DUAL ENROLLMENT: AN INTEGRATION STRATEGY FOR COLLEGE PERSISTENCE AND ACHIEVEMENT AMONG FIRST-GENERATION STUDENTS

by

Alisha Renee Carey

Liberty University

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

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APPROVED BY:

Cristie J. McClendon Ph.D., Committee Chair

Reginald Kimball Ed.D., Committee Member

Denise Young Ph.D., Committee Member

Scott Watson, Ph.D., Associate Dean, Advanced Programs
ABSTRACT

Educational and political leaders across the nation seek to create a more educated population in order to compete in a global technology-oriented society and to increase earning potential of workers. Colleges and universities are currently seeking ways to increase persistence and achievement in order to produce more college graduates. Georgia’s ACCEL program provides funding for dual enrollment programs that exist to support earning college credit while in high school. This study explored one Georgia university’s persistence and achievement among first-time first-generation college students who participated in dual enrollment programs. First generation students are more likely to withdraw from college enrollment during the first year of attendance. Utilizing dual enrollment as a social and academic integration strategy for first-generation and economically disadvantaged college student persistence is supported by the theoretical framework of Tinto’s student integration model. This study employed a causal-comparative research design that matched 119 first-time first-generation students who earned dual enrollment credit with 119 first-time first-generation students who did not earn dual enrollment credit. A Chi-square test for association was conducted for hypothesis one. For the purpose of analyzing hypotheses two and three, two-tailed t tests with a .05 alpha level were used in the study. A Mann-Whitney U test was also utilized for hypotheses two and three. No significant statistical difference in achievement or persistence was noted among the control and treatment groups.

Keywords: dual enrollment, college persistence, college retention, college achievement, first-generation college students
Dedication

I dedicate this dissertation to my best friend and the love of my life, Curtis. I am so blessed to have a husband who allows me the independence to try new things yet gives me a safety net when I do not succeed. Your patience and compassion have sustained me through this process. You had faith in me when I did not have faith in myself. You never complained about the time we lost together because I was working on my courses. I share and celebrate the completion of this milestone with you.

I also dedicate the completion of this lifelong dream to my two beautiful children, Hayden and Chandler. You both sacrificed for me to do this, but like your dad, you offered loving encouragement throughout the entire process. Your support has meant so much to me. Failure was never an option because I wanted you both to be proud of me and see me as an example of perseverance.

I must also offer dedication to my Lord and Savior, Jesus Christ. I am blessed through God’s grace with the opportunities that I’ve been given. I thank Him for giving me the strength and wisdom to complete this endeavor.

Finally, I dedicate this study to the many first-generation college students enrolled in universities today. I was once one of you. Although the journey seems long, a new and unexpected destiny awaits.
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CHAPTER ONE: INTRODUCTION

High school students are often faced with many options of courses that will help prepare them for the future; therefore, administrators, guidance counselors, and teachers who advise these young people on making informed choices must investigate the potential benefits of these available options. In addition, students are individuals with unique characteristics and personal needs. Strategies that often work for one group of students may not work for others. High schools and colleges are now placed under great pressure to increase student persistence and achievement. It is important to explore if a relationship exists between the variables of student persistence, achievement and high school dual enrollment course choices especially among groups of students who are more likely to be underachievers or potential drop-outs such as first generation college students. Existing research on dual enrollment participation related to college achievement and persistence has mainly focused on the first-time college student as a general population (Allen & Dadgar, 2012; An, 2013; Karp et al., 2007; North & Jacobs, 2010; Prophete, 2012; Swanson, 2008). Research available in the study of dual enrollment participation of first-generation college students and its possible relationship to college persistence and achievement is presently limited to populations in Arkansas (Loftin, 2012), Nebraska (Stansberry, 2013), and California (Buzynski, 2011). Since these studies can only be generalized to a specific population setting, a study in the state of Georgia targeting dual enrollment participation of first-generation college students related to persistence and achievement at the university level has been deemed as a gap in the research literature. Georgia high schools are mandated by the governor to participate in state-funded dual enrollment programs; thus, a study of this topic could aid in future guidance toward government spending and advising young students.
Students who have parents with college degrees usually inherit a support system that potentially aids them in higher education success (Barry, Hudley, Kelly, & Cho, 2009; Bradberry & Maather, 2009; Terenzini, Springer, Yaeger, Pascarella, & Nora, 1996). Many first time college students do not have parents who attended college or earned a college degree. These students are often referred to in research literature as first-generation college students (Billson & Terry, 1982; Pascarella, Pierson, Wolniak, & Terenzini, 2004; Ramos-Sanchez & Nichols, 2007; Terenzini et al., 1996; Warburton, Bugarin, & Nunez, 2001). First-generation college students are those students who enroll in a postsecondary institution with the distinction of being the first in their immediate family to have the chance of earning a bachelor’s degree. Unfortunately, first-generation college students are twice as likely to withdraw from a four-year college when compared to students who had at least one parent earn a Bachelor’s degree (Hoffman & Robins, 2005). To further complicate their endeavors of earning a college degree, this group often struggles with financial hardship. Many first-generation college students are also from lower-economic backgrounds and must face the difficult task of funding college tuition and living expenses while enrolled at a post-secondary institution (Mamiseishvili, 2010). Tinto (2005) proclaimed that low-income students are attending institutions of higher learning, but their persistence to a degree is often not fulfilled. First-generation college students who are also low-income must often work for financial support while they are attending classes. Mamiseishvili (2010) reported that first-generation college students who placed work priorities over their studies while in college often did not persist to finish a degree program.

Since first-generation college students represent an underserved population that is likely to have low persistence and achievement rates in higher education, researchers have sought to identify predictors of success. Researchers have reported improved persistence and achievement
through the participation of first-generation college students in multicultural learning groups (Jehangir, Williams, & Jeske, 2012), the feeling of belongingness on a college campus (Haussmann, Schofield, & Woods, 2007), and positive social experiences while attending college (Pascarella, Seifert, & Whitt, 2008); however, academic preparedness remains one of the best predictors of college success for all students (Bean, 2005; Mattern, Shaw, & Kobrin, 2010; Wessel, Bell, McPherson, Costello, & Jones, 2007). It is at the high school level where preparedness and integration of college expectations begin. While the variables of positive college experiences are evident in the research literature for first-generation college student success, a gap exists in the literature to identify how dual enrollment participation is related to positive outcomes in a population setting in the state of Georgia. This study will fill that gap in the literature.

Tinto’s student integration theory (1975) is a model that suggested early integration into the academic and social environment of college would increase student engagement and thus increase persistence and achievement. Tinto (1998) reported that this integration could take place both inside and outside the college classroom. To some degree precollege experiences are often introduced at the high school level through dual enrollment participation. Dual enrollment is a type of accelerated learning that offers high school students the option of earning college credit and high school credit simultaneously. Dual enrollment as a strategy to increase college accessibility for underserved populations is a growing area of educational research (An, 2013; Bragg, Barnett, & Kim, 2006; Green, 2007; Flores & Gomez, 2011; Hughes, Rodriguez, Edwards, & Belfield, 2012); however, the relationship of earning dual enrollment credit in high school and first generation college student persistence and achievement at the postsecondary level is an area of research that is quite limited (Bragg et al., 2006; Edwards, Hughes, &
Weisberg, 2011; Flores & Gomez, 2011; Green, 2007; Hughes et al., 2012). A study aimed at the exploration of this relationship is warranted in order to gain information meant to aid in the advisement of young high school students as they prepare for college success.

Chapter One briefly provides background information, the purpose, problem and significance of the study that investigates a possible relationship between earning dual enrollment credits while in high school and college persistence and achievement among first-generation college students. Research questions and hypotheses are described along with identification of variables. In addition, a list of definitions pertinent to the study will be included.

Background

In order to compete in a global economy, young Americans need the skills and education that a college degree provides. American citizens need jobs that pay well in order to survive a harsh economic climate. While many would debate that citizens should have jobs and live within their means, a family would have a difficult time surviving with an income based solely on jobs obtained with little educational foundation. Data from the U.S. Census Bureau (2012) affirmed that in 2009, people with a bachelor’s degree earned salaries that were two times more than people with just a high school diploma. The benefits that a degree can bring are numerous to an individual and also to our country’s economic well-being. Baum and Ma (2007) indicated that people with a college degree are more likely to be employed, earn a higher salary, pay more taxes and depend less on government assistance than people without college degrees. Nica and Popescu (2014) agreed that higher education is correlated with higher individual earnings. Researchers affiliated with The Georgetown University Center on Education and the Workforce emphasized that by 2018, the country will need 22 million new college degrees; however, it is
estimated that the United States will fall short by at least three million individuals with degrees (Carnevale, Smith, & Strohl, 2010). The Obama administration set a high target goal of having the largest percentage of college graduates among all nations in the world by 2025, and it must be a national priority for everyone if this goal is to be met with success (Lee, Edwards, Menson, & Rawls, 2011). Unfortunately, many students who begin college do not persist to graduation. In 2012, only 59% of first-time, full-time students who began seeking a bachelor’s degree at a four-year institution in fall 2006 completed a bachelor’s degree within six years (Kena, Aud, Johnson, Wang, Zhang, Rathbun, Wilkinson-Flicker, & Kristaphvich, 2014). Retaining students in the nation’s post-secondary institutions is a major economic concern.

First-generation college students are more likely to withdraw during the first year of enrollment in a postsecondary institution (Pascarella et al., 2004). A national longitudinal study of students enrolled for the first time in college beginning in 2003 revealed that by 2009 (six years later), 49% of non-first-generation college students involved in the study earned a bachelor’s degree while only 15% of first generation college students completed the requirements for a four-year degree (Aud, Hussar, Planty, Snyder, Bianco, Fox, Frohlich, Kemp, & Drake, 2010). Research supports that first-generation college students have a lower persistence and achievement rate than non-first-generation college students (Chen, 2005; Padgett, Johnson, & Pascarella, 2012; Woosley & Shepler, 2011). In addition, first generation college students face significant disadvantages in postsecondary outcomes both cognitively and psychosocially compared to students whose parents have some experiences with a postsecondary education (Padgett et al., 2012). First-generation college students also reported that they struggled academically and did not feeling personally connected to the college environment (Choy, 2001; Pittman & Richmond, 2007). Pascarella et al. (2004) reported that first-generation college
students are unlikely to participate in extracurricular activities such as sports or clubs, and they usually do not interact with other students in a non-academic setting. Pike, Kuh, and McCormick (2011) concurred by proclaiming that first-generation college students did not understand the social environment of college and often were more worried about finances than social interaction. Terenzini et al. (1996) characterized first-generation college students as those who are often financially challenged and often work part-time jobs while attending college. Bozick (2007) indicated that students who worked 20 hours or more each week were less likely to finish a degree and more likely to withdraw during the first year than those students who did not depend on financial support from a part-time job. First-generation college students face many challenges and the variable of low-income status may contribute greatly to their non-persistence.

The suggestion of utilizing dual enrollment as a bridge to college academic and social integration of high school students is well documented in research (Allen & Dadgar, 2012; Harnish & Lynch, 2005; Karp et al., 2007; Karp & Hughes, 2008; Kim & Bragg, 2008; Swanson, 2008; Medvide & Blustein, 2010; North & Jacobs, 2010). Tinto (1998, 2005) noted that student engagement and high school experiences are key components of persistence at the postsecondary level. To further enhance persistence, Tinto (1998, 2005) also suggested that through accelerated credit participation, high school students gain knowledge of the academic and social expectations of the college environment. Tinto (2005) proclaimed that more data is needed to assess these programs offering students increased interaction with more rigorous learning.

Existing research on dual enrollment has mainly concentrated on general student populations (first-time college students) rather than focusing on specific demographic variables such as first-generation status. A few studies reported that high school students gained college accessibility through participating in a dual credit program within their high school course of
study (Allen & Dadgar, 2012; North & Jacobs, 2010; Kim & Bragg, 2008), and Harnish and Lynch (2005) concurred in citing that dual enrollment aided underserved populations by exposing them to the unknown environment of a college setting. Dual enrollment has also been reported to aid in persistence to the second year of a degree program (Allen & Dadgar, 2012; An, 2012; Karp et al., 2007; North & Jacobs, 2010; Prophete, 2012; Swanson, 2008), and students earning more college credits in less time (Adelman, 2006; Hinojosa & Salinas, 2012) toward a bachelor’s degree. Students entering college with accrued credit hours are 8 times more likely to graduate within four years than those with no prior college hours (Hinojosa & Salinas, 2012).

Young, Joyner, and Slate (2013) indicated that students who entered a college setting with credit earned through dual enrollment had higher second year GPAs than students who did not participate in dual enrollment. Valentine (2010) also determined that dual enrollment participants had higher retention rates, less time to degree completion, and significantly higher second year GPAs.

Available research in retention and achievement of first generation college students who participated in dual enrollment is limited (Buzynski, 2011; Edwards, Hughes, & Weisberg, 2011; Flores & Gomez, 2011; Hughes et al., 2012; Loftin, 2012; Stansberry, 2013). A few studies indicated that first-generation college students who entered college with credits earned through dual enrollment participation did have a higher persistence rate to the second year and higher grade point averages (GPAs) at the end of the first year than first-generation college students who did not participate in dual enrollment (Buzynski, 2011; Loftin, 2012); however, these studies are generalized to specific populations based on the state setting of the university where the research was conducted. Respectively, these studies took place in Arkansas (Loftin, 2012), Nebraska (Stansberry, 2013), and California (Buzynski, 2011). Furthermore, national data have
also been investigated. Utilizing data collected from a national longitudinal study in 1988, An (2012) reported that first-generation college students who were also identified as low-income increased their chances of obtaining a degree if they participated in dual enrollment. While this is relevant data, policy makers in Georgia need research pertaining to the state’s population. Gall, Gall, and Borg (2010) indicated that research findings could only be generalized from the population from which the sample was drawn. Harnish and Lynch (2005) studied technical colleges in Georgia and concluded that earning dual enrollment credits toward an associate’s degree or diploma program increased persistence among underrepresented populations; however, the authors did not specifically identify first-generation students in that population. At this time, the study of first-generation college students and the relationship of earning dual credit with college persistence and achievement in a Georgia four-year university setting is a gap in the research literature. Research on how participation in dual enrollment and how it relates to postsecondary outcomes considering race, gender, socioeconomic class and first-generation status was recommended through previous studies (Bragg et al., 2006; Edwards, Hughes, & Weisberg, 2011; Flores & Gomez, 2011; Green, 2007; Hughes et al., 2012).

Approaching the issue of a more nationally educated population, the states are challenged with creating more opportunities for success of all individuals who seek a postsecondary education. The National Governor’s Association (2011) recommended to state and federal agencies that support for programs such as dual enrollment would aid in increasing graduation rates, increasing participation in college, and aligning curricular expectations at the high school and college level. Governors in Mississippi, Missouri, Virginia and Wisconsin agreed that increasing the participation in dual enrollment programs in each state would strengthen academic performance among future graduates and promote college success (Ward & Vargas, 2012).
Since first-generation college students are more likely to withdraw from college during their first year (Pascarella et al., 2004), research on this population could further inform government policy and funding. Data-driven accountability is a significant factor in maintaining financial and political support in today’s educational settings.

The target state chosen for this study was Georgia. The median annual income for Georgia residents who have a bachelor’s degree is two times greater than those residents without a bachelor’s degree (United States Census Bureau, 2012). The Governor of Georgia at the time of this study provided a vision for the state education system as one that would empower more students to earn college degrees with public school options and local flexibility (Governor’s Office of Student Achievement, 2013). The Complete College Georgia initiative focuses on partnerships and accountability, performance, and college readiness and accessibility with emphasis on populations with a historically low retention rate; in addition, higher education will partner with K-12 in order to offer more credit-based college-level courses to high school students (University System of Georgia, 2014). Georgia must increase the number of residents with college degrees in order to be economically competitive with other states. By 2020, the goal of this initiative is to have at least 60% of Georgia residents holding a bachelor’s degree, associate’s degree, or technical certificate. In 2012, less than 28% of Georgia residents had bachelor’s degrees (United States Census Bureau, 2012); additionally, 14% held an associate degree or technical certificate/diploma (University System of Georgia, 2014).

Dual enrollment is recognized in the Complete College Georgia initiative as a credit-based transition program to promote college readiness and success (University System of Georgia, 2014). Harnish and Lynch (2005) reported in a longitudinal study that dual enrollment participation increased accessibility and persistence rates for students in Georgia technical
colleges; however, the study did not report findings on first-generation students, and the study results are limited to technical colleges. Other studies reported a positive relationship between dual enrollment participation, college persistence and achievement among first-generation students (Buzynski, 2011; Loftin, 2012; Stansberry, 2013); however, these studies were conducted in other states (California, Arkansas, and Nebraska) and the results cannot be generalized to the first-generation college student population in Georgia. With the state’s goal of increasing postsecondary persistence, more research is needed to determine if a relationship exists for these variables among the first-generation population. Policy makers in Georgia need population-specific data to make informed choices for the state’s ongoing assessment of current practices.

Dual enrollment opportunities are offered at a distinct advantage in the state of Georgia, as the state has been recognized as one of the most generous in offering aid for college tuition (Torres & Diamond, 2013). The lottery-funded Helping Outstanding Pupils Educationally (HOPE) scholarship program began over 20 years ago in order to reward resident students with college financial aid based on high school academic success (Georgia Department of Education, 2015). The accelerated (ACCEL) dual enrollment program was originally created as an extension of the HOPE program (Georgia Student Finance Commission, 2015); however, the HOPE scholarship funded only a specified number of hours (127) that once included hours earned through ACCEL dual enrollment. Beginning in 2012, college credit hours earned through dual enrollment and ACCEL funding no longer counted among the 127 HOPE eligibility credit hours (Georgia Student Finance Commission, 2015). This change in policy allowed Georgia high school students to earn college credit while concurrently earning high school credits (dual enrollment) at little or no cost while saving hours that would eventually count toward a HOPE
scholarship credit hour limit when the students enrolled as first-time college students in a
Georgia college or university. The benefits of dual enrollment in Georgia could aid in obtaining
more college credit hours at a lower cost to individuals and families. First-generation college
students are more likely to be classified as low-income (Mamiseishvili, 2010), so earning
ACCEL credit could potentially save these families money on tuition costs.

The site for the data collection of the study was a comprehensive public university in
Georgia. For the purpose of this study, the university remained anonymous and given the
pseudonym of ABC University (ABCU). ABCU was one of 13 institutions in the State
University sector of the University System of Georgia, and had an average enrollment of
approximately 6,000 students during the time of this study from 2009-2012 (University System
of Georgia, 2014). ABCU is also a four-year institutional setting which will contribute to the
theoretical framework of this study. Tinto’s (1975) theory of student departure focused on the
four-year college student. Tinto (1998) proclaimed that the constructs of academic and social
integration were difficult to apply to the community college (two-year) setting due to time
constraints. Engle and Tinto (2008) reported that first generation college students were more
likely to persist at four-year institutions if they initially enrolled there. While Georgia has four
prestigious research universities, research suggested that first generation college students are less
likely to apply at these institutions (Pascarella et al., 2004; Dennis, Phinney, & Chuateco, 2005)
fearing rejection or having low self-efficacy in their academic and social abilities (Choy, 2001;
Engle, Bermeo, & O’Brien, 2006; Pittman & Richmond, 2007). Additionally, because ABCU is
the only public institution granting primarily baccalaureate degrees in its region of the state, it
was an ideal setting for the study. ABCU also addressed the Complete College Georgia statewide
initiative by citing several strategies (Complete College Georgia Plan, 2012) that potentially are
influenced through dual enrollment participation. Enhancing partnerships with K-12 (Andrews, 2004; Brand, 2008; Learner & Brand, 2006; Mattis, 2008; Hughes, 2010), improving accessibility for underserved populations (Engle, Bermeo, & O’Brien, 2006; Mattis, 2008; Swanson, 2008; Karp & Hughes, 2008), and improving time to degree completion (Adelman, 2006; Hinojosa & Salinas, 2012) are variables linked in research to dual enrollment.

**Problem Statement**

The problem of student retention in today’s postsecondary institutions is an ongoing concern among educators, educational leaders, and government policy makers. Specifically, it is not known if there is a relationship between participation in dual enrollment, persistence and academic achievement of first-generation first-time college students at one four-year public university located in Georgia. For the purposes of this study, persistence was defined as students who enrolled in the fall following their initial fall enrollment as first-time in college. Academic achievement was measured by cumulative grade point average (GPA) and number of credits earned at the end of the first academic year (fall and spring semester). The United States is falling short in producing college-educated individuals for the workforce (Carnevale et al., 2010). In 2012, only 59% of first-time, full-time students who enrolled at four-year institutions in the fall of 2006 completed a bachelor’s degree within six years (Kena et al., 2014). In addition, first-generation college students are twice as likely to withdraw during their first year of college (Pascarella et al., 2004). First-generation college students are often financially challenged and reported that they spent a great deal of time preoccupied with financial issues (Pike & Kuh, 2005; Terenzini et al., 1996). Researchers have suggested that utilizing dual enrollment as a bridge to college could be beneficial for students (Allen & Dadgar, 2012; Harnish & Lynch, 2005; Karp et al., 2007; Karp & Hughes, 2008; Kim & Bragg, 2008; Swanson,
2008; Medvide & Blustein, 2010; North & Jacobs, 2010). Studies in Arkansas (Loftin, 2012), Nebraska (Stransberry, 2013), and California (Buzynski, 2011) have reported that dual enrollment did have a positive relationship on college persistence and achievement among first-generation college students; however, these studies are limited to each respective state’s first-generation college student population and cannot be generalized to other settings. Although Harnish and Lynch (2005) studied dual enrollment and college outcomes in Georgia, this study was limited to technical colleges. No studies that apply to first-generation college students and dual enrollment student outcomes after their enrollment in a four-year postsecondary setting in Georgia were available at the time of this study. This study aids in filling that gap in the literature.

Purpose Statement

The purpose of this causal-comparative study was to explore if a relationship existed between participation in dual enrollment, persistence, and academic achievement of first-generation, first-time college students at one four-year public university located in Georgia. For the purposes of this study, persistence was defined as students who enrolled in the fall following their initial fall enrollment as first-time in college. Academic achievement was measured by cumulative grade point average (GPA) and number of credits earned at the end of the first academic year (fall and spring semester). Since factors such as race/ethnicity, gender, academic readiness, and income status are variables that could influence persistence and achievement (Allen, 1999; Bean, 2005; Mattern et al., 2010; Pascarella et al., 2004; Reason, 2009), data was gathered on these variables and used to match pairs as a sampling method. Gall et al. (2007) defined matching as:
A procedure that equates two or more groups on the extraneous variable Z at the outset of a study so that it can be ruled out as an influence on any relationship between X and Y that is later observed. (p. 644)

The population for the study included students identified as first-generation students enrolled at ABCU during the academic years beginning fall of 2009, 2010, 2011, and 2012 within four months of their high school graduation with at least three hours of dual enrollment credit; additionally, to be included in the sample, students had to be enrolled in the fall semester following their initial fall enrollment as first-time in college. Students who did not meet the criteria were eliminated from the study. Students who could not be matched on extraneous variables were eliminated from the study. All data was collected from the Office of Institutional Effectiveness at ABCU.

**Significance of the Study**

The United States is in great need of a more educated and credentialed population; however, graduation and persistence rates in postsecondary settings remain low (Kena et al., 2014). Every state is challenged with the concern of creating more graduates in postsecondary institutions. In the state of Georgia, economic well-being is dependent upon a population that is better educated and skilled in working in a competitive society. Mandated with a statewide command to improve Georgia’s colleges and universities in creating more graduates (University System of Georgia, 2014), the dual enrollment program could offer an advantageous strategy to promote college success. The implications of this study could offer much needed assistance to the population of first generation college students who are at an increased risk of completing a college degree. Since the Georgia ACCEL program offers students tuition assistance (usually 100%) for dual enrollment courses (Georgia Department of Education, 2015), first-generation
college students who are low-income would benefit financially. While in past years Georgia ACCEL college hours earned through dual enrollment were included in the maximum amount of Hope Scholarship hours which capped at 127 semester hours (Georgia Student Finance Commission, 2015), the class of 2012 and beyond will benefit from ACCEL program incentives even more by not having this threshold. Students have more to gain by taking the courses while in high school and saving the HOPE funding for later courses while enrolled directly at the university sites. The ACCEL program remains popular among Georgia residents, and the recent budget report at the time of this study from the governor’s office indicated continued financial support for the funding (MacCartney, 2015). If college persistence and achievement could be related to state-funded early credit programs such as dual enrollment, the benefits to the state colleges in Georgia could prove to be worth the cost. While some families refuse the HOPE scholarship due to religious objections to lottery funding, the ACCEL program might be more acceptable among this oppositional population since the funding is from a different source (Georgia Student Finance Commission, 2015). Another benefit of the study lies in the advisement of young students in high school. Teachers, administrators, and high school guidance counselors need to be more informed about how early college credit programs benefit students for years after they have graduated.

**Research Questions**

The following research questions were selected to guide the study:

**RQ1:** Among first-time first-generation college students, is there a significant association in dual enrollment participation with college persistence to the second year?

**RQ2:** Are there differences in achievement as measured by cumulative GPA at the end of the freshman year for first-time first-generation college students who participate in dual
enrollment as compared to first-time first-generation college students who do not participate in dual enrollment?

**RQ3:** Are there differences in achievement as measured by number of college hours earned at the end of the freshman year for first-time first-generation college students who participate in dual enrollment as compared to first-time first-generation college students who do not participate in dual enrollment?

### Null Hypotheses

The null hypotheses for this study were:

**H₀₁:** Among first-time first-generation college students, no significant association exists in dual enrollment participation and college persistence to the second year.

**H₀₂:** There is no significant difference in achievement as measured by cumulative GPA at the end of the freshman year for first-time first-generation college students who participate in dual enrollment as compared to first-time first-generation college students who do not participate in dual enrollment.

**H₀₃:** There is no significant difference in achievement as measured by number of college hours earned at the end of the freshman year for first-time first-generation college students who participate in dual enrollment as compared to first-time first-generation college students who do not participate in dual enrollment.

### Identification of Variables

The independent variable, dual enrollment participation, was defined as three or more college credit hours earned while in high school as reflected on students’ college transcript. The dependent variable, persistence, was defined as students enrolling in the fall following their initial fall enrollment as first-time in college. The dependent variable, achievement, was
measured by cumulative GPA earned at the end of the spring semester of the freshman year and by number of overall credit hours earned by the end of the spring semester of the freshman year. The experimental group was defined as students who were identified as first-time first-generation college students who earned three or more credit hours through a dual enrollment program; subsequently, the control group was defined as first-time first-generation college students who did not participate in a dual enrollment program, thus, entering the university with no credit hours. The extraneous variables of race/ethnicity, gender, academic readiness (SAT scores), and low-income status (Pell Grant recipients) were used to control for extraneous variables by using a matched pairs sampling method.

**Definitions**

Terms pertinent to the study are as follows:

1. *Academic Readiness:* College readiness is having the cognitive capacity, learning strategies, and academic behaviors to be successful in college-level courses (Conley, 2011). Scholastic Aptitude Test (SAT) scores (defined by ABCU) are utilized as a college readiness indicator for the purpose of this study.

2. *ACCEL Program:* A program for students classified as high school juniors and seniors at accredited public or private high schools in the state of Georgia, and is operated in all school terms except summer. The program allows students to pursue postsecondary study at approved public and private colleges and technical colleges while receiving dual high school and college credit for courses successfully completed (Georgia Student Finance Commission, 2015).

3. *Common Core Standards:* A national initiative to promote college and career readiness (Stand for Children, 2013).
4. *Dual enrollment:* A partnership between a secondary and a postsecondary institution where students can earn concurrent credit toward a diploma and a college degree (Karp, Calcagno, Hughes, Jeong, & Bailey, 2007).

5. *First Generation College Students:* One or both parents did not attend post-secondary school or earn a college degree (Billson & Terry, 1982).


7. *HOPE Scholarship Program (Helping Outstanding Pupils Educationally):* A lottery funded tuition reimbursement program for Georgia residents at public and private universities and colleges (Georgia Student Finance Commission, 2015).
CHAPTER TWO: REVIEW OF THE LITERATURE

Introduction

The condition of the educational system in America remains in a constant state of change. This condition is a response to the many challenges faced by educational and political leaders to create more college graduates in order to adequately compete in an ever-changing global economy. Carnevale et al. (2010) estimated that by 2018, the United States will not have enough people with college degrees to fill the many jobs needed for economic vitality and the ability to compete internationally. While most states are facing the challenges of creating a more educated populace, at the time of this study, the state of Georgia faced the task with a robust initiative (Complete College Georgia Plan, 2012). Georgia must increase the number of residents with college degrees in order to be competitive both nationally and internationally. Dual enrollment is a designated program in The Complete College Georgia Plan initiative (2012) that will aid in giving more students greater access to early college credit. Since first-generation college students are twice as likely to withdraw from a higher learning institution (Hoffman & Robins, 2005) and more likely to quit during their first year of college (Pascarella et al., 2004), it is imperative that policy-makers focus on this underserved population to identify strategies for their success. Tinto (1975) proposed early college integration as a strategy to increase college achievement and persistence. This study will explore the relationship between dual enrollment participation and college achievement and persistence among first-generation college students at ABC University located in the state of Georgia. The review of the literature was surveyed utilizing academic journals through an exhaustive search of Proquest and Academic Search Complete. The literature review will begin with a theoretical framework followed by a history of dual enrollment in the United States; in addition, a review of literature citing research of underserved populations in the
college setting, college readiness and accessibility, college retention and persistence will be included. Following a research-based discussion of the challenges facing dual enrollment and an outline of the programs available in Georgia, the gaps in the research literature will be addressed to support the study.

**Theoretical Framework**

This study investigated the persistence and academic achievement of first-time first-generation college students who earned college course credit through dual enrollment courses in high school. Engel and Tinto (2008) reported that first-generation college students were almost four times more likely to withdraw than those students whose parents earned college degrees. Dual enrollment participation has been shown to impact students’ academic success as it influences positive and informed decision-making while working toward a postsecondary degree (Swanson, 2008). The experience of taking college courses along with an effective support group provided by dual enrollment classes while in high school positively affects student acclimation to the postsecondary climate (Allen & Dadgar, 2012; Harnish & Lynch, 2005; Karp et al., 2007; Karp & Hughes, 2008; Kim & Bragg, 2008; Medvide & Blustein, 2010; North & Jacobs, 2010; Swanson, 2008). Utilizing dual enrollment as a social and academic integration strategy for first-generation and economically disadvantaged college student persistence is supported by the theoretical framework of Tinto’s student integration model (SIM). Tinto (1975) proclaimed that students modify their goals while in college based on experiences they have both socially and academically within the college environment; furthermore, a student is directly and indirectly impacted by his or her precollege experiences after enrollment in a postsecondary institution. Tinto (1998) identified academic integration to be the more important form of involvement as an indicator of college persistence. This integration can occur both inside and outside of the college
classroom setting (Tinto, 1998). Linking experiences from all classes in a student’s background also promotes ownership and engagement in the learning process. The interaction with facets of the college environment such as course rigor, peer interaction, and faculty input engages students deeply in the experience and enhances the learning process (Astin, 1993). These experiences that link learning both socially and academically lead to increased persistence among students (Tinto, 1997).

Another theory that addressed the significance of social and academic integration of first-year college students is Astin’s (1999) theory of student involvement. Astin (1999) acknowledged that persistence and achievement of first-year college students is strongly related to academic and social involvement. College students increased their chances of success through involvement such as attending class, fraternizing with peers, consulting with faculty, and participating in extracurricular activities. Astin (1984) defined student involvement as the “amount of physical and psychological energy that the student devotes to the academic experience” (p. 297). Both theories emphasized the significance of early college experience and integration as a key factor in a student’s progression through a degree program (Tinto, 1998; Astin, 1999).

While Tinto (1975) and Astin (1999) shared similar theories about student persistence, Tinto’s model provides a theoretical framework for empirical research. Other researchers have developed and expanded Tinto’s original theory of student persistence (Bean, 1981; Pascarella and Terenzini, 1980; Pascarella, 1986; Metzner & Bean, 1985). Bean (1980) proposed that student persistence intentions in higher education were closely related to employee related retention in the workplace. Utilizing Tinto’s (1975) student retention model, Bean (1981) added student attitude and environmental factors as influences on persistence in a college environment.
Pascarella and Terenzini (1980) further examined Tinto’s (1975) theory through the exploration of student interaction with faculty both inside and outside the classroom environment. Increased time with faculty increased student persistence (Pascarella & Terenzini, 1980). Metzner and Bean (1985) expanded Tinto’s (1975) theory to include nontraditional students along with certain psychological factors related to college persistence. In response to the findings of Bean and Metzner (1985), Tinto (1987) revised the integration model theory to include other persistence variables such as student economic background, psychological factors and environment when analyzing attrition research. Tinto (1993) strongly advised that researchers focus on institution-specific studies to reveal policy initiatives or other circumstances affecting persistence of students, and other researchers supported that position (Liu & Liu, 2000; House, 1999). Tinto (1997) argued that the constructs of the theory are mainly applicable to four-year institutions, and first-generation college students are more likely to persist at four-year institutions if that is their first post-secondary enrollment (Engle & Tinto, 2008). Tinto (2006) supported dual enrollment courses as a strategy for offering higher academic and social expectations of students while also creating an avenue for financial support and consistent interaction with faculty. Data is needed to support the investigation of programs that improve student engagement as it is a key factor in student persistence (Tinto, 2005).

**Review of the Literature**

First-generation college students are those students whose parents never attended college (Billson & Terry, 1982). First-generation college students are placed at a greater disadvantage in society than students whose parents obtained a college degree and have a higher earning potential. In a study of 3,290 students over the course of four years, Martinez et al., (2009) reported that low parental education was a risk factor for non-persistence in college students.
When controlling for intervening background variables, Strayhorn (2006) cited first-generation status as a significant predictor of college grade point average. First generation college students are twice as likely to withdraw from a higher learning institution (Hoffman & Robins, 2005) and they are most likely to quit during their first year of college (Pascarella et al., 2004). It is imperative that educational leaders find a way to support the success of these students. Engle et al. (2006) emphasized the immediacy of helping first-generation students gain access to college because it is crucial for their future both economically and socially. Future leaders might be lost to our society if strategies in education are not utilized to help the first-generation student; for example, the first lady of the United States, Michelle Obama, is a first-generation college student (Tyler & Johns, 2009). Sadly, first-generation college students begin to realize that the odds are against them at a very early age. Gibbons and Borders (2010) qualitatively explored first-generation middle school students in personal interviews and reported that these young people had lower self-efficacy, higher negative outcome expectations, and more perceived barriers to success than other students who had at least one parent with a college degree. First generation college students often do not have the encouragement and support in their household to attend college (Barry et al., 2009; Chen, 2005; Dennis et al., 2005); therefore, they are less likely to initially apply to colleges. Additionally, when they do apply, they reportedly apply to less prestigious schools (Dennis et al., 2005; Pascarella et al., 2004). These students also could experience a higher stress level while in college which leads to frustration and possible withdrawal. First generation college students are very unlikely to have mentors in their family or social community who can relate to the hardships of a college experience (Cushman, 2007; Dennis et al., 2005; Terrenzini et al., 1996). More successful first-generation college students have a support system where they can disclose feelings of stress (Barry et al., 2009). To further
complicate the college experience, many first-generation college students are also classified as economically disadvantaged (Bui, 2002; Choy, 2001; Mamiseishvili, 2010) and must endure the hardship of financing a costly postsecondary education.

Existing research indicated that first-generation college students were an underserved population in postsecondary education (Aspelmeier et al., 2012; Blackwell & Pinder, 2014; Bui, 2002; Chen, 2005); thus, the literature revealed studies of interventions and strategies theorized as aiding in their retention and achievement success (Cushman, 2007; Jehangir et al., 2012; Haussmann et al., 2007; McCarron, 2012). Researchers have sought to determine how to improve the isolation that first-time college students and first-generation college students experience during the freshman year transition creating a better environment for academic success. Researchers of a longitudinal study investigated the effects of first-generation low-income students participation in a community of multicultural learning with emotions connected with isolation while on campus (Jehangir et al., 2012). The researchers reported that these students who attended a Midwestern university were positively impacted emotionally through the sharing of personal experiences about their own identity (Jehangir et al., 2012); however, the researchers did not include data on how these feelings of social belonging affected achievement or persistence. In a review of the literature on feelings of student belongingness and retention, O’Keeffe (2013) acknowledged that students developed a sense of belonging through peer interaction, relationships with faculty, and encouragement of diversity; moreover, this sense of belonging was a critical component of determining student retention. In a study using individual growth curve modeling, Haussmann et al. (2007) randomly assigned students to an intervention that promoted student belongingness. Controlling for background variables that could affect persistence, the researchers concluded that a sense of belonging did increase persistence among
African-American and Caucasian first-year college students (Haussmann et al., 2007). First-generation college students enter the college environment with a necessity to change current cultural boundaries and expectations. The college campus is an unknown entity that may seem daunting and unattainable. McCarron (2012) confirmed that persistence among first generation college students is more likely if students feel involved through interaction with faculty and peers. In examining the factors that contributed to the persistence of 103 first-generation college students attending 28 elite post-secondary institutions in the United States, McCarron reported data that revealed a significant relationship between first-generation college student persistence rates and a reported personal feeling of belonging through interaction with others in the college environment.

Unfortunately, first-generation college students are not as likely as their peers to be involved in social engagement or interaction (Pascarella et al., 2004; Bui, 2002; Pike & Kuh, 2005; Terenzini et al., 1996). It is crucial that postsecondary institutions target first-generation college students through specific programs that target social and academic integration in order to familiarize these students to the college environment and help them to feel less isolated (Woosley & Shepler, 2011). Brost and Payne (2011) addressed the issue of engagement in a qualitative study with first-generation college students who had been academically dismissed from their post-secondary institutions. The students in the study reported through written reflective feedback that if given a second chance at obtaining a degree, they would spend more time on campus interacting with faculty and peers (Brost & Payne, 2011). These students recognized the importance of engaging in social and academic interaction for college success even though it was after their dismissal. First-generation college students had a tendency to enter
the college environment with low expectations of themselves (Choy, 2001), and reported knowing very little about the social environment of campus (Bui, 2002).

Studies have examined the relationship of first-generation college student personal self-efficacy as a variable predicting academic achievement or persistence. One researcher proposed adopting a social constructionist view when working with first-generation college students (Coffman, 2011). In a college retention study, researchers investigated how Frankl’s (1985) construct of purpose in life was associated with Bandura’s (1977) theory of self-efficacy as a retention predictor for those students who may be at risk of withdrawing from college (DeWitz, Woosley, & Walsh, 2009). The researchers reported that self-efficacy was a strong predictor of purpose in life (DeWitz et al., 2009). First-generation college students often enter the college environment motivated by the purpose of having a better life and helping their families economically. Blackwell and Pinder (2014) cited in a qualitative study that first-generation college students reported finishing a degree based on the single motivational factor of having a meaningful job with respectable pay. First-generation college students who enter the college environment with a stronger sense of self-efficacy and esteem are more motivated to complete their initial endeavor of earning a degree (Vuong, Brown-Welty, & Tracz, 2010); however, first-generation status may be a risk factor for lowering self-esteem and self-efficacy (Aspelmeier et al., 2012). Jenkins et al. (2013) cited that first-generation college students reported a lack of social support from family and friends, increased stress, more depressive symptoms, and less life satisfaction when compared to the reports of non-first-generation college students. The emotional intelligence of college students can affect retention and achievement (Sparkman et al., 2012). Tinto (1987) suggested that psychological variables should be considered when analyzing persistence of students.
Findings from longitudinal data suggested that parental education was a key predictor of student psychosocial development, and first-generation college students were at a distinct disadvantage when compared to non-first-generation college students (Padgett, Johnson, & Pascarella, 2012). Stephens, Fryberg, Markus, Johnson, and Covarrubias (2012) acknowledged that today’s universities expected an independence from students that actually undermined the successful performance of many first-generation college students who needed more support. Student achievement and success can be increased with a more focused and individualized advisement process that targets nonacademic and personal factors of all students (Fowler & Boylan, 2010). Mehta, Newbold, and O’Rourke (2011) concurred by suggesting that first-generation college students do not often know effective coping strategies for dealing with personal and social issues. Additionally, Owens, Lacey, Rawls, and Holbert-Quince (2010) suggested that first-generation African American males benefited from increased career counseling. Wang (2012) addressed the perceptions of first-generation college students through the study of memorable messages. Students reported how they perceived the messages received from faculty during interviews. First-generation college students affirmed that faculty verbal messages affected their perception of making good decisions and increasing future potential success (Wang, 2012). Wang (2012) reported that first-generation college students often depended on teachers for help in solving academic as well as personal problems. Tinto (1975) noted that the process that leads students to drop out of college is based on a series of interactions between those individuals and the institution. Astin (1999) confirmed that students who interacted with faculty and staff are more likely to persist.

A large body of research explored factors relating to student success after the student entered a college environment. Student participation engaged the college student and further
enhanced success (Woosley & Miller, 2009). Tinto (2005) noted that higher education could learn a lot from working in partnership with the high school environment since those early experiences of high school contributed to college persistence. Tinto (1998) proclaimed that academic integration was a key indicator of college persistence, and courses taken on a high school campus allowed students to experience that integration even earlier through faculty interaction. Woosley and Sheplar (2011) concurred suggesting that programs targeting first-generation college students’ early integration added to retention. High school teachers are more accessible to students in comparison to college faculty, and they often have more quality time to spend with students in both an academic and personal nature (Tinto, 1998). Additionally, Tinto (1997) noted that providing opportunities where students can link social and academic experiences would lead to persistence. Collaboration of both the high school staff and college staff are crucial in helping to promote first-generation college student success (Woosley & Sheplar, 2011); thus, dual enrollment provides the opportunity for this significant partnership. Dual enrollment also provides an opportunity for students to be exposed to more challenging courses (Tinto, 2006) and increases the chances of first-generation college students’ initial enrollment (Engle et al., 2006). Engle and Tinto (2008) confirmed that taking more rigorous courses in high school increased the chances of low-income first-generation college student enrollment in a four-year college. Researchers recommended that more studies are necessary to explore how early accelerated courses relate to postsecondary outcomes considering variables such as gender, socioeconomic class, and generational status (Edwards, Hughes, & Weisberg, 2011; Tinto, 2005).
Dual Enrollment for Underserved Populations

Dual enrollment is an educational strategy created to offer more advanced students opportunities to get ahead in preparing for a bright future. Dual enrollment is defined in research literature as “collaborative efforts between high schools and colleges in which high school students (usually juniors and seniors) are permitted to enroll in college courses” (Karp et al., 2007, p. 1). Researchers have also sought to link dual enrollment participation to college success. A comparative study explored how dual enrollment participation impacted cumulative grade point average and first year persistence rates (Jones, 2014). Utilizing a community college and research university setting, Jones (2014) reported that participation in dual enrollment can positively relate to higher GPAs and higher persistence rates. Dual enrollment is growing in popularity among underserved groups of students. Ishitani (2003) reported that first-generation students’ risk of withdrawing from college is 71% higher than students from homes with two college-educated parents. In four-year institutions, only 34% of low-income first-generation students earned a bachelor’s degree in six years (Engle & Tinto, 2008). Since dual enrollment offers opportunity to benefit students at the postsecondary level, researchers recommended that dual credit opportunities be offered to all students rather than just the academically-gifted ones (Karp & Hughes, 2008). This includes first-generation college students. In a qualitative study, students in a dual credit program reported recognition of a relationship between college success and a successful future while concurrently finding that the experience helped to make them more aware of the obstacles that could possibly cause them to fail at obtaining a degree (Medvide & Blustein, 2010). This recognition may not have been possible for first-generation college students who did not have a support network composed of parents who attended college that can advise them on the stumbling blocks of finishing a degree. Karp (2012) recognized that dual
enrollment provided a unique situation where students can learn and practice significant college skills while still in the high school learning environment. Since dual enrollment increased the likelihood that students enrolled full-time in college after high school (Harnish & Lynch, 2005), it could be advantageous for those first-generation college students who have limited support. When low-income first-generation college students completed rigorous courses in high school, it increased their chances of attending a four-year postsecondary institution (Engle & Tinto, 2008). Dual enrollment could be an avenue to success for first-generation college students who are also economically disadvantaged.

Several recent studies reported a positive relationship between dual enrollment participation, college persistence and achievement among first-generation students (Buzynski, 2011; Loftin, 2012; Stansberry, 2012; Wintermeyer, 2012). Data was collected from one university in Iowa from 2005 to 2009 in order to determine if a relationship existed between earning college credits in high school and student persistence and achievement at the postsecondary level (Wintermeyer, 2012). Wintermeyer (2012) concluded that entering a postsecondary institution with previously earned college credits affected achievement and persistence among all students including first-generation college students. Since first-generation college students are less likely to understand the college environment upon entering it, the transition into the university setting is easier if previous college experiences exist. Similarly, Loftin (2012) concluded that first-generation college students benefitted from dual enrollment programs as an aid in acclimating efficiently to the unknown postsecondary environment. This study utilized quantitative analysis to explore the variables of gender, academic readiness, ethnicity, and prior credits earned in relation to college retention and achievement (Loftin, 2012). Using data from the University of Arkansas cohort groups from 2004-2008, Loftin reported positive results in
achievement and persistence to the second year among first-generation college students. Both studies reported that females were an overrepresented population among first-generation college students who earned dual credit (Wintermeyer, 2012; Loftin, 2012); moreover, this suggested that males are somewhat underrepresented among first generation college students who take dual enrollment courses. An additional study explored similar variables of persistence and achievement based on first-generation college student participation in dual enrollment delivery models (Buzynski, 2011). Conducted in a California college setting, Buzynski (2011) concluded that first-generation college students who earned college credit through dual enrollment had higher achievement and persistence rates than first-generation college students who did not earn dual credit; thus, Buzynski reported that both the high school and college campus delivery model revealed similar results. Students who took a mixture of dual enrollment courses on a high school campus and a college campus were more successful than those students who relied on one of the delivery modes (Buzynski, 2011).

Limited research is available to support dual enrollment for first-generation college student success at the postsecondary level; however, Engle et al. (2006) claimed that educators must address the gaps in preparing these students by providing opportunities for learning beyond what is taught in the high school curriculum. Dual enrollment can be an opportunity to achieve at a level that was not previously recognized by first-generation college students. Learner and Brand (2006) supported the concept of secondary-postsecondary learning options for underserved student populations as a means of access. Vargas, Roach, and David (2014) reported that 87% of the students who participated in a dual enrollment program in Oklahoma persisted through five semesters and college enrollment tripled among African American and Latino students at the participating postsecondary institutions. Allowing all students to take more
rigorous courses at the high school level can help close the achievement gap for diverse student populations (American College Test, 2010; Engle et al., 2006). Hoffman, Vargas, and Santos (2008) concluded that dual enrollment courses in high school can help to make college access more equitable for all groups of students. Tinto (2006) recognized that higher academic and social expectations are indicators of student achievement. Dual enrollment can offer every student a more challenging learning connection to the high school academic curriculum.

**History of Earning Dual Credit**

The concept of dual enrollment has existed for many years. The idea began over 40 years ago when high school administrators in New York approached leaders at Syracuse University in an effort to combat the dreaded waste of time evident in the senior year (Syracuse University Project Advance [SUPA], 2014). They decided to utilize resources already in existence and offer college courses to students who needed more of a challenge during the final year of high school. The first course was offered in 1973, and the program has grown extensively to currently offer over thirty dual credit courses (SUPA, 2014). Schools across the country began to see that offering dual credit courses had many advantages for the more advanced student; however, the issue of wasted time in the latter days of high school continued to trouble educational leaders. In 2001, a commission was created by the Woodrow Wilson National Fellowship Foundation to examine how to improve the senior year (National Commission on the High School Senior Year, 2001). The foundation, developed in 1945, strives to use good ideas that will aid in creating practical yet innovative programs to support education (National Commission on the High School Senior Year, 2001). The results of the commission suggested that schools needed to improve curriculum alignment, raise achievement, and provide more rigorous alternatives for
students as they prepared for their academic futures (National Commission on the High School Senior Year, 2001).

The birth of dual enrollment so many years ago in New York has led to an avenue of speculation for secondary education, postsecondary education, and government leaders. How to best utilize these programs is a common question among policy makers. Despite the limited research on the topic of earning dual credit while in high school, it is a growing trend among high school students. According to a study published by the National Center for Educational Statistics, 82% of high schools reported having students who were enrolled in dual credit programs during the 2010-11 school year (Thomas, Marken, Gray, & Lewis, 2013). This document represents the public high schools; therefore, one can assume that there are even more private high schools participating in programs that offer dual credit. Among the two million students who are enrolled in dual programs, 1.4 million are taking academic courses while 601,500 are enrolled in courses with a technical/vocational focus (Thomas et al., 2013). This represents a large portion of high school students in our nation, so the focus on more quality educational research on dual enrollment is certainly warranted.

The urgency in educating learners for the 21st Century has sparked a renewed interest in dual enrollment programs. Earning college credit while in high school can help ease the transition to attending college and possibly earning a college degree (Allen & Dadgar, 2012; Harnish & Lynch, 2005; Karp et al., 2007; Karp & Hughes, 2008; Kim & Bragg, 2008; Medvide & Blustein, 2010; North & Jacobs, 2010; Swanson, 2008). According to Baum, Ma, and Payea (2010), students who earn degrees from postsecondary institutions are more likely to earn better incomes and be gainfully employed. Data from the U.S. Census Bureau (2012) affirmed that in 2009, people with bachelor’s degree earned salaries that were two times more than people with
just a high school diploma. The necessary wages that are necessary to support a family in today’s economy require a postsecondary degree (Hoffman & Robins, 2005). During the recent recession, people who held bachelor’s degrees fared better than those without a degree with lower unemployment rates from January of 2008 until December of 2010 (U.S. Census Bureau, 2012). The United States will need more people with strong academic backgrounds in the future. Unfortunately, projections indicated that the economy will suffer, and many Americans will miss great opportunities to fill good jobs positions because of the lack of an education. Researchers affiliated with The Georgetown University Center on Education and the Workforce emphasized that by 2018, the country will need 22 million new college degrees; however, it is estimated that the United States will fall short by at least three million degreed individuals with associates or higher. An estimate of 4.7 million new workers with degrees will be necessary for a successful and globally competitive society (Carnevale et al., 2010). The urgency to educate is presently here, and political leaders are providing the support for creating ways to make a college education more accessible to all citizens.

College and career readiness continues to be an issue for high schools and institutions of higher learning. Access to college for many students due to financial struggles also remains a key issue in the United States. President Obama recently proclaimed that higher education was one of the most pressing economic needs. The president has committed to a goal of putting higher education within the reach of those who want it (Shear, 2010). In recent State of the State addresses, governors in Mississippi, Missouri, Virginia, and Wisconsin supported the expansion of dual enrollment as a key strategy for strengthening academic success (Ward & Vargas, 2012). Helping more people achieve the dream of a college degree seems to be a common goal among policy makers and stakeholders. The Obama administration has set a goal of having the largest
percentage of college graduates among all nations in the world by 2025, and it must be a national priority for all if educators and policymakers want to fulfill this proclamation (Lee et al., 2011). Researchers have suggested that utilizing dual enrollment as a bridge to college could be beneficial for students in completing degree programs (Allen & Dadgar, 2012; Harnish & Lynch, 2005; Karp et al., 2007; Karp & Hughes, 2008; Kim & Bragg, 2008; Medvide & Blustein, 2010; North & Jacobs, 2010; Swanson, 2008).

**Advanced Placement® or Dual Enrollment**

The concept of earning college credit while in high school can also be realized through Advanced Placement® courses offered by the College Board (College Board, 2015). While dual enrollment programs have existed for quite a while in the United States, the Advanced Placement® program has existed much longer. Immediately after World War II, the Ford Foundation created the Fund for the Advancement of Education in order to expand educational opportunities for students (College Board, 2015). Educators suggested that advanced courses be offered in high schools by good teachers. It was also decided that if these students could pass a strenuous exam that covered the objectives of the class, they should receive college credit (College Board, 2015). This was the birth of the present day AP® program offered by College Board. The program continued to grow in popularity and offered exceptional training to high school teachers willing to teach the rigorous courses. The program specifically reached out to minority and low-income students during the 1980s and 1990s (College Board, 2015). In the Advanced Placement® Report to the Nation (2014), policy makers report that 1,003,430 students in the class of 2013 took AP® exams. Of these examinees, 275,864 students were from low-income families (College Board, 2014). In the past 10 years, the number of students benefiting from the AP® program has doubled. Among the class of 2013 graduating seniors, one in five
U.S. public high school graduates scored a three or higher on an AP Exam (College Board, 2014). Scoring a three or higher on the exam gives the examinee college credit. Regretfully, College Board (2014) reported that many students who are qualified to take courses opt to skip the opportunity. It is possible that the Advanced Placement® Program may be losing candidates to dual enrollment programs; similarly, both programs offer a financial benefit and cost-savings to parents of college students (Dutkowsky, Evensky, and Edmonds, 2009).

Many students and parents are confused by the difference in the two programs. Both programs offer college credit, so the choice can be a perplexing one. This remains an issue of debate among high school guidance counselors who must advise students on which courses are best for their lifestyle, academic preparedness, and future plans. Advanced Placement® courses are offered by trained high school teachers within the school setting. These teachers must have a current teaching certificate and attend staff development at an AP® Summer Institute, a week-long training that introduces the pedagogy and strategies of rigorous coursework (College Board, 2014). Dual enrollment is a bit more complicated in its delivery methods since there are three choices. First, dual courses must be taught by an individual with credentials to teach in a college setting. The Southern Association of Colleges and Schools Commission on Colleges ((2015) define these teaching credentials as having a doctorate or master’s degree in the teaching discipline or master’s degree with a concentration in the teaching discipline which is defined as a minimum of 18 graduate semester hours in the content area. When courses are offered on a high school campus, the host university must either send an instructor under their employ to teach the course or find a credentialed candidate among the high school faculty. Most high school teachers hold advanced degrees in education rather than in content subjects which is the requirement in teaching postsecondary courses. It is often difficult to find high school teachers with the proper
credentials to teach college undergraduate courses; however, offering classes at the high school setting is often an attractive option for students since they can still stay immersed in their own familiar community. This arrangement also gives parents a sense of security that their child is not driving to another location each day. The second delivery method allows students to attend classes on a nearby university campus. This is a good option for acclimation to the college setting, but transportation issues often arise and the daily schedules of the two educational sites often clash. The last delivery method is through taking online courses. Colleges and universities occasionally offer dual enrollment opportunities through an electronic platform. This may be accomplished by taking a course through the traditional online platform; however, Georgia now has an online program called eCore® that is supported by the University System of Georgia (eCore®, 2014). The program allows any student to complete core classes online. eCore® (2014) encourages dual enrollment and offers credit through eleven four-year degree granting institutions to qualified high school students.

Advanced Placement® courses offer much prestige to high schools. In the state of Georgia, the governor gives high points on the state report card for schools with AP® programs (Kinnick, 2012). In addition, College Board is a well-known and well-respected national organization. The AP® Program is under constant evaluation and decisions are made based on solid research practices (College Board, 2014). Credit from these courses does depend upon the final exam score on the national assessment, and universities across the nation have differing requirements in accepting the credit although it is usually very well-received (College Board, 2014). Dual enrollment credit depends on passing the course. Students often take dual credit courses through local colleges and universities and may or may not actually attend that school when they officially choose a college. With this in mind, students must be sure that the credit
will transfer. It is often difficult to choose dual enrollment when the student does not even know the college of their choosing as early as their sophomore year of high school. This is the year that most students will qualify for dual credit options. These two opportunities are often a complicated choice as many students will inevitably choose a mixture of both. Researchers have reported that students who take a mixture of both AP and dual enrollment courses have higher GPAs and persistence rates than those students who do not take a form of credit-based credit while in high school (Valentine, 2010).

Despite these concerns, dual enrollment could possibly contribute to alleviating some of the issues that stand in the way of a more college-educated society by creating students who are ready for college and have access to those higher learning institutions.

**College Readiness and Accessibility**

Educational research provides some insight into how dual enrollment can help prepare high school students for college and allow them a way to access it more easily. Dual enrollment is reported to increase students’ positive outcomes as they transition from high school to college (Lewis & Overman, 2008). Policy makers with *American College Test (ACT)* (2010) identify academic planning and readiness as a key indicator of college success. Karp, Calcagno, Hughes, Jeong, and Bailey (2007) found in an extensive longitudinal study in the states of New York and Florida that students who participated in dual enrollment programs were more likely to enroll in a four-year college and have higher grade point averages (GPA’s) than students who did not take dual credit classes. Research in North Carolina concurrently added that participation in dual credit courses showed a positive effect on GPA (Ganzert, 2014) which indicated that students were college-ready. Hinojosa and Salinas (2012) affirmed that students who enter college with credit earned in high school have higher GPAs than those students who enter with no prior
college hours. In a comparison study of dual credit students and non-dual credit students, researchers found that dual credit students had higher GPA’s at the end of the second year (Young et al., 2013). Research supports dual enrollment as an effective strategy for college readiness. After evaluating four dual enrollment programs in Ohio, Texas, Florida, and Oregon, researchers reported a positive correlation between earning college credit in high school to writing and math readiness (Kim & Bragg, 2008). Denecker (2013) also suggested that the dual credit classroom is a setting that promoted growth as a writer contributing to college-readiness. Additionally, high school students who take dual credit courses are 12% more likely to enter college within seven months of graduation (Swanson, 2008). Dual enrollment participation also increases enrollment opportunities among students especially those who are identified as low-income (Lichtenberger, Witt, Blankenberger, & Franklin, 2014). Dual enrollment aids students in an understanding of college practices such as prerequisites and assessment practices which could lower frustrations that lead to poor performance (Karp & Hughes, 2008). Using the option of college credit offered in high school links secondary to postsecondary education as a means of access and college readiness (An, 2013; Lerner & Brand, 2006; Karp et al., 2007; Swanson, 2008); however, additional research is needed to support how dual enrollment contributes smoother transition to the college environment by facilitating collaboration among partnering institutions of learning (Andrews, 2004; Hughes, 2010). College readiness and access can be more attainable to students through dual enrollment when collaborative effort of both the high school and college offer a suitable support system (Karp & Hughes, 2008). Through this collaboration that is set forth to help students, post-secondary institutions and high schools can learn from one another and develop strong partnerships that will aid in future endeavors.
Policymakers may claim that dual enrollment students are among the stronger academic students in high schools and therefore would probably do well at the postsecondary level without the readiness concept of early college courses. Refuting this claim, a report from the Oregon University System acknowledged that in 2007-08, 81.4% of seniors taking dual enrollment courses continued to some form of postsecondary institution compared to only 72.6% in 2005 (North & Jacobs, 2010). Persistence in the study was measured while controlling for academic strength and other predicting factors of achievement and persistence (North & Jacobs, 2010). Kim & Bragg (2008) also controlled for academic performance, gender and educational background characteristics and found that students who earned dual credit in high school showed a positive correlation to math and writing readiness. Similarly, in an evaluation of College Now, a dual credit program of The City University of New York, revealed regression results that suggested a positive effect of earning dual credit and a higher college GPA after controlling for prior academic performance (Allen & Dadgar, 2012). It might also be an assumption that students motivated to take dual credit courses would also be motivated to attend college and not need the support of access to an institution. Rejecting this assumption, a qualitative longitudinal study investigated perceptions of administrators, faculty and students in Georgia technical colleges participating in a dual credit program. Students reported that access to the college was indeed through their interaction with the program. Many of them enrolled at the technical colleges after graduating from high school (Harnish & Lynch, 2005). Students who have an enjoyable and positive experience with dual enrollment courses have increased motivation to attend college (Burns & Lewis, 2000; Peterson, Anjewierde, & Corser, 2001). Ozmun (2013) reported that high school students in a relevant study did not report significant positive self-efficacy or confidence in college coursework before taking a dual enrollment course. Medvide
and Blustein (2010) concluded that students cited increased confidence and better time management skills after completing dual enrollment courses. This implication posits that the dual enrollment experience could have contributed to the students’ successful outcomes. Positive outcomes are identified in the research literature pertaining to college readiness and access as it is related to dual enrollment participation (Burns & Lewis, 2000; North & Jacobs, 2010; Kim & Bragg, 2008; Harnish & Lynch, 2005; Medvide and Blustein, 2010; Ozmun, 2013; Peterson, Anjewierde, & Corser, 2001).

**College Persistence**

Higher learning institutions are facing alarming numbers of students who are not finishing the requirements for a degree. Due to the economic conditions this situation creates, Vargas (2013) addressed the issue of students not completing college a national concern. According to the American College Test or ACT, (2010), only 35% of all college students will actually finish a degree and one out of four students will not enroll for a second year. The issue of college persistence has a long history of scholarly research. Reason (2009) described the process of completing a comprehensive literature review on college persistence to be a Herculean task. For many decades, researchers in higher education have theorized about the concept of student’s finishing college degrees. Notably, traits of the student who may persist include academic preparedness, endurance in meeting goals, and individual motivation (Pascarella et al., 2008). Other personal characteristics such as age, gender, ethnicity, and family background can also affect college persistence. Mattern et al. (2010) reported that academic preparedness was the best predictor of college persistence. Students were more likely to feel loyal and persist at institutions where they were academically successful (Bean, 2005). Allen (1999) asserted that minority students were more likely to persist to a second year if they felt
personally motivated. In another study, a sense of belonging promoted persistence among African-American and Caucasian first-year college students (Haussmann et al., 2007).

With a rich and extensive body of research studies on the topic of college persistence, it is often difficult for policy makers at institutions of higher education to make critical decisions that may or may not promote retention of a particular population; therefore, it is significant that each institution be studied for its effectiveness in retaining students. Each environment may hold information that could possibly aid in persistence. Reason (2009) and Tinto (1993) supported the notion of researching individual settings for effective gains in retention. Tinto (2005) asserted that decisions about college persistence programs must be data driven in order to be accountable for funding.

Research literature has revealed that earning dual enrollment credit can have a positive correlation with college persistence. An (2012) reported that dual enrollment participants increased their probability of finishing any type of degree (associates included) by 8%. This same study that employed a large federal database for analysis found that dual credit participants increased their chances of obtaining a bachelor’s degree by 7% (An, 2012). Stuhl and Vargas (2012) concurred with these results in a dual enrollment study completed in Texas; similarly, college attendance and completion of a degree were correlated positively with earning college credits while in high school. Research in Florida and New York dual enrollment programs positively associated dual credit earnings with retention in college to the second year (Karp et al., 2007). In a dual enrollment study conducted at the University of Texas-Pan American, researchers reported that students entering college with course credit are 8.3 times more likely to graduate within four years than those students with no accumulated credit hours (Hinojosa & Salinas, 2012). Students who completed dual enrollment programs through a South Carolina
technical school and enrolled in that same institution were reported to have a higher persistence rate to the second year than those students who did not participate in the dual credit program (D’Amico, Morgan, Robertson, & Rivers, 2013). Adelman (2006) confirmed that accelerated college credit during the first calendar year of enrollment in college gave students a significant advantage over students who made slower attempts at earning college hours. Dual enrollment students have more leverage toward earning credit more quickly the first year of college since they will enter the higher education environment with some accumulation of hours. The issue of college retention and persistence continues to be a national concern; however, research is positively correlated with students earning college credit while in high school and postsecondary success (Adelman, 2006; An, 2013; D’Amico et al., 2013; Karp et al., 2007).

**Criticism and Challenges of Dual Enrollment**

With the offer of other credit-earning potential avenues, it is evident that dual enrollment faces some scrutiny. The Advanced Placement® Program maintains ongoing research, evaluation and program development (College Board, 2014) which is a great advantage over the dual enrollment programs that are so widespread and inconsistent in delivery methods. While some positive research does exist to support dual enrollment (Adelman, 2006; An, 2013; D’Amico et al., 2013; Hinojosa & Salinas, 2012; Karp et al., 2007), more investigation is needed to inform students, parents, political leaders, and academic leaders. From a funding perspective, Kinnick (2012) reported that dual enrollment does not offer incentive to public high schools since the loss of students in class could mean a loss of funding per pupil. Colleges and universities in Georgia also lose funds as they must balance ACCEL dollars with rising tuition costs (Kinnick, 2012).

Through these criticisms, one can find counter-arguments for dual enrollment programs. While high schools may lose funding, they also gain courses back that were previously cut from
their own budget; for example, foreign languages such as Chinese or German could be taken as a dual credit option (Kinnick, 2012). Colleges may lose a few dollars on tuition payments; however, college spending on basic level courses (developmental) can often be lessened if students are better prepared through dual enrollment (Hunt, 2007). Although the money issue can be argued among the institutions, the savings for many families is not easily disputed. Students who earn college credit while in high school will inevitably save money on college tuition.

Despite the many advantages of dual enrollment participation, researchers reported that challenges definitely remain. In a qualitative study, Howley, Howley, Howley and Duncan (2013) identified specific patterns evident with high schools and partnering post-secondary institutions; for example, personal attitudes, motives, and power struggles were among the issues presented. After recent policy changes in Virginia, Pretlow and Wathington (2014) reported that even though dual enrollment expansion was governmentally mandated, enrollment among certain groups (Caucasian females in particular) remained overrepresented. The same study reported that no significant correlation was found in dual enrollment participation and college success factors. Limited research still exists on underserved populations (Pretlow & Wathington, 2014).

**Dual Credit Programs in Georgia**

In order to improve on a national level, individual states must begin to do their part in educational initiatives that support postsecondary degree readiness, access, and retention. The National Governor’s Association (2011) recommended to state and federal agencies that support for programs such as dual enrollment would increase graduation rates, participation in college, and would better align curricular expectations at the high school and college level. Developed by leaders from the National Governors Association and the Council of Chief State School Officers,
the Common Core Standards are a national initiative to promote college and career readiness (Stand for Children, 2013). The expectation of educating children to be more prepared for college and career has helped the dual credit programs grow quickly in the state of Georgia. The Governor of Georgia at the time of this study provided a vision for the state education system as one that would empower more students to earn college degrees with public school options and local flexibility (The Governor’s Office of Student Achievement, 2013). The Complete College Georgia Plan initiative will focus on partnerships and accountability, performance, and college readiness and accessibility with emphasis on populations with a historically low achievement and persistence rate. Higher education will partner with K-12 in order to offer more credit-based college-level courses to high school students (Complete College Georgia Plan, 2012). Georgia must increase the number of residents with college degrees in order to be economically competitive with other states. Dual enrollment is a designated program in The Complete College Georgia Plan initiative (2012) that will give students greater access to early college credit.

Several programs are now in existence to offer students early access to college courses.

**Early College**

Early colleges are developed as a partnership between Georgia public schools and a University System of Georgia college or university. Currently, 10 early colleges are operating in the state (Board of Regents, University System of Georgia, 2011). Originally created by the Bill and Melinda Gates Foundation, the first early college opened in Georgia in 2005. These are small schools located on the high school campus where students can earn a diploma through challenging course work in conjunction with college credit courses to eventually earn a degree (Board of Regents of the University System of Georgia, 2011). The strategy of the early college is to make a stronger connection between the teacher and the student. The Gates Foundation
seeks to increase the number of students in the United States who have good opportunities to be successful in earning a postsecondary degree.

**Move on When Ready.** The *Move on When Ready* program supports 11th and 12th graders who are on track for graduation to attend classes on a college campus and receive both high school and college credit. Funding for the tuition costs is provided through the local school system’s FTE program count. Requirements include the provision that students must have attended the participating high school the year prior to entering the program (Georgia Department of Education, 2015). This program allows the student early integration into the college environment while still in high school.

**Dual Enrollment.** Two types of dual enrollment programs are offered in Georgia public schools. The offering of dual enrollment is state-mandated in Georgia. Both programs are non-need based. The Hope Grant is offered to students who seek a certificate or diploma from a Technical College System of Georgia school (Georgia Department of Education, 2015). The Hope Grant is an extension of the Hope Scholarship Program which is lottery-funded tuition assistance for students seeking an associate or bachelor degree (Georgia Student Finance Commission, 2015). The Georgia ACCEL program offers students tuition assistance (usually 100%) for taking academic degree-level courses for credit toward both high school diplomas and college degrees (Georgia Department of Education, 2015). Students may incur cost of books or nominal fees that are not covered by ACCEL at the university level. In the past, Georgia ACCEL-earned college hours were included in the maximum amount of HOPE Scholarship hours which capped at 127 semester hours. Beginning with the class of 2012, ACCEL program incentives became very attractive to families by not including the hours in the Hope Scholarship limit (Georgia Student Finance Commission, 2015). This holds the program in a popular yet
controversial standing among Georgia taxpayers since the funding is now originating from state funding (state appropriations). Torres and Diamond (2013) recognized that Georgia is one of the most generous states for college aid because of HOPE. Since 1993, approximately 6.8 billion dollars have supported over 1.5 million Georgia post-secondary students (Torres & Diamond, 2013). In 2011, 40% of high school graduates in Georgia were eligible for the HOPE Scholarship (Georgia Department of Education, 2015).

**Literature Gaps**

Since dual enrollment is a concept that has been in existence for over 40 years (SUPA, 2014), it is an area of research that holds extensive investigation of its effectiveness. Research revealed that dual enrollment can support college readiness (Karp et al., 2007; Swanson, 2008) and access (Allen & Dadgar, 2012; North & Jacobs, 2010; Kim & Bragg, 2008; Harnish & Lynch, 2005). In addition, dual enrollment has also been reported to aid in the issue of retention (An, 2012; Karp et al., 2007; Allen & Dadgar, 2012; Kim & Bragg, 2008) and earning more college credits in less time (Adelman, 2006; Hinojosa & Salinas, 2012). While most studies concur that dual enrollment can be an effective means of achieving successful results, little research exists to show its benefits for first generation or economically disadvantaged college students. Since first-generation college students are four times more likely to withdraw from college than students who have at least one college-educated parent (Hoffman & Robins, 2005), it is significant to study interventions that can aid in the retention of this group. Economically disadvantaged students are often first-generation college attendees (Mamiseishvili, 2010); therefore, identifying strategies to aid in helping this underserved population is certainly justified.
This study investigated if a relationship existed between first-time first-generation college students who take dual credit in high school and achievement measured by GPA and persistence as measured by students enrolling in the second year of college. In order to control for extraneous variables previously reported in research to affect persistence and achievement, the researcher used a match pairs sampling procedure. The study will be conducted at ABC University, a University System of Georgia postsecondary institution, to further explore dual enrollment as it is funded through the Georgia ACCEL program. Since ACCEL offers these courses at no charge to the student or family (Georgia Student Finance Commission, 2015), it is advantageous both financially and educationally. The 2010 results of the Census reported that Georgia was ranked third in the United States in relation to poverty level (Haines & Brumback, 2011; United States Census Bureau, 2010). In addition, 14.9% of Georgia citizens do not have medical insurance (United States Census Bureau, 2010). This may be due to the fact that they are unemployed or forced to work in an environment where health insurance is not a required offering to employees such as in a part-time situation. The state has a high unemployment rate and has suffered extensively due to the recent recession beginning around 2008 (Haines & Brumback, 2011). First-generation college students are often from low earning families (Mamiseishvili, 2010), so the ACCEL program could contribute to their finishing a degree by providing financial support for the high cost of college tuition. It is imperative to the future of the state’s economy that more educated workers are prepared through Georgia colleges and universities.

Summary

The opportunity of earning college credit while in high school is one that is popular among students, parents, educators and policy makers. Research revealed that dual enrollment
can support college readiness (Karp et al., 2007; Swanson, 2008) and access (Allen & Dadgar, 2012; North & Jacobs, 2010; Kim & Bragg, 2008; Harnish & Lynch, 2005). In addition, dual enrollment has also been reported to aid in the issue of retention (An, 2013; Karp et al., 2007; Allen & Dadgar, 2012; Kim & Bragg, 2008) and earning more college credits in less time (Adelman, 2006; Hinojosa & Salinas, 2012) which is a national concern. The United States needs more educated individuals to support the job market of tomorrow.

Since first-generation college students are more likely to withdraw from college courses (Chen, 2005; Padgett et al., 2012; Woosley & Shepler, 2007) and unlikely to complete a degree when compared to their peers who had at least one parent attend college (Engle & Tinto, 2008; Ishitani, 2003), it is significant that educators and policy makers address this group with effective strategies to promote more successful outcomes. Already the possible victims of a low socio-economic condition, first-generation college students often lack the support necessary to finish a college degree (Pascarella et al., 2004). Tinto (1975) proposed that student persistence is strongly influenced by academic and social integration along with precollege experiences. High school experiences can affect college persistence (Tinto, 2005).

Dual enrollment is especially popular in Georgia where the ACCEL program offers free tuition for students who earn college credit while in high school. The Complete College Georgia Plan initiative (2012) proposed by the state’s governor at the time of the study designates dual enrollment programs as a strategy for increasing college attendance, readiness, achievement and completion of post-secondary degrees. Georgia is a poverty-stricken state; therefore, this boost in the academic future of students can be crucial to many families who seek a better way of life. First generation college students have been identified as a population in great risk of withdrawing from college courses upon the second year (Chen, 2005; Padgett et al., 2012;
Woosley & Shepler, 2007). This study explored the relationship between dual enrollment participation and college persistence and achievement among first generation college students.
CHAPTER THREE: METHODOLOGY

The researcher of this study explored dual enrollment participation as a strategy for college persistence and achievement among first-generation college students. The purpose of this causal-comparative study was to explore a possible relationship between participation in dual enrollment, persistence, and academic achievement of first-generation, first-time college students at one four-year university located in Georgia. For the purposes of this study, persistence was defined as students who enroll in the fall semester following their initial fall enrollment as first-time in college. Academic achievement was measured by cumulative grade point average (GPA) and number of credits earned at the end of the first academic year (fall and spring semester).

Since random assignment of groups is not possible in this study, extraneous variables will be controlled by collecting data for race/ethnicity, gender, low-income status (Pell Grant recipient), and Scholastic Aptitude Test (S.A.T.) scores. The researcher formed matched pairs in the population sample based on these variables. Gall, Gall, and Borg (2010) recommended utilizing a matched pairs sampling procedure in order to control for extraneous variables. While the researcher cannot control for all possible differences in groups, this procedure will offer a reduction of selection threat to validity and aid in the minimization of group non-equivalence and possible influence on the results (Pedhazur & Schmelkin, 2013; Zhao, 2004). Race/ethnicity, gender, academic readiness, and income status are variables that could affect persistence and achievement (Allen, 1999; Bean, 2005; Reason, 2009; Pascarella et al., 2008; Mattern et al., 2010). This chapter includes a description of the study participants and setting, data collection procedures, and data analysis that will be utilized to test each hypothesis. This study will contribute to the existing literature about dual enrollment participation and will help to inform policy makers on future decisions in advisement and funding for first-generation college students in the state of Georgia.
Design

A causal-comparative design was utilized for this study. Gall et al. (2007) asserted that causal-comparative studies explore the possibility of differences that already exist among groups. Campbell and Stanley (1963) suggested that researchers could utilize a causal-comparative design when attempting to interpret a possible cause-effect relationship between an independent variable and a dependent variable. No random assignment of participants to the groups could be implemented since the data was studied after the effect on the variable had already occurred. The causal-comparative design is “more consistent with how practitioners and other education stakeholders think about the world” (Gall et al., 2007). A sample size of 30 or more participants in each group is required for causal-comparative studies (Rovai, Baker, & Ponton, 2013). The researcher utilized a matched pairs design to form the two comparison groups. Zhao (2004) suggested that researchers can match participants in control and treatment groups on significant variables to ensure “covariate balance” (p. 91).

Research Questions

The following research questions were selected to guide the study:

**RQ1**: Among first-time first-generation college students, is there a significant association in dual enrollment participation with college persistence to the second year?

**RQ2**: Are there differences in achievement as measured by cumulative GPA at the end of the freshman year for first-time first-generation college students who participate in dual enrollment as compared to first-time first-generation college students who do not participate in dual enrollment?

**RQ3**: Are there differences in achievement as measured by number of college hours earned at the end of the freshman year for first-time first-generation college students who
participate in dual enrollment as compared to first-time first-generation college students who do not participate in dual enrollment?

**Hypotheses**

The following hypotheses were selected to guide the study:

- **H₀₁:** Among first-time first-generation college students, no association exists with participation in dual enrollment and college persistence to the second year.

- **H₀₂:** There is no significant difference in achievement as measured by cumulative GPA at the end of the freshman year for first-time first-generation college students who participate in dual enrollment as compared to first-time first-generation college students who do not participate in dual enrollment.

- **H₀₃:** There is no significant difference in achievement as measured by number of college hours earned at the end of the freshman year for first-time first-generation college students who participate in dual enrollment as compared to first-time first-generation college students who do not participate in dual enrollment.

**Participants**

The sample size was composed of first-time first-generation college freshmen who graduated from high school in the same year upon enrolling at ABCU and enrolled in the fall semester for college courses in 2009, 2010, 2011, and 2012. To determine that a relevant sample size would be available upon beginning the data analysis after Liberty Internal Review Board approval, a data set was created by ABCU using the following parameters: enrolled in fall 2009, 2010, 2011, or 2012 as bachelor's degree-seeking first-time student; graduated from high school the same year as enrollment at ABCU; state of origin=Georgia; first-generation college student. The data set revealed a total sample population of 1,461 (N=1,461). In order to test the research
hypotheses, the participants were divided into two groups, first-time first-generation students who have at least three hours of dual enrollment credit (treatment group) and first-time first-generation students who have no dual enrollment credit (control group). The initial participant data set indicated a total of 135 (N=135) first-time first-generation students who had at least three hours of dual enrollment credit; whereas, the participants that were first-time first-generation students with no dual credits totaled 1326 (N=1326). In order to control for extraneous variables affecting persistence and achievement, data was collected for each participant that included gender, ethnicity, socio-economic status, and academic readiness. Guided by the usual practice of ABCU, socio-economic status was identified by Federal Pell Grant recipient status, and academic readiness was identified by S.A.T. scores. The researcher matched each dual enrollment participant with a non-dual enrollment participant on each of the extraneous variables yielding a sample size of 238 (N=238), or 119 pairs. This procedure also aided the study in creating two groups with equal number of participants. Participants who could not be matched were eliminated from the study. Creswell (2003) recommended that researchers conducting a causal-comparative design study do a power analysis to determine an appropriate sample size that would reveal statistically significant results. Creswell (2003) identified the components of a power analysis to be the amount of power, the alpha level (significance), and the effect size. According to Cohen (1988), A priori power analysis for a t-test with sig. = .05 and power = .80 will produce a moderate effect (.5) with N=64 per group. Stevens (1996) reported that population sample sizes of 100 or more would be acceptable for increasing the statistical power of a study. The number of participants in the study met the criteria for producing adequate statistical power (N=238; n1=119; n2=119).
Setting

The site for the data collection of the study was a comprehensive public university in Georgia. For the purpose of this study, the university will remain anonymous and given the pseudonym of ABC University (ABCU). ABCU was one of 13 institutions in the State University sector of the University System of Georgia, and had an average enrollment of approximately 6,000 students during the time of this study from 2009-2012 (University System of Georgia, 2014). During the time of the study, the institution averaged 78% retention rate of baccalaureate students to the second year and 52% six-year graduation rate, both of which were among the highest in the University System of Georgia state university sector. The researcher obtained approval from the university’s office of Institutional Effectiveness.

Instrumentation

The researcher utilized existing student data from ABCU in order to measure the dependent variables of persistence and achievement. Enrollment data for participants was collected through the college’s student information system (Banner by Ellucian, 2015). Banner, software distributed by Ellucian, is a system used by almost 1400 institutions of higher education in the nation (Banner by Ellucian, 2015). It is used primarily as a tool to store student registration status, financial information, demographic and achievement data. Data requested by the researcher from ABCU included graduation date from high school (first-entry students seeking a bachelor’s degree), Scholastic Aptitude Test scores (S.A.T.), gender, ethnicity, first-generation status, family income status, enrollment status at the end of first year, and credit earned through dual enrollment. Factors such as race/ethnicity, gender, academic readiness, and income status are variables that could influence college persistence and achievement (Allen, 1999; Bean, 2005; Mattern et al., 2010; Pascarella et al., 2004; Reason, 2009). According to a correlational study of
115 colleges including over 150,000 participants, S.A.T. scores are reliable in predicting first year grade point averages of post-secondary students (Korbin, Patterson, Shaw, Mattern, & Barbuti, 2008). The researcher will use a matched pairs sampling method to reduce selection threat to validity and the influence of the group non-equivalence (Pedhazur & Schmelkin, 2013; Zhao, 2004). Participants will be matched on the factors that have been revealed in research to affect college achievement and persistence.

Information was collected pertaining to registration of second year returning status to measure the variable of college persistence. The utilization of measuring the variable of college persistence through students’ returning to a second year has been validated in previous and similar studies (Buzynski, 2011; Jones, 2014; Loftin, 2012; Vargas, Roach, & David, 2014; Wintermeyer, 2012); Number of hours earned and grade point average was also collected at the end of the first year to measure the variable of student achievement. Similar studies in dual enrollment research have validated that the number of hours earned by students along with cumulative GPA are reliable indicators of student achievement (Buzynski, 2011; Jones, 2014; Loftin, 2012; Wintermeyer, 2012). All data for variables was collected through the university’s Banner system. Variables for the study were chosen based on the research literature (Allen, 1999; Bean, 2005; Mattern et al., 2010; Pascarella et al., 2004; Reason, 2009). Research on how participation in dual enrollment and how it relates to postsecondary outcomes considering race, gender, socioeconomic class and first-generation status has been recommended through previous studies (Bragg et al., 2006; Edwards, Hughes, & Weisberg, 2011; Flores & Gomez, 2011; Green, 2007; Hughes et al., 2012).
Procedures

Upon successful proposal defense, the researcher submitted appropriate paperwork to the Liberty University Institutional Review Board (IRB) which is the regulating entity that reviews research using human subjects. The Liberty University IRB delineates three types of reviews which are expedited, exempt, and full review. Since this particular study used preexisting data and non-identifiable student numbers, the researcher was awarded an expedited review and received approval from the Liberty University Internal Review Board (Appendix C). Next, the researcher contacted the associate provost for institutional effectiveness at the research site to collect the data for the study. Request for data was made by the researcher (Appendix A), and the research site representative provided appropriate documentation of acceptance (Appendix B). The associate provost for institutional effectiveness and the director for institutional research at ABCU have the authority to provide the appropriate data set to the researcher; therefore, an internal review at the university level was unnecessary for the study. The data set was collected for the study utilizing the college student information system, Banner. The data was extracted from Banner by representatives from the Office of Institutional Effectiveness at ABCU and sent to the researcher electronically as an Excel document. The dataset included the following variables: pseudo identification number; semester of entry (fall, 2009; fall, 2010; fall, 2011; or fall, 2012); return next fall (yes/no); S.A.T. score; A.C.T. score; low income indicator (Pell Grant eligible); race/ethnicity; gender; hours earned through dual enrollment; hours earned through spring of first year at ABCU; cumulative GPA at end of spring of first year; high school graduation date. After receiving the Excel file containing the data, the researcher imported the data set and utilized the Statistical Package for the Social Sciences (SPSS), version 19, to conduct data analysis. The name of the college remained anonymous and was given the
pseudonym of ABCU. Student names were not included in the data and each student was given a pseudo identification number for identity. ABCU retained a crosswalk of pseudo identification numbers to actual student identification number. The researcher did not receive any individually identifiable data such as name or actual student identification number. This protected the anonymity of the participants. All data was stored on the researcher’s personal computer in her home office and was password protected at all times. The researcher is not employed by the university, so limitations of that particular scenario do not warrant discussion. Data was analyzed and findings reported in Chapter Four. Upon the completion of the study, data will be stored for a period of three years. After the passage of three years, the researcher will destroy the data.

**Data Analysis**

Data analysis began with descriptive statistics to describe demographics and variables for the treatment and control groups: gender, socioeconomic status (Pell Grant Recipients), credit hours earned, and cumulative GPA. The researcher also analyzed frequency data of student persistence. This data helped the researcher to better evaluate the trends and patterns of the sample population. The descriptive statistical analysis is reported in Chapter Four.

Research question one was tested using the chi-square test for association. Howell (2010) recommended the chi-square statistic when a researcher has two categorical variables. Stevens (2012) concurred in citing that a chi-square test was appropriate when both the dependent and independent variables were dichotomous. The independent variable for research question one was dual enrollment participation (0-no; 1-yes), and the dependent variable was student persistence (0-no; 1-yes). In order to run a chi-square test for association, several assumptions were met. First, both independent and dependent variables were dichotomous, and second, the study had two groups of participants with a population sample size that was larger than 40
(Howell, 2010; Warner, 2012). Additionally, Howell (2010) recommended that cell frequencies be greater than five. Effect size was measured and interpreted according to Cohen’s criteria (Cohen, 1988).

Research questions two and three were tested using a two-tailed independent samples $t$-test. Agresti (2013) identified the $t$-test as the correct procedure to examine the mean differences between two groups; in addition, it is commonly used in causal comparative research designs when a between-subjects comparison is assessed (Gall, Gall, & Borg, 2010). The dependent variable for research question two was student cumulative GPA which is measureable on a continuous scale. The dependent variable for research question three was number of hours earned which was measureable on a continuous scale. The independent variable (first-generation students’ participation in dual enrollment (control and treatment groups) was measurable on a categorical scale. The researcher examined certain significant assumptions before running the $t$-test. Agresti (2013) identified the two assumptions as data having a normal distribution and equality of variance. The assumption for normality was first addressed by visually investigating histograms and normality plots for the bell curve distribution for credit hours and GPA by dual enrollment participant status and assessing skewness and kurtosis (Tabachnick & Fiddell, 2007). Next, the completion of Kolmogorov-Smirnov and Shapiro-Wilk analysis was used to determine normal distribution of the dependent variables since the sample size is larger than 50 (Tabacknick & Fiddell, 2007). Normality was assumed, for according to Tabacknick and Fiddell (2007), if the skewness value was $<2.00$, the kurtosis value was $< 3.00$, and the Kolmogorov-Smirnov test was non-significant at $p > .05$. Micceri (1989) warned that non-normality in educational studies is very common; thus, Delaney and Vargha (2000) cited that when data from educational settings were skewed in the same direction, the results could still be acceptable. The
homogeneity of variance assumption was tested by performing a Levene’s test. Tabacknick and Fiddell (2007) recommended a non-significance level of $p > .05$ regarding the Levene’s test for variance assumption. Tabacknick and Fiddell (2007) confirmed that even when moderate violations of these assumptions are evident, the $t$-test can still be considered robust; however, Green and Salkind (2011) recommended the Mann-Whitney U Test as an alternative to the independent samples $t$-test when one or more assumptions of the $t$-test were violated. Violations are reported in the study as well as results of $t$-tests and Mann Whitney U tests. Finally, effect size was determined by calculating partial eta squared in order to examine the significance of statistical power between the means (Howell, 2011). SPSS Version 19 was utilized for statistical analysis.
CHAPTER FOUR: FINDINGS

Research Questions

The following research questions were selected to guide the study:

RQ1: Among first-time first-generation college students, does participation in dual enrollment have an association with college persistence to the second year?

RQ2: Are there differences in achievement as measured by cumulative GPA at the end of the freshman year for first-time first-generation college students who participate in dual enrollment as compared to first-time first-generation college students who do not participate in dual enrollment?

RQ3: Are there differences in achievement as measured by number of college hours earned at the end of the freshman year for first-time first-generation college students who participate in dual enrollment as compared to first-time first-generation college students who do not participate in dual enrollment?

Null Hypotheses

The null hypotheses for this study were:

H01: Among first-time first-generation college students, no association exists between participation in dual enrollment and college persistence to the second year.

H02: There is no significant difference in achievement as measured by cumulative GPA at the end of the freshman year for first-time first-generation college students who participate in dual enrollment as compared to first-time first-generation college students who do not participate in dual enrollment.

H03: There is no significant difference in achievement as measured by number of college hours earned at the end of the freshman year for first-time first-generation college
students who participate in dual enrollment as compared to first-time first-generation college students who do not participate in dual enrollment.

**Descriptive Statistics**

Among the 238 total participants in the study, the number of male and female pairs in each group did not equal. In each group, females represented 66% (79) of the sample while 34% (40) was male (Table 1). Participants who did not receive the Pell Grant represented 73% (87) of the sample and 27% (32) received the Pell Grant (Table 2). The predominant ethnicity in the sample was Caucasian with less than 1% reported as Multiracial. Since the study employed a matched pairs design for sampling, other ethnicities were eliminated due to little or no representation in the treatment being studied.

Table 1

*Gender Representation in Control and Treatment Groups*

<table>
<thead>
<tr>
<th>Gender</th>
<th>DE Treatment Group</th>
<th>No DE Control Group</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female</td>
<td>79</td>
<td>79</td>
<td>158</td>
</tr>
<tr>
<td>Male</td>
<td>40</td>
<td>40</td>
<td>80</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>119</strong></td>
<td><strong>119</strong></td>
<td><strong>238</strong></td>
</tr>
</tbody>
</table>
Table 2

Pell Grant Recipient Status in Control and Treatment Groups

<table>
<thead>
<tr>
<th></th>
<th>Pell</th>
<th>NO Pell</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>DE Treatment Group</td>
<td>32</td>
<td>87</td>
<td>119</td>
</tr>
<tr>
<td>No DE Control Group</td>
<td>32</td>
<td>87</td>
<td>119</td>
</tr>
<tr>
<td>Total</td>
<td>64</td>
<td>174</td>
<td>238</td>
</tr>
</tbody>
</table>

The cumulative credit hours and cumulative GPAs from the control (no dual enrollment) and treatment groups (dual enrollment) were presented in the form of means and standard deviations. Results are shown in Tables 3 and 4. The mean for accumulated credit hours of the groups was 26.04 for the treatment group and 25.89 for the control group. The mean for cumulative GPA for the control group was 3.08 and 3.21 for the treatment group.

Table 3

Descriptive Statistics for Control and Treatment Groups for Accumulated Credit Hours

<table>
<thead>
<tr>
<th>DE Participation Group</th>
<th>Mean</th>
<th>N</th>
<th>Std. Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>DE Treatment Group</td>
<td>26.04</td>
<td>119</td>
<td>4.16</td>
</tr>
<tr>
<td>No DE Control Group</td>
<td>25.89</td>
<td>119</td>
<td>4.79</td>
</tr>
<tr>
<td>Total</td>
<td>25.97</td>
<td>238</td>
<td>4.48</td>
</tr>
</tbody>
</table>
Table 4

Descriptive Statistics for Control and Treatment Groups for Cumulative GPA

<table>
<thead>
<tr>
<th>DE Participation Group</th>
<th>Mean</th>
<th>N</th>
<th>Std. Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>DE Treatment Group</td>
<td>3.21</td>
<td>119</td>
<td>.540</td>
</tr>
<tr>
<td>No DE Control Group</td>
<td>3.08</td>
<td>119</td>
<td>.600</td>
</tr>
<tr>
<td>Total</td>
<td>3.15</td>
<td>238</td>
<td>.573</td>
</tr>
</tbody>
</table>

Assumption Tests

Assumption testing was conducted by using the Levene’s test for equality of variance. The results of Levene’s test for accumulated credit hours, $F = 1.93, p = .17$, indicated that the variances of the two populations are assumed to have slight differences in equality. The results of Levene’s test for cumulative GPA, $F = 1.66, p = .20$, indicated that the variances of the two populations are assumed to be approximately equal. Since the significance level was greater than 0.05 for both tests, the assumption of homogeneity of variance was not violated in either case.

Normality Tests

The assumption test for normality was first addressed by creating a histogram and normality plot. A visual perusal of the histogram for accumulated credit hours and GPA indicated a rough normal distribution (Figure 1) with both curves skewing in the same direction. A visual review of the normality plot for accumulated credit hours and cumulative GPA indicated a rough normal distribution (Figure 2).
Figure 1. Credit Hours and GPA Distribution

Figure 1. Histogram for credit hours and GPA by dual enrollment participation status.
While the visual representation of normality indicated rough approximation of normality, the completion of Kolmogorov-Smirnov and Shapiro-Wilk revealed that the scores for accumulated credit hours and GPA deviated from normality (Tables 5 and 6). The case of non-normality in educational data is quite common (Micceri, 1989); additionally, Delaney and Vargha (2000) reported that when data from educational settings were skewed in the same direction, the results could still be acceptable. Since the data were skewed to the left, the researcher decided to utilize the $t$-test, but the researcher interpreted the results with caution. Since the assumption of normality was violated, the researcher also concluded that a
nonparametric statistical test could be more appropriate for the data analysis of hypotheses two and three. Green and Salkind (2011) recommended the Mann-Whitney U Test as an alternative to the independent samples $t$-test when one or more assumptions of the $t$-test were violated. Assumptions adequately met for the Mann-Whitney U included a continuous dependent variable (GPA score and number of hours earned), two groups with an independent categorical variable, and observations independent from one another (Gall, Gall, & Borg, 2010). The fourth assumption, normality distribution, was determined during the analysis and results were inferred based on the shapes of the distribution.

Table 5

*Tests for Normality for Accumulated Credit Hours*

<table>
<thead>
<tr>
<th></th>
<th>Kolmogorov-Smirnov</th>
<th>Shapiro-Wilk</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Statistic df Sig.</td>
<td>Statistic df Sig.</td>
</tr>
<tr>
<td>DE Treatment Group</td>
<td>.191 119 .000</td>
<td>.876 119 .000</td>
</tr>
<tr>
<td>No DE Control Group</td>
<td>.181 119 .000</td>
<td>.877 119 .000</td>
</tr>
</tbody>
</table>

Table 6

*Tests for Normality for Cumulative GPA*

<table>
<thead>
<tr>
<th></th>
<th>Kolmogorov-Smirnov</th>
<th>Shapiro-Wilk</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Statistic df Sig.</td>
<td>Statistic df Sig.</td>
</tr>
<tr>
<td>DE Treatment Group</td>
<td>.09 119 .024</td>
<td>.960 119 .001</td>
</tr>
<tr>
<td>No DE Control Group</td>
<td>.12 119 .000</td>
<td>.948 119 .00</td>
</tr>
</tbody>
</table>
Null Hypothesis One

The first null hypothesis stated that among first-time first-generation college students, participation in dual enrollment is not associated with college persistence to the second year. Hypothesis one was tested using a chi square test. The independent variable was dual enrollment participation status (control versus treatment group). The dependent variable was persistence measured by student enrollment in second year of college or third semester.

Descriptive statistics. Table 7 reveals the frequency of students who persisted to a third semester of enrollment by participation or non-participation in dual enrollment (control and treatment group). Within the control group, a total of 93 (78%) students persisted and 26 (22%) did not persist; thus, the treatment group had a total of 101 (85%) students who persisted and 18 (15%) students did not persist (Figure 3). Students who participated in dual enrollment (treatment group) had a higher percentage of students who did persist to the second year of college enrollment.

Table 7

<table>
<thead>
<tr>
<th>Frequency of Persistence among Control and Treatment Groups</th>
</tr>
</thead>
<tbody>
<tr>
<td>Did not Persist to Third Semester</td>
</tr>
<tr>
<td>Did not Persist to Third Semester</td>
</tr>
<tr>
<td>Persisted to Third Semester</td>
</tr>
<tr>
<td>Total</td>
</tr>
</tbody>
</table>
Chi Square Test Assumptions. In order to run a chi-square test for association, several assumptions were met. First, the two variables are dichotomous, and second, the study had two groups of participants with a population sample size that was larger than 40 (Howell, 2010; Warner, 2012). Additionally, Howell (2010) recommended that cell frequencies be greater than five. Since the independent variable, dual enrollment participation was coded as yes (1) or no (0), and the dependent variable, persistence, was coded as yes (1) or no (0), the variables are considered dichotomous. The total sample size consisted of 238 participants which adequately met the sample size assumption for a chi-square analysis. Finally, all expected cell frequencies were greater than five.

Chi Square Test for Association. A chi-square test for association was conducted to determine if an association existed between dual enrollment participation and persistence to the third semester. There was not a statistically significant association between dual enrollment participation and persistence to the third semester, $\chi^2(1) = 1.784, p = .18$ (Table 8). As a
measures of the strength of association of a nominal by nominal relationship, Phi indicated that there was not an association between dual enrollment participation and persistence to the third semester, $\varphi = -0.9, p = .18$ (Table 8). A small effect size was calculated using Cohen’s $d$ ($r = .12$) which indicated the possibility of a Type I error. Post hoc analysis indicated low power (.26) which indicated the likelihood of a Type II error. The researcher failed to reject the null hypothesis.

Table 8

*Chi-Square Test*

<table>
<thead>
<tr>
<th></th>
<th>Value</th>
<th>df</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pearson Chi-Square</td>
<td>1.784</td>
<td>1</td>
<td>.182</td>
</tr>
<tr>
<td>Nominal by Nominal Phi</td>
<td>-0.087</td>
<td></td>
<td>.182</td>
</tr>
<tr>
<td>N of Valid Cases</td>
<td>238</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Hypothesis Two**

A two-tailed independent $t$-test was used to analyze the second null hypothesis which stated that there would be no significant difference in achievement as measured by cumulative GPA at the end of the freshman year for first-time first-generation college students who participate in dual enrollment as compared to first-time first-generation college students who did not participate in dual enrollment.

The independent variable was dual enrollment participation (control versus treatment group). The dependent variable was grade point average. A two-tailed independent $t$-test was conducted to compare the mean GPAs between dual enrollment participants (treatment group)
and non-dual enrollment participants (control group). Table 9 contains the means and standard deviations of the GPAs. The difference between the two groups was not significant, $t(1.66) = -1.75, p = .08$ (Table 10). The Cohen’s $d = .23$, indicating a small effect size for this hypothesis and that a Type I error was likely. Post hoc analysis indicated an achieved power of .34 which is low; therefore, the likelihood of a Type II error was noted. No significant difference in the GPA mean of the two groups was noted. Since normality had been violated, a Mann-Whitney U test was also analyzed although Tabbacknick and Fiddell (2013) reported that the $t$-test is generally robust when assumptions are moderately violated. According to Green and Salkind (2011), the Mann-Whitney U Test is an alternative to the independent samples $t$-test when one or more assumptions of the $t$-test are violated.

The Mann-Whitney U test was run to determine if there were differences in participants’ GPAs between the treatment (dual enrollment participation) and control (non-dual enrollment participation) groups. Distributions of GPAs for the treatment and control group were not similar as assessed by visual inspection (Figure 4). GPAs were not statistically significantly different between dual enrollment participation ($Mdn = 3.25$) and non-dual enrollment participation ($Mdn = 3.25$) $U = 6301, z = -1.47, p = .14$. The researcher failed to reject the null hypothesis.

Table 9

<table>
<thead>
<tr>
<th>GPAs Treatment and Control Group</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Dual Enrollment Participation</strong></td>
</tr>
<tr>
<td>----------------------------------</td>
</tr>
<tr>
<td>DE Treatment Group</td>
</tr>
<tr>
<td>No DE Control Group</td>
</tr>
</tbody>
</table>
Table 10

*Independent Samples t-Test for GPA Equality of Variance Assumed*

<table>
<thead>
<tr>
<th>Levene's Test for</th>
<th>t-test for Equality of Means</th>
<th>95% Confidence Interval of the Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Equality of Variances</td>
<td></td>
<td></td>
</tr>
<tr>
<td>F</td>
<td>Sig.</td>
<td>t</td>
</tr>
<tr>
<td>1.67</td>
<td>.198</td>
<td>1.75</td>
</tr>
</tbody>
</table>

Figure 4. Distribution of GPA

![Distribution of GPA](image)

**Figure 4. Distribution of GPA scores Mann-Whitney U.**
Hypothesis Three

A two-tailed independent $t$-test was used to analyze the third null hypothesis which stated that there would be no significant difference in achievement as measured by number of college hours earned at the end of the freshman year for first-time first-generation college students who participate in dual enrollment as compared to first-time first-generation college students who did not participate in dual enrollment.

The independent variable was dual enrollment participation (control versus treatment group). The dependent variable was accumulated credit hours. A two-tailed independent $t$-test was conducted to compare the mean credit hours earned between dual enrollment participants (treatment group) and non-dual enrollment participants (control group). Table 11 contains the means and standard deviations of the credit hours earned among the two groups. The difference between the two groups was not significant, $t(1.93) = .260, p = .80$ (Table 12). The Cohen’s $d = .30$, so the effect size for this hypothesis is small indicating the possibility of a Type I error. Post hoc analysis indicated that statistical power was low (.63), so the likelihood of a Type II error also exists. No significant difference in the credit hours mean of the two groups was noted; however, since the normality of distribution assumption was violated, the researcher interpreted the result of the independent samples $t$-test with caution. Tabacknick and Fiddell (2013) reported that the results of the $t$-test are considered robust even with moderate violations of the assumptions; however, Green and Salkind (2011) recommended the Mann-Whitney U Test as an alternative to the independent samples $t$-test when one or more assumptions of the $t$-test were violated.

A Mann-Whitney U test was used to determine if there were differences in credit hours between the treatment (dual enrollment participation) and control (non-dual enrollment
participation) groups. Distributions of credit hours for the treatment and control group were similar, as assessed by visual inspection (Figure 5). Credit hours were not statistically significantly different between dual enrollment participation ($Mdn = 27$) and non-dual enrollment participation ($Mdn = 27$), $U = 7211.5$, $z = .248$, $p = .80$. The researcher failed to reject the null hypothesis.

Table 11

*Credit Hours Earned Treatment and Control Groups*

<table>
<thead>
<tr>
<th>Dual Enrollment Participation</th>
<th>N</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>Std. Error Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>DE Treatment Group</td>
<td>119</td>
<td>26.04</td>
<td>4.163</td>
<td>.382</td>
</tr>
<tr>
<td>No DE Control Group</td>
<td>119</td>
<td>25.89</td>
<td>4.792</td>
<td>.439</td>
</tr>
</tbody>
</table>

Table 12

*Independent Samples t-Test for Credit Hours Equality of Variance Assumed*

<table>
<thead>
<tr>
<th>Levene's Test for Equality of Variances</th>
<th>t-test for Equality of Means</th>
<th>95% Confidence Interval of the Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>F</td>
<td>Sig.</td>
<td>df</td>
</tr>
<tr>
<td>1.93</td>
<td>.17</td>
<td>.260</td>
</tr>
</tbody>
</table>
Figure 5. Credit Hours Earned Distribution

Results Summary

Three hypotheses were examined to compare first-time first-generation college students who participated or did not participate in dual enrollment. The first hypothesis measured persistence based on student enrollment in the third semester of college. Hypotheses two and three compared mean scores of accumulated credit hours and GPAs to measure achievement among the control and treatment groups. Matching characteristics for control of confounding variables were utilized in the study. All students were matched on gender, ethnicity,
socioeconomic status (Pell Grant), and prior academic achievement (S.A.T. scores). The results show that there was no significant difference in students who participated in dual enrollment and students who did not participate in the dual enrollment. Chapter Five discusses the results, the implications, and the need for future research regarding this topic.
CHAPTER FIVE: DISCUSSION, CONCLUSIONS, AND RECOMMENDATIONS

Discussion

The purpose of this causal-comparative study was to explore if a relationship existed between participation in dual enrollment, persistence, and academic achievement of first-generation, first-time college students at one four-year public university located in Georgia. The researcher conducted an extensive literature review of college student persistence, college student achievement, first-generation college students, and dual enrollment. The treatment group was composed of 119 first-generation students who participated in dual enrollment. The control group was composed of 119 first-generation students who did not participate in dual enrollment. In order to control for extraneous variables that have previously been shown to affect achievement and persistence in research (Allen, 1999; Bean, 2005; Mattern et al., 2010; Pascarella et al., 2004; Reason, 2009), a matched pair sampling procedure was utilized. Independent samples t-tests and Mann Whitney U tests were conducted to statistically compare number of hours earned and GPAs between the groups. A chi-square ($\chi^2$) test of association was conducted to analyze persistence. This chapter will review the findings and discuss the results of the study. In addition, limitations and implications will also be presented along with recommendations for future research.

Research Question One

In an effort to fill a gap in the literature pertaining to first-time first-generation college students in the state of Georgia at one four year bachelor degree granting institution, the first research question of the study sought to determine if participation in dual enrollment was statistically associated with college retention to the second year. To address this question, a chi-square test of association was utilized. There was not a statistically significant association
between dual enrollment participation and persistence to the third semester, \( \chi^2 (1) = 1.78, p = .18 \); however, descriptive statistics revealed that within the control group, a total of 93 (78%) students persisted and 26 (22%) did not persist. The treatment group had a total of 101 (85%) students who persisted and 18 (15%) students did not persist. Even though the results were not statistically significant, the treatment group (dual enrollment participants) did have a higher percentage of students who enrolled for a second year of college courses.

In a study on student persistence, Hinojosas and Salinas (2012) reported that students who participated in dual enrollment and earned college hours were 2.7% more likely to persist to the second year of enrollment when compared to students with no dual enrollment participation. Similarly, McCormick (2010) reported that 90% of the students who entered a four-year college with dual enrollment credit did persist to the second year. In a Florida study, Davis (2014) also found that dual enrollment students had a mean college persistence score higher than non-dual enrollment students. The results of this study support a previous study in the state of Florida; Prophete (2013) concurred that dual enrollment participation increased persistence to the second year and increased the chances of attaining a degree at a higher rate than non-dual enrollment participation. Prophete reported that 82% of the dual enrollment participants in a study persisted. Thacker (2014) found that 15% more dually enrolled students persisted to the second year when compared to non-dually enrolled counterparts. In addition, Buzynski (2011) found that students who earned dual enrollment credit had a 9.2% higher persistence rate than students who had not earned dual enrollment credit. Other studies concurred with these findings that dual enrollment participation increased students’ likelihood of persistence (Belfield, Hughes, & Rodriguez, 2012; Cowan & Goldhaber, 2015; Vargas, 2012; Speroni, 2011; Hughes, et al, 2012). These studies did not distinguished between first generation and non-first generation status.
In an Arkansas study, Loftin (2012) reported that 95% of first generation students with dual enrollment credit persisted, and that first generation students with dual enrollment credit were more likely to persist than the comparison group of first generation students with no dual enrollment credit. Prophete (2013) reported that minority students who participated in dual enrollment were more likely to persist than minorities that did not participate; similarly, Stansberry (2013) linked dual enrollment participation of first generation minority students with increased persistence. While the results of the present study did not yield statistically significant results, it is notable that more dual enrollment participants did persist (85%), and evidence of previous research supports these findings. The present study did not have enough minority participants to investigate the effects of dual enrollment on their college success.

**Research Question Two**

Research question two was presented to investigate if differences in achievement as measured by cumulative GPA at the end of the freshman year existed for first-time first-generation college students who participate in dual enrollment as compared to first-time first-generation college students who do not participate in dual enrollment. A two-tailed independent t-test was used to analyze research question two. The difference between the two groups was not significant, \( t(1.66) = -1.75, p = .08 \). No significant difference in the GPA mean of the two groups was noted. The Mann Whitney U test confirmed that GPAs were not statistically significantly different between dual enrollment participation and non-dual enrollment participation \( U = 6301, z = -1.47, p = .14 \). The mean GPA of the treatment group \( M = 3.21, SD = .54 \) was only slightly higher than the mean GPA of the control group \( M = 3.08, SD = .60 \). Similarly, Loftin (2012) concluded that when all extraneous variables were considered, dual
enrollment participation accounted for only .09 of the variation in first generation college students’ GPA.

In contrast to the present study, evidence in research has suggested that dual enrollment participation does have a relationship with increased GPAs. The researchers of an extensive longitudinal study in New York and Florida reported that dual enrollment participants achieved higher GPAs than non-dual enrollment participants (Karp et al., 2007). In a college persistence study, Hinojosa and Salinas (2012) reported that students who enter college with credit hours are more likely to have higher GPAs than those students who enter with no credit hours. Similarly, in an evaluation of College Now, a dual credit program of The City University of New York, revealed regression analysis data that suggested a positive effect of earning dual credit and a higher college GPA after controlling for prior academic performance (Allen & Dadgar, 2012).

In a correlational study, Stansberry (2013) utilized groups of first generation students that participated in dual enrollment and sought to analyze predictors of achievement by number of college credit hours earned upon entry as a first time college student. Stansberry reported that first generation majority students who completed six or more dual enrollment credits had the highest grade point averages after the first year of college enrollment. While the results of the present study did not suggest that dual enrollment participation increased first generation students’ GPA, Stansberry’s study suggested that achievement could be predicted by number of hours earned upon entry to the college. Stansberry’s research also concluded that this prediction could be made only at the end of the first year of college enrollment. The study did not find a statistically significant difference in GPAs after the end of the second year of enrollment; thus, the researcher suggested that more homogeneity existed within the groups at that time (Stansberry, 2013). Young, Joyner, and Slate (2013) reported similar results in a study of dual
enrollment participation. GPAs of dual enrollment participants were slightly higher than non-dual enrollment participants at the end of the first year; however, by the end of the second year, the GPAs of the two groups showed little statistical significance (Young et al., 2013).

**Research Question Three**

A two-tailed independent *t*-test was used to analyze the third research question which asked if there would be a significant difference in achievement as measured by number of college hours earned at the end of the freshman year for first-time first-generation college students who participate in dual enrollment as compared to first-time first-generation college students who did not participate in dual enrollment. The *t*-test indicated that the difference between the two groups was not significant, *t*(1.93) = .260, *p* = .80. A Mann Whitney U test also indicated that credit hours were not statistically significantly different between dual enrollment participation (Mdn = 27) and non-dual enrollment participation (Mdn = 27), *U* = 7,211.5, *z* = .248, *p* = .80. The mean credit hours earned of the treatment group (*M* = 26.04, *SD* = 4.16) was only slightly higher than the mean credit hours earned of the control group (*M* = 25.89, *SD* = 4.79).

The results of the present study conflict with past studies presented on populations that did not identify first generation status. Hinojosa and Salinas (2012) and Michalowski (2007) agreed that dual enrollment students earned more hours than their non-dual enrollment counterparts. Another study concurred that a relationship does exist between dual enrollment participation and earning more credit hours (Belfield et al., 2012). Thacker (2014) reported that dual enrollment participation increased the likelihood of earning credit hours and attaining a degree at a greater speed than those students without dual enrollment participation.
Conclusions

The current study sought to fill a gap in the research literature concerning first-generation college students’ achievement and persistence with dual enrollment participation at one Georgia post-secondary institution. Colleges and universities face the challenge of increasing the number of students who persist toward a degree and show evidence of scholarly achievement. Tinto (1975) reported that student persistence is strongly influenced by academic and social integration along with precollege experiences; hence, high school experiences can affect college persistence (Tinto, 2005). Dual enrollment is a program that has achieved national recognition (National Governor’s Association, 2011) and is supported in research as having positive outcomes as a strategy for college readiness (Karp et al., 2007; Swanson, 2008; Stansberry, 2013), access (Allen & Dadgar, 2012; North & Jacobs, 2010; Kim & Bragg, 2008; Harnish & Lynch, 2005), persistence (An, 2012; Karp et al., 2007; Allen & Dadgar, 2012; Kim & Bragg, 2008) and earning more college credits in less time (Adelman, 2006; Buzynski, 2011; Hinojosa & Salinas, 2012). Although first-generation college students are more likely to withdraw from college courses within the first year (Chen, 2005; Engle & Tinto, 2008; Ishitani, 2003; Padgett et al., 2012; Woosley & Shepler, 2007), limited studies are available to investigate dual enrollment participation among first-generation students and college success.

Utilizing one Georgia university setting (ABCU), this causal-comparative study investigated first-generation college students’ achievement and persistence with participation in dual enrollment. Using a matched pairs sampling procedure, the participants were matched on gender, academic readiness (S.A.T. scores), socioeconomic status (Pell Grant Recipient), and ethnicity. These demographic variables were identified in research as having a possible effect on college achievement and persistence; therefore, the researcher treated them as confounding. The
matching procedure yielded 119 pairs as participants in the study. The first group had no dual
enrollment credit while the second group had dual enrollment credits upon entry to the
university.

The first research question of the study sought to determine if participation in dual
enrollment was statistically associated with college retention to the second year. To address this
question, the researcher used a chi-square test of association. While no statistical difference was
evident among the two groups, descriptive statistics revealed that within the control group, a total
of 93 (78%) students persisted and 26 (22%) did not persist. The treatment group had a total of
101 (85%) students who persisted and 18 (15%) students did not persist. Students who
participated in dual enrollment (treatment group) did have a higher percentage of students who
persisted to the second year of college enrollment. Other studies support the evidence that dual
enrollment participation can be associated with higher persistence rates (Davis, 2014; Belfield et
al., 2012; Buzynski, 2011; Hinojosas & Salinas, 2012; McCormick, 2010; Prophete, 2013;
Speroni, 2011; Thacker, 2014; Vargas, 2012) and with higher persistence rates among first-
generation students (Loftin, 2012; Stansberry, 2013). While the null hypothesis was not rejected,
the researcher still found evidence of a slight increase in persistence among the treatment group
(85% persisted in the treatment group; only 78% persisted in the control group).

Research question two investigated the differences in GPAs at the end of the first college
year between the dual enrollment and non-dual enrollment group. An independent t-test showed
no significant difference in means; however, the mean of the treatment group was slightly higher
(treatment group $M = 3.21$; control group $M = 3.08$). In a similar study, Loftin (2012) reported
that first-generation dual enrollment participants had GPAs that varied only .09 above the first-
generation non-dual enrollment participants. The results of this study concurred with Loftin’s
study; however, other research suggests that dual enrollment does have a relationship with higher GPAs (Allen & Dadgar, 2012; Hinojosa & Salinas, 2012; Karp et al., 2007). Other studies report evidence of increased college hours earned through dual enrollment correlating with higher GPAs at the end of the first year, but showing little significant difference at the end of the second year (Stansberry, 2013; Young et al., 2013).

Research question three investigated if there would be a significant difference in college hours earned between the control and treatment groups. An independent $t$-test indicated that the difference in college hours earned was not significant. The result of the present study conflicted with other studies that reported dual enrollment participants earned more college credit hours by the end of the first year than non-dual enrollment participants (Belfield et al., 2012; Swanson, 2008; Thacker, 2014). Since this study was completed in Georgia with residents of the state, the dual enrollment participants earned hours at a free or reduced cost through the ACCEL program compared to the cost of college tuition at ABCU. While the groups earned almost equal number of credit hours (26), it is assumed that the personal financial cost was higher for the non-dual enrollment group’s credit hours.

The dual enrollment participants in this study showed evidence of a slightly higher GPA than the non-dual enrollment participants. Earning dual enrollment credits could aid in academic readiness and awareness among first-generation college students. Stansberry (2013) reported that first generation minority students with six or more dual enrollment credits had a higher ratio of college credits earned to college credits attempted at the end of the second year. According to Stansberry, the results of that study support the evidence that taking more dual enrollment courses in high school will result in success at the college level at the end of the first year of enrollment. Students who participate in dual enrollment may be better prepared for the rigor of
college courses. This is supported through research that dual enrollment can aid in college readiness (An, 2012; Jones, 2014; Karp et al., 2007; Swanson, 2008) and career preparation (Medvide & Blustein, 2010) among first-time college students. Tinto (2006) cited that dual enrollment provided an opportunity for students to be exposed to more challenging courses; thus, these rigorous courses increased the chances of first-generation college students’ initial acceptance and enrollment to a prestigious university (Engle et al., 2006; Engle & Tinto, 2008). Dual enrollment students may also be more self-aware of the stringent work ethic necessary in obtaining a bachelor’s degree. In a qualitative study, students in a dual enrollment program reported recognition of a relationship between college success and a successful future while concurrently finding that the experience helped to make them more aware of the obstacles that could possibly cause them to fail at obtaining a degree (Medvide & Blustein, 2010). Karp (2012) concurred in noting that dual enrollment participation provided an early opportunity for students to practice college skills. This awareness may not be possible for first-generation college students who do not have a support network to advise them on the stumbling blocks that often impede the long journey to a college degree. Perceptions of dual enrollment participation were, unfortunately, beyond the scope of the present study.

Implications

The findings of this study provide several implications for practice. Leaders at the state and local level will need to further investigate the benefits of dual enrollment participation. While the average college credits earned at the end of the first year were relatively similar among the dual and non-dual enrollment students, it is likely that these first-generation students did save money on tuition cost. If one Georgia resident student earned 15 hours for a semester at ABCU and another Georgia resident student earned 15 hours for a semester through dual enrollment,
then the second student saved the cost of tuition having the hours funded through Georgia’s ACCEL program. The dual enrollment program also places high schools and post-secondary institutions in a much-needed partnership to foster academic and social integration strategies for all underserved populations. It is recommended that high schools identify first-generation students and help them develop goals in completing college credit while in that comfortable setting. High schools could gain valuable information through the tracking of these students through the college years. In addition, high school guidance counselors should seek out minority populations and males to encourage an increase in dual enrollment participation. Finally, it would be beneficial for parents of first-generation students to understand the dual enrollment process. These parents who did not obtain college degrees need training and support in order to help their children succeed.

**Limitations**

While efforts were made to minimize the limitations of this study, several are still quite relevant to note. First, the study included only one college campus located in one geographical location in the state of Georgia. ABCU has a low minority population, and participants in dual enrollment are predominantly Caucasian and female which limited the studies’ ability to be generalized to other settings or populations. The study was also limited to students enrolled in ABCU over a four year period from 2009-2012.

The causal-comparative design limited the research because the independent variable could not be manipulated (Gall et al., 2010). Also, while the matching procedure controlled for extraneous variables and reduced the selection threat to validity (Pedhazur & Schmelkin, 2013; Zhao, 2004), it also limited the number of participants in the study and limited variable data. With a matching procedure, the researcher cannot be certain that she identified the most
significant variables for matching the participants (Gall et al., 2010) even though the research
literature identified these variables as possibly confounding the measurement of college
persistence and achievement (Allen, 1999; Bean, 2005; Mattern et al., 2010; Pascarella et al.,
2004; Reason, 2009).

A final limitation in the study involved the comparison of the present study with previous
ones. While an investigation of the means of credit hours earned among the dual enrollment
treatment groups in similar studies could provide more insight to the researcher of this study,
data available for comparison was quite limited. For example, Thacker (2014) measured a
likelihood of earning more credit hours through dual enrollment participation by the speed of
college completion based on number of semesters. Loftin (2012) reported the number of hours
earned through dual enrollment prior to enrollment. Researchers of a Texas study cited number
of college hours earned by dual enrollment participation in percentages rather than means
(Hinojosa & Salinas, 2012). Michalowski (2007) reported that students who participated in dual
enrollment enrolled in baccalaureate degree programs earned on average half a credit (.50) more
than their peers who had not participated. A recent study concurred that data limitations were
quite common to previous studies of dual enrollment; thus, this creates substantial impacts on the
potential estimates of dual enrollment effects on post-secondary outcomes (Cowan & Goldhaber,
2015).

**Recommendations for Future Research**

The study participants were predominantly Caucasian and female. This is similar to other
studies on dual enrollment (Karp et al., 2007; Prophete, 2012; Stansberry, 2013; Thacker, 2014;
Wintemeyer, 2013). Recommendations on future research would include an analysis on the
barriers to dual enrollment participation for males and minorities. Prophete (2012) and
Stansberry (2013) reported that minorities who participated in dual enrollment did have a slight increase in GPA and persistence rates when compared to majorities who participated in dual enrollment. Since this study investigated persistence to the second year, it is recommended that ABCU continue this study as longitudinal to investigate graduation persistence for first-generation dual and non-dual participants. Additionally, qualitative data could serve to add first-generation students’ perception of the academic and social integration value of dual enrollment participation as well as provide reasons for student non-persistence. It was beyond the scope of this study to track students transferring to other institutions at the end of the first year which would indicate that they did actually persist albeit at other institutions. ABCU could also gain valuable information from a study that evaluates postsecondary success with dual enrollment delivery setting. The present study combined all students who had three or more hours of dual enrollment credit upon entry to the freshman year; thus, creating a melting pot of every dual enrollment program represented among their students. A study of ABCU’s own dual enrollment program at area high schools could provide useful recruiting data. Further research in dual enrollment could also be valuable in collecting evidence of college credit delivery method (high school classroom; college classroom or online program) and number of credit hours earned correlated with GPA and persistence rates. Finally, research is needed to investigate the financial cost of Georgia’s ACCEL program and total savings to individual students. While dual enrollment research is quite expansive, it is an area that will inevitably require further study as educators and policy makers seek to create 21st Century learners in a competitive and technology-oriented global society.
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As a graduate student in the Education Department at Liberty University, I am conducting research as part of the requirements for my Doctorate of Education. The title of my dissertation research project is DUAL ENROLLMENT: AN INTEGRATION STRATEGY FOR COLLEGE PERSISTENCE AND ACHIEVEMENT AMONG FIRST-GENERATION STUDENTS. The purpose of this causal-comparative ex-post facto study is to explore a possible relationship between participation in dual enrollment, persistence, and academic achievement of first-generation, first-time college students at one 4-year public university located in Georgia. For the purposes of this study, persistence will be defined as students who enrolled in the fall following their fall enrollment as first-time in college. Academic achievement will be measured by cumulative grade point average (GPA) and number of credits earned at the end of the first academic year. In order to control for extraneous variables, data will be collected for race/ethnicity, gender, low-income status (Pell Grant recipient), and SAT scores. I am writing to request permission to collect the data for my study for the student population defined as first-generation, first-time college students seeking a bachelor’s degree enrolled during the 2009, 2010, 2011, and 2012 academic years. I am not requesting the names or any identifiable information for the students enrolled in the university. Thank you for considering my request. If you choose to grant permission, please provide a signed statement on approved letterhead indicating your approval to be sent to me through email at rcarey2@liberty.edu.
Appendix B: Data Request Approval

DATE: January 8, 2015

TO: Alisha (Renee) Carey, [redacted]
    Doctoral Candidate
    Liberty University

SUBJECT: Data Request for Dissertation

I am responding to your request of December 20, 2014 for data to be used in your dissertation research project *Dual Enrollment: An Integration Strategy For College Persistence And Achievement Among First-Generation*. I understand that the purpose of this causal-comparative, ex-post facto study is to explore possible relationships among participation in dual enrollment, persistence, and academic achievement of first-generation, first-time college students at one 4-year public university located in Georgia. For the purposes of this study, persistence will be defined as students who enrolled in the fall following their fall enrollment as first-time in college. Academic achievement will be measured by cumulative grade point average (GPA) and number of credits earned at the end of the first academic year. In order to control for extraneous variables, data will be collected for race/ethnicity, gender, low-income indicator (e.g., Pell Grant eligible), and SAT scores.

The Institutional Effectiveness (IE) office at [redacted] will provide you with an Excel file of first-generation, first-time college students seeking a bachelor’s degree enrolled during the 2009, 2010, 2011, and 2012 academic years. Students will not be individually identifiable in the data set provided to you. Before releasing the data file to you, the IE office will create a pseudo identification number for each student in the file. The IE office will retain a crosswalk of pseudo identification number to actual student identification number. You will not receive any individually identifiable data such as name or actual student identification number. The dataset will include the following variables: Pseudo identification number; Semester of entry (fall 2009, fall 2010, fall 2011, or fall 2012); Return next fall (yes/no); SAT score; ACT score; Low Income Indicator (e.g., Pell Grant eligible); Race/Ethnicity; Gender; Hours earned through dual enrollment; Hours earned through spring of first year; Cumulative GPA at end of spring of first year; High school graduation date.

I respectively request that throughout your dissertation and in any related presentations or publications you use a pseudonym (e.g., ABC University) rather than referring to [redacted].

I look forward to the results of your study.
Appendix C: IRB Approval

May 14, 2015

Alisha Renee Carey
IRB Application 2220: Dual Enrollment: An Integration Strategy for College Persistence and Achievement among First-Generation Students

Dear Renee,

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 you do not plan to obtain and utilize 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,

[Signature]
Fernando Garzon, Psy.D.
Professor, IRB Chair
Counseling

(434) 592-4054

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