coded as the number 0 to identify non-retained students, and the number 1 will be used for accepted students. The independent variable of dual enrollment graduate GPA that will be used will range from 2.0 - 4.0.

The independent variable of matriculation status (accepted or not accepted into the program) will be the dichotomous value as the student retain or did not retain. The independent variable will be the GPA of full time, dual enrolled college seniors and this will be used to determine if a linear association exists between undergraduate dual enrollment and the matriculation rate to a graduate program. The data will be processed through SPSS to determine if the GPA of dual enrolled college seniors and the acceptance to graduate program Spearman's correlation coefficient. The information will be protected for security reasons through locked password.

Data Analysis

The data will be analyzed using SPSS v23. Once the data is imported, descriptive statistics are performed to compute gender, matriculation status, age, and overall GPA. After the descriptive statistics are computed, then the test of assumptions and primary analyses are computed for each of the three research questions. According to Warner (2013), the effect size is 100 students is the required minimum for statistical power of .80 at the .05 alpha level.

For research question one, is there a difference in GPA scores between those who were accepted and not accepted into the program, an independent samples t-test will be conducted. The independent variable was coded 0 for not accepted and 1 for accepted. GPA scores ranged from 1 to 4. An independent samples t-test is used when there are two groups that are being compared on some continuous variable (Field, 2017; Pallant, 2016; Tabachnick & Fidell, 2018). An assumption of the independent samples t-test is normality. Normality is tested using the Shapiro-Wilks test. If the p value of the Shapiro-Wilk test is less than .05, then the assumption of normality is violated and the Mann-Whitney U test, the non-parametric version of the independent samples t-test will be conducted (Field, 2017; Pallant, 2016; Tabachnick & Fidell, 2018). The Mann-Whitney U test does not assume normality. If the p value of the Mann-Whitney U test is less than .05, then there is a statistically significant difference between groups.

Research question two asked, is there a difference in matriculation rates between dual enrolled and non-dual enrolled college seniors. The independent is coded as 0 for non-dual enrolled and 1 for dual enrolled. The dependent variable, matriculation status, was coded as 0 for rejected and 1 for accepted. To address this research question, a two-way chi-square test of independence will be conducted to determine if there statistically significant differences between the dual enrolled and non-dual enrolled college seniors. A two-way chi-square test of independence is used when there are two categorical variables that are being compared (Field, 2017; Pallant, 2016; Tabachnick & Fidell, 2018). If the p value is less than .05, then there is a statistically significant difference in matriculation rates between non-dual enrolled, and dual enrolled college students.

The third research question asked is there a difference in final grade point average (GPA) between dual enrolled and non-dual enrolled college seniors. The independent variable was

coded as 0 for non-dual enrolled and 1 for dual enrolled. The dependent variable, GPA, was scored on a 1 to 4 scale. To address this research question, an independent samples t-test is planned. If the assumption of normality is not met, the non-parametric version of the independent samples t-test, the Mann-Whitney U test, will be conducted. If the p value is less than .05, the groups are statistically different.

CHAPTER FOUR: FINDINGS

Overview

The purpose of this quantitative correlational study is twofold. First, this study will determine if there is difference between dual enrolled and non-dual enrolled college seniors and matriculation rates. Second, this study will also determine if there are statistically significant differences in matriculation rates and GPA between students who have participated in dual enrollment programs and those who have not. This chapter contains the study research questions and hypotheses, along with the descriptive statistics of demographic and research variables. Next, the results of the statistical analyses use to address the three research questions are reported. This chapter concludes with summary.

Research Question(s)

RQ1: Is there a difference in GPA scores between those who were accepted and not accepted into the program?

RQ2: Is there a difference in matriculation rates between dual enrolled and non-dual enrolled college seniors?

RQ3: Is there a difference in final grade point average (GPA) between dual enrolled and non-dual enrolled college seniors?

Hypotheses

$H_0$1: There is no statistically significant difference in GPA scores between those who were accepted and not accepted into the program.

H_{02}: There is no statistically significant difference in matriculation rates between dual enrolled and non-dual enrolled college seniors.

$H_0$3: There is no statistically significant difference in final grade point average (GPA) between dual enrolled and non-dual enrolled college seniors.

Descriptive Statistics

There were a total of 9,379 respondents in this study. The majority of respondents were female (58%), and the average age across all respondents was 38 (*SD* = 11.15). Additionally, 95% of respondents were accepted into the dual enrollment program and the average GPA across all respondents was 3.20 (*SD* = 0.62). Descriptive statistics for both the dual enrolled and non-dual enrolled students are contained in Tables 1 and 2.

Table 1

Descriptive Statistics: Gender and Matriculation Status (n = 9,379)

	Non-dual Enrolled		Dual Enrolled		Total	
	N	%	N	%	N	%
Gender						
Female	5,269	58.1%	169	55.6%	5,438	58.0%
Male	3,806	41.9%	135	44.4%	3,941	42.0%
Matriculation						
Rejected	453	5.0%	10	3.3%	463	4.9%
Accepted	8622	95.0%	294	96.7%	8916	95.1%

Table 2

Descriptive Statistics: Gender and Matriculation Status (n = 9,379)

	Non-dual Enrolled		Dual Enrolled		Total	
	M	SD	M	SD	M	SD
Age	39.96	10.71	38.17	11.16	38.26	11.15
Overall GPA	2.71	0.61	3.23	0.61	3.20	0.62

Results

The data analysis process consists of three phases, the data preparation phase, the preliminary analysis phase, and the primary analysis phase. During the data preparation phase,

data was checked for missing values and errors using the SPSS frequency procedure. The preliminary analysis phase consists of the tests of the assumptions for the statistical analysis. Finally, the primary analysis reports the results of the statistical tests used to address the study's null hypotheses. Below are the results of each phase.

Data Preparation Phase

The data was first imported into SPSS version 23. Once the data was imported, frequencies were computed to examine if there were any missing values or data errors. The results indicated that none of the 9,379 respondents had missing data or data errors. After the data was checked for errors and missing values, there were two nominal categorical variables, gender and matriculation that were converted to numeric variables from string variables. Gender was originally coded as F and M, and was recoded as 1 for Female and 2 for Male. Additionally, matriculation was converted from R (rejected) and A (accepted) to 0 for rejected and 1 for accepted. No other changes were made to the data file.

Hypotheses

Null hypothesis One

The first null hypothesis stated that there is no statistically significant difference in GPA scores between those who were accepted and not accepted into the program. To test the assumption of normality, a Shapiro-Wilk test was conducted. The results indicated that the distribution of GPA scores for the accepted and non-accepted groups was non-normal, $SW(463) = .962$, $p < .001$. Therefore, the independent samples t-test was not appropriate to use. Since the assumption of normality was violated, the non-parametric Mann-Whitney U test was also performed. The Mann-Whitney U test is used when you want to evaluate the relationship between a nominal categorical variable, in this case matriculation status, and a continuous

variable, in this case GPA (Field, 2017; Pallant, 2016). The Mann-Whitney U test compares the median GPA of the two matriculation groups, accepted and rejected, by converting the scores on the continuous variable, GPA, to ranks. The Mann-Whitney test then evaluates whether there is a statistically significant relationship between the ranks for the two groups.

Results revealed a statistically significant difference in median GPA scores between those who were rejected (*Md* = 2.50, *n* = 10) and those who were accepted (*Md* = 3.14, *n* = 294), *U* = 396.50, *z* = -3.93, *p* < .001, *r* = .23, as the p value was less than .05. Specifically, dual enrolled students who were accepted in the program had significantly higher GPAs than those who were not accepted. Additionally, the r effect size value was small, based on Cohen's standards of .1 for small, .3 for medium, and .5 or higher for large. Based on the results, the null hypothesis was rejected. See Table 3.

Table 3

Mann-Whitney Test: Differences between Rejected and Accepted Students on GPA Scores (n = 304)

	Rejected		Accepted					
	N	*Md*	*N*	*Md*	*U*	*p*	*z*	*r*
GPA	10	2.50	294	3.14	396.50	.000	-3.93	.23

Null hypothesis two

Null hypothesis two stated that there is no statistically significant difference in matriculation rates between dual enrolled and non-dual enrolled college seniors. To address this question, a two-way chi-square test of independence was conducted. The chi-square test of independence evaluates whether there is a statistically significant association between two categorical variables (Pallant, 2016; Tabachnick and Fidell, 2018). Specifically, a two-way chi-

square test examines if there is a statistically significant difference in the percentage of non-enrolled, scored as 0, and enrolled students, scored as 1, who matriculate or are in enrolled in the program, scored a 1. The two-way chi-square test is the appropriate test for this analysis because both the independent variable, enrollment status (dual enrolled vs non-dual enrolled), and the dependent variable, matriculation status (accepted vs. non-accepted) were both categorical, and the research questions asks about differences in matriculation percentage between the dual enrolled and non-dual enrolled.

Results of the chi-square test of independence, using the Yates Continuity Correction for 2 x 2 cells, indicated that there was no statistically significant difference in the proportion of enrolled (95%) and non-enrolled (96.7%) student who were accepted into the program, χ^2 (1, n = 9,379) = 1.47, p = .225, *phi* = .014, as the p value was greater than .05. See Table 3. The phi coefficient effect size indicated revealed that the magnitude differences of the proportions between the two groups was small, based on Cohen's (1988) standard of .10 for small, .30 for medium, and .50 or higher for large. Based on the results of the chi-square test of independence, the null hypothesis was not rejected.

Table 3

Chi-Square Test of Independence: Proportion of Students Accepted into the Program by Enrolled (n = 9,075) and Non-enrolled (n = 304) Students

	Non-dual Enrolled		Dual Enrolled				
	n	%	n	%	χ^2	*p*	*phi*
Accepted	8622	95.0%	294	96.7%	1.47	.225	.014
Non-Accepted	453	5.0%	10	3.3%			

Null hypothesis three

The third null hypothesis stated that there is no statistically significant difference in final grade point average (GPA) between dual enrolled and non-dual enrolled college seniors. The independent variable was enrollment status, where 0 was non-dual enrolled and 1 was dual enrolled. The dependent variable was GPA, which ranged from 1 to 4. The test of normality indicated that the assumption of normality was violated, $SW(304) = .974$, $p < .001$. Therefore, the independent samples t-test was not appropriate to address this research question.

To address this question, a Mann-Whitney U test was conducted. The non-parametric Mann-Whitney U test is used when you have a nominal independent variable and a dependent variable, and you want to determine if there are statistically significant differences between the two groups on the dependent variable (Field, 2017; Pallant, 2016; Tabachnick and Fidell, 2018). This was the appropriate statistical test to address this research question because the independent variable, enrollment status, was a nominal categorical variable divided into two groups, dual enrolled and non-dual enrolled. Additionally, the dependent variable, GPA, was a continuous ratio scaled variable.

Results of the Mann-Whitney U test indicated that there was a statistically significant difference in median GPA scores between non-dual enrolled ($Md = 3.26$, $n = 9{,}075$) and dual enrolled ($Md = 3.12$, $n = 304$) students, $U = 1238816$, $z = 3.03$, $p = .002$, $r = .03$. Specifically, the non-dual enrolled students had higher median GPA scores than the dual enrolled students. The effect size r was calculated by dividing z (-3.03) by the square root of the total sample size (9,379). The results produced an r of .03. Based on Cohen's effect size standards of .1 for small, .3 for medium, and .5 or greater for large, the effect of enrollment status on GPA was very small (Cohen, 1988). So, despite the fact that there was a statistically significant difference between

non-dual enrolled and dual enrolled groups, the effects were very small. Based on these results, the null hypothesis was rejected. See Table 4

Table 4

Mann-Whitney Test: Differences between Non-dual Enrolled and Dual Enrolled Students on GPA Scores (n = 9,379)

	Non-dual Enrolled		Dual Enrolled					
	N	*Md*	*N*	*Md*	*U*	*p*	*z*	*r*
GPA	9,075	3.26	304	3.12	1238816	.002	-3.03	.03

Summary

There were a total of 9,379 respondents in this study. There were three null hypotheses. The first null hypothesis stated that there is no statistically significant correlation between dual enrollment college GPA and graduate program matriculation rates. Given there was a violation in the assumption of normality, a Mann-Whitney U test was conducted. This non-parametric test revealed that the dual enrolled students who were accepted into the program had significant higher GPAs than those dual enrolled students who were not accepted.

The second null hypothesis stated that there is no statistically significant difference in matriculation rates between dual enrolled and non-dual enrolled college seniors. Results of the two-way chi-square test of independence, which is used to assess the proportional differences between categorical variables, indicated that there was no statistically significant difference in the proportion of accepted students between dual enrolled and non-dual enrolled student. Therefore, the null hypothesis was not rejected.

Finally, null hypothesis three stated that there is no statistically significant difference in final grade point average (GPA) between dual enrolled and non-dual enrolled college seniors.

The results of the Mann-Whitney U test indicated that the non-dual enrolled students had significantly higher median GPA scores than the dual enrolled students. As a result, the null hypothesis was rejected. The next chapter contains a detailed explanation of these results.

CHAPTER FIVE: CONCLUSIONS

Overview

This chapter will provide a review of the statistical data analysis. All three null hypotheses and the corresponding results will be reviewed in detail along with the purpose of this study. Implications from the study will be discussed in detail and recommendations for future research will conclude this study.

Discussion

The causal-comparative design was used to determine if significant differences exist in GPA scores between those who were accepted and those who were not accepted into the graduate program. A causal-comparative design was also used to determine if significant differences exist in the matriculation rates and final GPA of dual enrolled and non-dual enrolled college seniors. The independent variables were matriculation status (accepted or not accepted into the graduate program) and enrollment status (dual enrolled or not dual enrolled). The dependent variables were GPA scores and matriculation rates. The variables were chosen to represent dual enrolled students and non-dual enrolled students at a private institution in central Virginia for each fall semester from 2014 through 2018.

The first null hypothesis stated that there is no statistically significant correlation between dual enrollment college GPA and graduate program matriculation rates. To test the assumption of normality, a Shapiro-Wilk test was conducted. The results indicated that the distribution of GPA scores for the accepted and non-accepted groups was non-normal, $SW(463) = .962$, $p < .001$. Since the assumption of normality was violated, the non-parametric Mann-Whitney U test was also performed. The results revealed that the dual enrolled students who were accepted into a graduate program had significantly higher GPAs than those dual enrolled students who were

not accepted. To prevent any confusion with these results, it should be noted that any undergraduate student can enroll in a limited number of graduate level courses without official acceptance into a graduate degree program. These finding highlights that those who were in fact accepted and permitted to dual enroll in a graduate program did have a substantially higher GPA than those who were not admitted.

Analysis of the results from the first hypothesis supports the goal-setting theory as the dual enrolled students with higher GPA's were accepted in a graduate program. Establishing goals, such as a high GPA, will result in self-satisfaction for adult learners according to Locke and Latham (2006). Based on this, the belief is that learners who make goals will build self-efficacy (Locke, 2018; Schunk, 2012).

The significant findings from hypothesis one is that a student's dual enrollment GPA will influence the students work at the graduate level, both good and bad. While this is not very surprising, the performance and success of students in graduate school can be estimated using the past GRE scores too, but overall, level education (Wao, Ries, Flood, Lavy, & Ozbek, 2016). Students who earn higher GPAs have demonstrated the motivation and goal-setting theory indicated by Locke and Latham (2006). Most universities choose a merit-based approach in which students are selected on the basis of their prior achievement (Pitman, 2016). Dual enrollment provides students the opportunity to demonstrate prior achievement at the graduate level by obtaining a graduate GPA via dual enrollment courses. This allows the graduate admissions office to make informed acceptance decisions based on past performance by the student.

The results found in hypothesis one indicated that the students who did not obtain a high GPA from dual enrollment courses did not receive acceptance into a graduate program which

highlights two important points. The first point is that the student may not be prepared to succeed at the graduate level, and this is reflected in both their undergraduate GPA, but more importantly, their dual-enrolled graduate GPA. The second point highlights how the student may not be motivated to complete the assignments and other required coursework to maintain a high dual-enrolled graduate GPA. In either case, the students who were not accepted into a graduate level program based on their dual-enrolled graduate GPA outlines that graduate GPA is a good overall indicator for acceptance into a graduate level program. The graduate GPA more accurately reflects the student's past performance and perhaps future performance should they be admitted into a graduate program. Young (2005) concluded that the graduate GPA was more accurate than the undergraduate GPA when measuring past academic performance, possibly due to maturation. These findings reinforce this point of view.

The second null hypothesis stated that there is no statistically significant difference in matriculation rates between dual enrolled and non-dual enrolled college seniors and their admission into a graduate program. Results from the two-way chi-square test of independence revealed no statistically significant difference in the proportion of dual enrolled (95%) and non-dual enrolled (96.7%) students who were accepted into a graduate program. Therefore, the null hypothesis was not rejected.

Analysis of the results from the second hypothesis supports the adult learning theory. Rotter's (1954) theory included two prominent motivation variables. The first is expectancy which is defined as an individual's belief regarding the likelihood that a particular reinforcement would occur following a specific behavior (Rotter, 1954). The second is a reinforcement value which means how much individuals desired a particular outcome relative to other potential outcomes (Rotter, 1954). Individuals' capabilities to direct thoughts and actions in intentional

ways designed to attain goals are critically important for developing a sense of urgency (Usher & Schunk, 2018). The results of the null hypothesis demonstrate that students seeking a graduate school program will accomplish the necessary requirements by establishing goals such as a high GPA or GRE test score, if required.

The significance of this finding indicates that dual enrollment does not necessarily influence the student's acceptance decision into a graduate program. The results demonstrated that the dual enrolled student and the non-dual enrolled student could both be accepted into a graduate program as long as the requirements for graduate admissions were met by the student. For the graduate school, the results indicate that the admissions requirements must reflect the needs of the school. Jones, Combs, and Skidmore (2019) stated the purpose of using preadmissions selection criteria is to select students for a limited number of positions and to predict who might be most likely to matriculate and graduate from the course. The student must demonstrate the ability to succeed in graduate school and the goal of the graduate admissions office is to determine which students are best prepared. Jones, Combs, and Skidmore (2019) stated that arguably, it is unfair to admit a student who will likely not be successful in our program, nor is it fair to fail to admit a student who would be successful in the program. As such, it is important for admission decisions staff to gather as much evidence as possible in order to make informed acceptance decision (Childers & Rye, 1987; Tucker & Uline, 2015). This hypothesis, in addition to the first hypothesis, highlights that a high dual enrollment GPA is useful for early admission into a graduate program, but not required to get into a graduate program. Should they decide to apply after the completion of their undergraduate education, a student can still be admitted based on their undergraduate GPA and other tests scores or documentation. These findings highlight the importance of dual-enrollment for exceptional

students who seek to fast track both their undergraduate and graduate education by fulfilling the requirements of both concurrently. This hypothesis was not rejected as the evidence shows that dual enrollment is not required for successful admission, but rather early admission.

The third null hypothesis stated that there is no statistically significant difference in final grade point average (GPA) between dual enrolled and non-dual enrolled college seniors. The results from the Mann-Whitney U test indicated that the non-dual enrolled students had significantly higher median GPA scores than the dual enrolled students. As a result, the null hypothesis was rejected.

These findings support the social cognitive theory. Social cognitive theory is a psychological perspective on human functioning that emphasizes the critical role played by the individual's social environment and its impact on their motivation, learning, and self-regulation (Schunk & Usher, 2019). Self-efficacy, which results from self-reflection, is critically important to the internal motivational process outlined in social cognitive theory (Schunk & Usher, 2019). The motivation of dual or non-dual enrolled students will influence the final grade point average based on the student's internal motivation, but the end results (GPA) of each differ substantially.

The significance of this finding is rather simple. Dual enrollment can prepare and give students insight into graduate school but based on these results, it will not provide a higher chance of gaining acceptance into a graduate program. Assuming GPA is the only requirement for admission, the sample of data used for this research provides an interesting paradox. The lower average dual-enrollment GPA observed from this data indicates that dual-enrollment could potentially hinder a student's chances of admission due to the lower average GPA. These findings provide great insight for the graduate admissions office as they can determine if a variety of standards for acceptance is needed, not just the student's GPA. Young (2008)

concluded that programs should use a variety of criteria and that each predictor should be assessed relative to predictive validity. From these results, graduate admissions should determine if dual enrollment could provide a more holistic review during the admissions process. Graduate programs can move toward accomplishing the important goal of diversity through strategic activities to increase the pool of applicants and through what is called holistic review or holistic admissions practices (Kent & McCarthy, 2016). Kent and McCarthy (2016) stated that graduate programs might find it useful to develop rubrics or define aspirational metrics of what they perceive in advance as important to graduate and professional success. The results have provided understanding that a student's final GPA will determine acceptance into a graduate program.

After analyzing the demographics from the data collected, the majority of respondents were female (58%), and the average age of all graduate students in the same was 38 years old (*SD* = 11.15). These results also support the social cognitive theory as researchers have shown that perceived similarity in age, gender, and ability levels can influence observers' self-efficacy (Bandura, 1986). The results demonstrate that students with similar external factors, such as age, play a large role in a student's decision of whether or not to attend graduate school.

The significance of this finding is the importance as it highlights how a graduate level education has large implications in the workplace, especially for career advancement. The result of this study supports the understanding that graduate students are seeking higher education in order to improve their workplace opportunities after being in a particular workplace for several years. Education is often viewed primarily in economic terms and the major role of post-compulsory education has switched into training the appropriate workforce (Siivonen & Isopahkala-Bouret, 2016). The majority of respondents in this study were female which

demonstrates the greater desire for higher education falls upon the female students. From the literature review, it became clear that women tend to be more responsive to and benefit more from interventions aimed at increasing educational attainment more so than men (Angrist, Lang, & Oreopoulos, 2009; Deming et al., 2014; Rodríguez-Planas, 2012). The long-standing contribution of academic education to cultivate knowledge and skills that constitutes good citizens has been relabeled as employability and the emphasis has been placed on individual abilities (Boden and Nedeva, 2010). The growth in graduate school attendance over the last several years has demonstrated that students are seeking higher education for career advancement, or for new career opportunities. The shift in discourse is not only on the level of language use, but it also reflects a profound change in the understanding of the role of education in today's society (Siivonen & Isopahkala-Bouret, 2016).

Implications

The implications of the study revealed that further research is validated. This study will add insight and understanding into dual enrollment for graduate programs across universities. Totonchi and Glass (2017) stated because admitting applicants is a major investment for disciplines, committees tend to minimize the risk by admitting those who appear to be the most prepared applicants. Dual enrollment provides students the opportunity to experience and demonstrate being prepared for graduate school through obtaining a graduate GPA. Totonchi and Glass (2017) explained the main criteria that faculty used to draw inferences about applicants' merit were GRE scores and grade point average. Improving the options of dual enrollment will prepare students for the first year of graduate school.

The strength of this study indicates that the dual enrolled students who were accepted into the graduate program had significant higher GPAs than those dual enrolled students who were

not accepted. In the literature, undergraduate achievements were reported to explain from four to 17 percent of the variation in graduate-level performance (Kuncel et al., 2001; Lane, Lande, & Cockerton, 2003; Owens, 2007; Truell, Zhao, Alexander, & Hill, 2006). A graduate program has a set of first-year courses that are required and these courses have undergraduate prerequisites (Yslas Vélez, 2017). Student's academic transcript is a major role in the admission decision for master's programs, given that 99% of reviewers rely heavily on the academic transcript to evaluating past performance of the student (Okahana, Augustine, & Zhou, 2018). This study demonstrated that the student's GPA factors into the admissions decision for graduate admissions. Khaydarov, Peterson, and Carrie (2019) stated that students who have inaccurate view on admission criteria may be at a disadvantage if they fail to acquire desired experiences valued by graduate programs. On the other hand, faculty who are aware of the graduate admission criteria have greater possibility of assisting their students in obtaining graduate enrollment (Khaydarov, Peterson, & Carrie, 2019).

A future study on the factors like personal lives, finances, could help isolate or eliminate the diverse factors in dual enrollment. The graduate admissions process is a critical step for quality assurance within higher education (Zimmermann, Von Davier, & Heinimann, 2017). The admissions committee will need to determine additional factors that might be preventing students from pursuing a graduate degree. Graduate program application itself has been steadily increasing at an average annual rate of four percent between Fall 2007 and Fall 2017, and it is projected that post-baccalaureate enrollment will increase by three percent annually between 2017 and 2028 (McFarland, Hussar, Zhang, Wang, Wang, Hein, Diliberti, Forrest Cataldi, Bullock Mann, & Barmer, 2019). The changing dynamics of the student body and other transformations occurring in higher education are tied to improvement and propagation of new

initiatives (McFarland et al., 2019). The graduate admissions will need to explore alternatives for the application process to adapt to the changing culture.

Limitations

The external validity may be threatened by demographics at the private institution in central Virginia. A limitation could potentially impact the study through students selecting a different graduate program, such as a public institution in a different state, even after taking dual enrollment classes at a private institution in central Virginia. The steps taken to limit the treat was collecting the data for students who were accepted into the graduate program. The data included dual enrolled and non-dual enrolled students along with age and gender.

Internal validity may be threatened with individual factors. The individual factors include financial burden, ethnicity, and test scores which could influence the student's decision to attend graduate school. Further research into the individual factors may lead to the student demographics for graduate admissions.

Recommendations for Future Research

1. An additional area of potential study is the influence of test score measure such as the GRE or MCAT and dual enrolled graduate students. Standardized tests such as the Graduate Record Examination (GRE) are a reasonable alternative to the frequent use of undergraduate grade point average (U-GPA) in selecting graduate students (Kuncel & Hezlett, 2007). Further research to determine the influence on dual enrolled graduate students and test scores through the admissions process would be a potential area of study.
2. Researching external factors influencing graduate students, such as the financial burden, may demonstrate the student's decision to attend graduate school. Several

prominent researchers (Ethington & Smart, 1986; Hearn, 1987; Isaac, Malaney, & Karras, 1992; Malaney & Isaac, 1988) in the 1980s and 1990s excluded the influence of undergraduate debt in their examination of student transitions from college to graduate school.

3. Further interest is the influence of ethnicity in the graduate admissions process. Universities have faced substantial legal challenges to their efforts to increase racial and ethnic diversity in their enrollments (Conger, 2015). Further research to determine the influence of ethnicity toward graduate school would be a potential area of study.
4. Since the research rejected null hypothesis three, future research at several private and public universities should be conducted to identify any significant correlation with the final grade point average (GPA) between dual enrolled and non-dual enrolled college seniors.
5. Further research on the age of the graduate student would bring insight into the changing workforce. Kelan (2008) explained that age is a particularly important issue in maintaining one's employability and the entrepreneurial work on the self in order to stay up to date and at the top of one's game. Researching adult graduates' employability and age would be a potential area of study (Siivonen & Isopahkala-Bouret, 2016).

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APPENDIX: IRB APPROVAL LETTER

LIBERTY UNIVERSITY.
INSTITUTIONAL REVIEW BOARD

November 7, 2019

Heather Hewitt
IRB Application 4050: The Relationship between the GPA of Dual-Enrolled College Seniors and Acceptance into a Graduate Program

Dear Heather Hewitt,

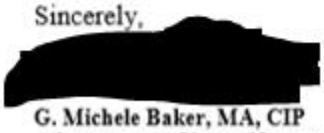
The Liberty University Institutional Review Board has reviewed your application in accordance with the Office for Human Research Protections (OHRP) and Food and Drug Administration (FDA) regulations and finds your study does not classify as human subjects research. This means you may begin your research with the data safeguarding methods mentioned in your IRB application.

Your study does not classify as human subjects research because it will not involve the collection of identifiable, private information.

Please note that this decision only applies to your current research application, and any changes to your protocol must be reported to the Liberty IRB for verification of continued non-human subjects research status. You may report these changes by submitting a new application to the IRB and referencing the above IRB Application number.

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

Sincerely,



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