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by

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In Plain Sight: An Analysis of First-Generation Student Academic Success in a University Administered Dual Enrollment Program

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**In Plain Sight: An Analysis of First-Generation Student Academic
Success in a University Administered Dual Enrollment Program**

by

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Dedication

This effort is dedicated to the two loves of my life.

To my wife and best friend Mary Helen, your steadfast love and support throughout our life together has served as my strength and inspiration. I cannot begin to repay your unfaltering patience, your many sacrifices, or your willingness to simultaneously challenge and encourage me to be more than I ever imagined.

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It is my hope that this work might, in some small way, inspire you.

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In Plain Sight: An Analysis of First-Generation Student Academic Success in a University Administered Dual Enrollment Program

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Supervisor: Victor B. Sáenz

In 2000, the Texas Higher Education Coordinating Board adopted *Closing the Gaps by 2015: The Texas Higher Education Plan*, a blueprint to minimize educational gaps in Texas. This plan called for the expansion of early college intervention programs across the state. Since that time, a number of programs have been established that offer both college experience and the opportunity to earn college credit. Throughout the implementation of these programs, questions of rigor have persisted, as have uncertainties about how these programs might provide a true college experience. This is especially true for Texas' underrepresented student populations. In light of these questions, a four-year university has developed a unique dual enrollment program that offers both the benefits and rigor of courses offered to on-campus first-year university students. Get Ready Today, a pseudonym, provides dual enrollment courses to students across the state.

Through quantitative analysis of extant data, this dissertation sought to better understand the enrollment of first-generation students in Get Ready Today, examining if these students had significantly different academic outcomes as a result of participation in the program when compared to their non-first-generation peers. Secondly, this dissertation examined the Get Ready Today first-generation population in comparison to

comparable control samples of first-generation students who both did and did not participate in other early college intervention programs. These control samples were developed through Propensity Score Matching. The results of the quantitative analysis were reviewed through a framework of Stanton-Salazar's (2011) theories on student social capital development, and their impact on Tinto's (1993) theories of student departure. The resulting findings have implications for the continued development and continuous improvement of early college intervention programs across the state.

Table of Contents

List of Tables	xvii
List of Figures	xviii
Chapter 1: Introduction	1
Statement of the Problem.....	3
Dual Enrollment.....	5
Purpose of the Study	7
Get Ready Today	8
Research Questions.....	9
Research Design	10
Addressing the Research Questions.....	11
Definition of Terms	12
Limitations and Delimitations	14
Assumptions	15
Significance of the Study	15
Organization of the Study	17
Summary	17
Chapter 2: Review of the Literature	18
Historical Background.....	18
Demographics	22
Impact on Society	26
Texas Higher Education Policy	29

Part-time enrollment	29
First-generation Students	29
Characteristics.....	30
Influence of family.....	31
Financial issues	33
Transition to college	34
Strengths	35
Challenges.....	37
First-generation family characteristics.....	40
Preparation for college.....	41
Academic and campus experiences	43
Dual Enrollment.....	44
Performance of Dual Enrollment Programs.....	46
First-generation Students in Early College Intervention Programs	48
Exposure	50
Relationships.....	52
Theoretical Frameworks	54
Social Capital	55
Impact of relationships on social capital development	57
Influencers	58
Theories of student departure.....	59
Summary and Analysis	63

Chapter 3: Methodology.....	68
Research Questions.....	68
Research Design	72
Study Sample	74
First-generation Status Identification.....	75
Get Ready Today survey data.....	75
ApplyTexas	76
Demographics	77
Variables	80
Independent variables	80
Dependent variables.....	82
Data Analysis.....	85
Correlation Analysis	85
Non-first-generation student grade correlation.....	86
First-generation student grade correlation	86
Mean response by first generation status <i>t</i> -test.....	86
Multivariate Analysis of Variance	87
Assumptions of MANOVA	87
Research Question 1 and 2: MANOVA.....	88
Research Question 2 and 3: Propensity Score Matching	89
PSM data preparation.....	91
Selection of covariates	92

Matching	96
Research Question 3 and 4: <i>t</i> -tests	99
Limitations	101
Summary	102
Chapter 4	103
Descriptive Analysis	103
Pearson Correlation – Social Capital Development.....	104
Non-first-generation Student Grade Correlation	104
First-generation Student Grade Correlation	105
Mean Response by First-generation Status <i>t</i> -test.....	107
Research Question 1 – High School Academic Performance.....	110
Multivariate Analysis of Variance on High School Grade	110
Multicollinearity	110
Paired Samples <i>t</i> -tests – High School Grade	113
Research Question 2 – College Academic Performance	116
Multivariate Analysis of Variance on College Grade.....	116
Paired Samples <i>t</i> -tests – College Grade	118
Research Question 3 – No Early College Intervention.....	121
Independent Samples <i>t</i> -tests – SAT®	121
Independent Samples <i>t</i> -tests – Graduation Type	122
Research Question 4 – At Least One Early College Intervention	123
Independent Samples <i>t</i> -tests – SAT®	123

Independent Samples <i>t</i> -tests – Graduation Type	123
Summary	124
Chapter 5: Discussion and Recommendations	126
Dual Enrollment.....	126
Get Ready Today	127
Purpose	127
Research Questions.....	128
Methodology	129
Summary of Major Findings.....	131
Major Finding #1	132
Major Finding #2	133
Major Finding #3	134
Major Finding #4	135
Implications for Practice, Policy, and Theory	136
Practice.....	137
K-12 practitioners	137
Higher education practitioners.....	138
Policy	139
Theory	141
Limitations	144
Future Research	146
Concluding Thoughts.....	148

Appendix	150
References	151

List of Tables

Table 3.1	Summary of Methods Used to Address the Research Questions.....	72
Table 3.2	Listing of Study Variables	83
Table 3.3	Baseline Characteristics of First-generation Student in the Propensity Score Pre-match Sample	94
Table 3.4	Analysis of Maximum Likelihood Estimates	96
Table 3.5	Baseline Characteristics of First-generation Student in the Propensity Score Post-match Sample	98
Table 4.1	Pearson Correlation Coefficients – Non-first-generation Students ...	105
Table 4.2	Pearson Correlation Coefficients – First-generation Get Ready Today Responders	106
Table 4.3	Comparison of Correlation Coefficients.....	107
Table 4.4	Sample Descriptives Using t-test for Equality of Mean Survey Responses.....	109
Table 4.5	Pearson Correlation Coefficients	111
Table 4.6	Multivariate Analysis of Variance	112
Table 4.7	Tests of Between-Subjects Effects.....	113
Table 4.8	Paired Sample’s t-test results – High School Grade Comparison.....	115
Table 4.9	Pearson Correlation Coefficients	116
Table 4.10	Multivariate Analysis of Variance	117
Table 4.11	Tests of Between Subjects Effects.....	118
Table 4.12	Paired Sample’s t-test results – High School Grade Comparison	120

List of Figures

Figure 2.1	Percentage of Hispanic representation of the 2050 Texas population by age range.....	23
Figure 2.2	Various facts about the growth of early college intervention programs in Texas	25
Figure 2.3	Theoretical framework model for analyzing first-generation, Get Ready Today participant academic outcomes	66
Figure 3.1	First-generation status sample size by source	77
Figure 3.2	Gender distribution by first-generation status	78
Figure 3.3	Race distribution by first-generation status	79
Figure 3.4	Ethnicity distribution by first-generation status	80
Figure 3.5	Control sample development process	93
Figure 3.6	Pre-match sample distributions	97
Figure 3.7	Post-match sample distributions.....	97

Chapter 1: Introduction

The dual enrollment program provides an opportunity for minority and first-generation students to learn about colleges and improve their study skills, and it gives them more information about the process of attending college. The dual enrollment program provides the best kind of outreach available—outreach that offers academic enrichment and inspires students to excel. (Hugo, 2001, p. 72)

Often hidden in plain sight, first-generation students, the first in their family to attend college, may be found in every community across Texas. First-generation students often share a number of common characteristics, yet are not entirely similar. Pervasive within this population are a number of dissimilar social, economic, academic, ethnic and racial factors that serve to both positively and negatively influence their educational progress. With no parental college experience to serve as a guide, first-generation students must navigate their educational journey in relative solitude, maximizing their strengths and minimizing their weaknesses, searching for guidance and opportunity.

Throughout their educational journey, first-generation students encounter personal and systemic barriers to academic achievement. It is thus ironic that in order to become successful in academic endeavors, first-generation students must utilize both personal and systemic resources to overcome these barriers. Fortunately, engaging the right combination of individual strengths and institutional support systems may prove to be a positive first-step in paving the path to and through college for these students.

The absence of strength-based models will be seen throughout this study. Despite existing literature focused on first-generation student strengths, a majority of studies into the experiences of first-generation students are based upon a deficit perspective. This may stem from a lack of adequate measures to identify and highlight strengths. While this study sought to identify programmatic traits that exploit first-generation student strengths, much of the supporting literature is often based upon student deficits. This is refuted where possible.

Through the design and implementation of specialized academic programs, institutions seek to provide greater exposure, experience, and guidance to first-generation populations. Building upon identified student strengths, these programs endeavor to empower first-generation students to greater engagement, self-advocacy, and aspiration. Dual enrollment programs, while not often designed to specifically address the needs of first-generation students, hold the promise of providing both exposure and guidance while also offering an opportunity to earn college credit while still in high school.

In the dual enrollment classroom, students are able to complete a college level course while still enrolled in high school, earning both high school and college credit. Within this classroom, students are exposed to the college experience in a microcosm, allowing them to practice college skills earlier in their academic career, providing key exposure to the realities of higher education. The dual enrollment classroom, thus affords a positive introduction to college, providing both experience and knowledge of the expectations of college coursework in a controlled, supportive environment. Less, however, is known about the impact of dual enrollment participation on first-generation

populations. In this study, a sample of both first-generation and non-first-generation students enrolled in a university administered dual enrollment program were examined to determine if course participation might offer any statistically significant level of benefit to first-generation students in comparison to their non-first-generation peers. In addition, this study also sought to examine first-generation students enrolled in dual enrollment courses in comparison to two control samples of similar first-generation students who both did and did not participate in other early college intervention programs.

Statement of Problem

By definition, first-generation students are students who come from homes where neither parent, nor guardian, has ever attended college (Pascarella, Pierson, Wolniak, & Terenzini, 2004; Terenzini, Springer, Yaeger, Pascarella, & Nora, 1996; 2012; Warburton, Bugarin, & Nuñez, 2001), giving them no opportunity to learn about college through the experience of their parents. A lack of experience and exposure to the realities of college preparation, application, and enrollment puts first-generation students at high risk of foregoing participation in higher education (Engle, Bermeo, & O'Brien, 2006; Pyne & Means, 2013). Various factors may serve to actively discourage first-generation students from advancing their academic careers, making them less likely to perform well in school, take college preparatory coursework, consider college enrollment, or to apply to college (Balemian & Feng, 2013; Engle et al., 2006; Warburton et al., 2001).

Nationwide, first-generation students make up approximately 19.6 percent of all new first-time, full-time college students, down from 21.5 percent in 2000 and 28.2 percent in 1990 (Eagan et al., 2015). In Texas, however, estimates of first-generation

student representation are as high as 40 percent (You & Potter, 2014). In 2011, both the University of Texas System and the Texas A&M University System reported first-generation, first-year populations of 24 percent and 26.5 percent respectively at their flagship campuses (Data and Research Services, 2015; Office of Institutional Reporting, 2016). Regional campus percentages vary, but the University of Texas at El Paso estimated their percentage of first-generation first-year students in the 2014-2015 class at over 50 percent (UTEP, 2015). As these measurements only consider those first-generation students who matriculate to the institutions, it is likely that the true percentage of first-generation students enrolled in Texas' high schools is higher.

As a partial response to this need, the Texas Higher Education Coordinating Board (THECB) developed the *60x30TX* plan in 2015 as a follow-up to the completion of *Closing the Gaps: The Texas Higher Education Plan* (Texas Higher Education Coordinating Board, 2015a). The overarching goal of this new program was to accelerate Texas higher education systems to serve as a national exemplar. The program has four basic targets that include increasing the percentage of 25-35 year old Texans with postsecondary credentials from the current 38 percent to 60 percent by 2030. The second basic target will be to increase the number of Texans who earn a certificate, associate, or bachelor's degree to 550,000. A third basic target will be to guarantee that all graduates will gain quantifiable and saleable skills. The final basic target will be to control student debt, maintaining it at less than 60 percent of first-year earnings.

To accomplish the goals of *60x30TX*, the THECB sought to grow and intensify education partnerships. An example includes the alignment of two- and four-year

institutional academic programs and promoting more efficient transfer policies. A proposed the expansion of partnerships between higher education and K-12 to improve college readiness for all students is also included. This involved the expansion and continuous improvement of early college intervention programs across the state.

Student success in the postsecondary environment has been a continuing topic of concern among higher education leaders, policymakers, and advocates. In an effort to expose a greater number of students to college level coursework, the State of Texas has expanded the number and type of early college intervention programs that offer experience and credit. Among these programs are a growing number of dual enrollment programs of various type and quality level. With a substantial number of first-generation students participating in these programs, it becomes necessary to determine the benefits, if any, that dual enrollment programs might have for this population. It thus becomes necessary to determine if there is a significant relationship between participation in a dual enrollment program and first-generation academic success.

Dual Enrollment

While dual enrollment programs have proliferated across the United States, lower-achieving, underrepresented, and first-generation populations have not taken advantage of these programs (An, 2015; Hugo, 2001). Lack of awareness, encouragement, and reluctance to undertake the challenge that dual enrollment courses represent, often work in tandem to discourage enrollment (Atherton, 2014). This is unfortunate as first-generation students, much like other underrepresented groups may benefit from the guidance, experience, and increased social confidence gained through

participation in dual enrollment (Lukes, 2014a; O'Conner & Justice, 2008a). These students may benefit from completion of dual enrollment programs through increased likelihood of retention into the second year of college (Allen & Dadgar, 2012; An, 2013; Karp, Calcagno, Hughes, Jeong, & Bailey, 2007) and persistence to graduation (Swanson, 2008).

Research has shown that a majority of students who choose dual enrollment courses come from populations with higher assessment scores (Thomas R. Bailey, Hughes, & Karp, 2002; Contreras, 2011). These populations generally benefit from the support and advice gained from parents who have experience in the college environment (Terenzini et al., 1996). A clear separation therefore exists between students with higher assessment scores and students with lower assessment scores, this is especially true for first-generation students (Struhl & Vargas, 2012). There are many factors in play here, including race, ethnicity, and socio-economic status. These factors may work in tandem to create alterative experiences that may not be conducive to college enrollment. Importantly Struhl and Vargas' finding may indicate that current systems of assessment do not adequately measure the ability of students from underrepresented populations.

Research into the benefits of dual enrollment programs as both academic and emotional groundwork exists throughout the body of knowledge (Allen & Dadgar, 2012; An, 2013, 2015; Thomas R. Bailey et al., 2002; Cowan & Goldhaber, 2015; Hugo, 2001; Karp et al., 2007). Unfortunately, there is little research specific to the relationship between dual enrollment and first-generation students, as the prevailing research has focused on overall dual enrollment student populations. Some studies have found that

dual enrollment increases engagement across populations (Allen & Dadgar, 2012), while also increasing awareness of college culture and expectations among underrepresented populations (Hugo, 2001). Existing research into the benefits of dual enrollment programs for first-generation students is both restricted and narrow. Buzynski (2011) and Loftin (2012) found that first generation college students in Iowa and Arkansas who completed dual enrollment coursework earned higher grades and were more likely to persist to the second year of college when compared to first-generation students who did not participate in dual enrollment. Both studies examined statewide first-generation populations in dual enrollment programs, without regard to specific dual enrollment program characteristics. While these studies show that dual enrollment is beneficial to first-generation students, they do not address the benefits that first-generation students are likely to experience from participating in a structured, university administered dual enrollment program.

Purpose of Study

The purpose of this study is to inform both policy and process in the development and continuous improvement of early college intervention programs to improve academic success in first-generation student populations in Texas. This study sought to determine if first-generation students participating in a university administered dual enrollment program have significantly different academic outcomes in comparison to their non-first-generation peers, as well as in comparison to other first-generation students. This analysis of first-generation student response to early college intervention programs, specifically dual enrollment programs, could inform parent, teacher, administrator, and policymaker

decision making, assisting in the development of more effective intervention strategies and programming. Texas' evolving demographics call for a specialized study to better understand the relationship between dual enrollment programs and first-generation achievement.

Throughout the remainder of this document the designated university administered dual enrollment program will be identified under the pseudonym *Get Ready Today*.

Get Ready Today

The focus of this study was on first-generation students enrolled in the Get Ready Today dual enrollment program. Get Ready Today is a credit based transition program identified as a Singleton type. As a Singleton type program, Get Ready Today is offered as an elective, supplementing high school curricula while exposing students to college coursework (T.R. Bailey & Karp, 2003). This program adheres to the first-year student program of study and is delivered to students statewide through a combination of on-site teaching by trained high school teachers and a proven online learning component. Get Ready Today offers face-to-face instruction combined with online materials, activities, and direct services from university faculty and staff to support both students and teachers. Students enrolled in Get Ready Today experience the challenge of college-level coursework, preparing them for future success by providing exposure to the challenging curriculum students will encounter in college. At the time this study was completed, Get Ready Today offered courses aligned with Texas College and Career Readiness Standards developed by the THECB.

Of the approximately 3,500 students enrolled in Get Ready Today for the 2015-2016 academic year, approximately 20 percent self-identified as first-generation. Student-level data from state agency sources allowed this study to more reliably identify first-generation students enrolled in Get Ready Today, making it possible to examine first-generation student academic success. The sample of first-generation students within Get Ready Today represents an opportunity to learn more about how these students might benefit from participation in a structured and innovative dual enrollment program.

Research Questions

The following research questions guided this study:

RQ1: What significantly different outcomes in high school academic performance exist for self-identified first-generation students who participate in Get Ready Today in comparison to their non-first-generation peers?

RQ2: What significantly different outcomes in Get Ready Today college grade performance exist for self-identified first-generation students who participate in Get Ready Today in comparison to their non-first-generation Get Ready Today peers?

RQ3: What significantly different outcomes in academic performance exist for self-identified first-generation students who participate in Get Ready Today in comparison to a representative sample of first-generation students who did not participate in other early college interventions including Get Ready Today, Advanced Placement, International Baccalaureate, early college high schools, or dual-credit?

RQ4: What significantly different outcomes in academic performance exist for self-identified first-generation students who participate in Get Ready Today in comparison to

a representative sample of first-generation students who did participate in other early college interventions including Advanced Placement, International Baccalaureate, early college high schools, or dual-credit?

Research Design

Through quantitative analysis of extant data, this study sought to better understand the academic outcomes for a sample of first-generation students in a specific dual enrollment program, examining if these students had significantly different academic outcomes as a result of participation in the program when compared to their non-first-generation peers. Secondly, this study examined a sample of Get Ready Today' first-generation students in comparison to a comparable control sample of first-generation students who both did and did not participate in other early college intervention programs. This study included correlation, significance, and regression analysis. The study also employed propensity score matching in the development of a control sample of first-generation students who did not participate in Get Ready Today. The results of the quantitative analysis were then reviewed through a theoretical framework that included theories on social capital development and theories of student departure. In examining social capital, Stanton-Salazar's (2001, 2011), theories on social capital and social network development as a means to reduce social inequality served as a primary guide. The theoretical framework also incorporated the social capital and key influencer theories of Attinasi (1998), Conley (2005), Contreras (2011), Cowan and Goldhaber (2015), and Thomas (2002). In examining student departure theory, both Tinto (1975, 1987, 1993) and Bean and Eaton's (2001) theories served as primary guides. Additional departure

theories including Astin (1984), González, Moll, & Amanti (2005), Rendon (1994), and Tierney (1993) also informed this study.

Addressing the Research Questions

A number of statistical tests were utilized to examine first-generation student academic outcomes in comparison to other groups. A combination of multivariate analysis of variance (MANOVA) tests, *t*-tests, and regression analysis were performed. To address Research Question 1, MANOVA was utilized to determine if significant differences existed between first semester high school grade, second semester high school grade, and the algebraic difference between first semester high school grade and second semester high school grade for first-generation students in comparison to their non-first-generation peers. Results of the MANOVA led to further testing utilizing *t*-tests. The power of the *t*-tests was determined through calculation of Cohen's *d*. Research Question 2 was similarly analyzed utilizing MANOVA to determine if significant differences existed between mid-semester college grade, final college grade, and the algebraic difference between mid-semester college grade and final college grade for first-generation students in comparison to their non-first-generation peers. The results of the MANOVA led to additional *t*-tests. Once again, the power of the *t*-tests was determined through the calculation of Cohen's *d*.

To address Research Questions 3 and 4, this study utilized propensity score matching (PSM), to develop two separate control samples of first-generation students who did not participate in Get Ready Today from specific school districts in Texas. All school districts that participate in Get Ready Today as well as adjacent districts were used

to develop a preliminary pool of students to be used in PSM. The PSM process was used to create two separate control samples of students. The first sample included first-generation students who did not participate in Get Ready Today or any other type of early college intervention. The second sample included first-generation students who completed at least one early college intervention not including Get Ready Today.

After identifying a series of suitable covariates from the literature, a propensity score equation was developed through logistic regression. This equation was then utilized to score each student in the control pools. The students were then matched to the original Get Ready Today test sample using nearest neighbor matching with replacement. The result was two closely matched control samples. PSM was utilized to overcome selection bias for first-generation students who have self-selected into Get Ready Today. Once the control samples were identified, paired-samples *t*-tests were performed to determine if there were any significant differences in both SAT[®] score and mean graduation type score for Get Ready Today first-generation students in comparison to the first-generation control samples. Graduation type is based on a TEA defined rating of the difficulty of the curriculum taken by each student.

Definition of Terms

The following terms will appear throughout this study:

Advanced Placement[®]: a program created by the College Board, which offers college-level curricula and examinations to high school students.

Concurrent enrollment: a situation where students are enrolled in two or more institutions at the same time often earning credit at both institutions. This may also be referred to as

dual enrollment.

Dual enrollment: a college preparatory program that allows high school students to enroll in college level coursework, often leading to college credit, while still enrolled in high school. In many cases, students receive both high school and college credit through completion of the dual enrollment course but this is not always the case.

Early College High School: Developed in cooperation with a postsecondary institution, these high schools offer students the opportunity to earn up to 60 hours of college credit as part of their high school curriculum.

Early College Intervention: Programs designed to provide both college experience and coursework to high school students, often resulting in both high school and college credit. Examples include Advanced Placement[®], International Baccalaureate[®], Dual Credit, Dual Enrollment, Early College High School.

First-generation: Students, neither of whose parents or guardians has ever attended a postsecondary institution.

Get Ready Today: a pseudonym for a dual enrollment program administered by a university.

International Baccalaureate[®]: is a two-year educational program that provides an internationally accepted curriculum of instruction for entry into higher education and can lead to credit at universities worldwide.

Propensity Score Matching (PSM): a statistical matching technique that estimates the effect of a treatment through examination of covariates that best predict receiving the treatment.

Limitations and Delimitations

This study had a number of anticipated limitations. The first identified limitation is based on the study sample. By limiting the study to a unique Texas dual enrollment program, the results of the study may not be generalized to the overall population of Texas students in dual enrollment programs. The results, however, may serve to inform how other early college interventions programs, and especially dual enrollment programs, might design their programs to better serve first-generation students. A second limitation was the limited availability of academic performance data, specifically the availability of college performance data. As a result, this study was forced to utilize standardized admissions tests to measure academic performance. This is not ideal, as these admissions tests are not designed to measure achievement. In addition, standardized admission tests may only measure academic achievement at a single point in time, not truly taking into account the academic gains made through dual enrollment participation. A final limitation is the direct result of the use of propensity score matching to create control samples of first-generation students. A completely randomized sample would have been the ideal choice for this study. However, this was not possible and because of the high risk of self-selection bias in the Get Ready Today sample, the development of appropriate comparison samples of first-generation students required careful consideration and design of the PSM process.

This study also had a number of delimitations. Primarily, the decision to focus on a specific dual enrollment program, rather than examine dual enrollment programs statewide led to difficulties with sample sizes, but was necessary as the study sought to

measure the level of benefit, if any, that students received as a result of enrollment in the specified program. Another delimitation is based upon the decision to include students enrolled in all academic programs offered by Get Ready Today. This decision was made to both maximize sample size and to examine the programmatic effects of Get Ready Today rather than the specific effects of each academic program. The final delimitation is based on the examination of first-generation students within the designated dual enrollment program. While a larger, longitudinal study of first-generation students might be preferable, in this situation, the study of first-generation students within a specific dual enrollment program offered the opportunity to examine the significance of benefits that first-generation students might gain in comparison to non-first-generation students within the same treatment conditions.

Assumptions

This study assumed that student self-reported information provided through Get Ready Today surveys and state forms were reliable. The use of extant data and cross-referencing with datasets from various sources by this study served to minimize the impact of unreliable data. It was also assumed that the sample of available data is representative of the overall population. As more detailed examination was made, sample sizes decreased. Once again, the use of multiple data sources was utilized to maximize sample sizes.

Significance of Study

With drastic population changes already taking place and more predicted for the future, the State of Texas has focused efforts on addressing the educational needs of its

increasingly underrepresented population. Within this population exists a subset of first-generation students who must navigate the education pipeline with little to no exposure, or assistance. With low rates of college enrollment, first-generation students often require high levels of support and encouragement to embark upon the journey to higher education (Blackwell & Pinder, 2014; Engle et al., 2006; Pascarella et al., 2004; Terenzini et al., 1996; Winkle-Wagner, 2011). As the number of early college intervention programs offered across Texas increases, it is important to explore the relationship between program participation and completion and first-generation student academic outcomes.

Through a combination of encouragement and legislation, early college intervention programs, including dual enrollment programs have multiplied across the state. While often offering a convenient opportunity to earn college credit, in question is the effectiveness of dual enrollment programs in truly preparing students for college coursework. To address these concerns, Get Ready Today offers a university administered dual enrollment program, based on college curricula, taught by trained instructors and aligned to the academic expectations the university. This study sought to determine if significant relationships exist between Get Ready Today completion and student academic outcomes. These measurements may assist in validating the effects of Get Ready Today' unique programmatic offerings and providing greater insight into solutions to the challenges faced by first-generation students in Texas.

Organization of Study

The next chapter will evaluate the current literature regarding first-generation student traits and challenges, dual enrollment program characteristics and benefits, and present the theoretical framework that guided this study. The third chapter will present details of the research methodology utilized in determining the significance of relationships between Get Ready Today completion and first-generation student academic performance. Chapter four will discuss the results of the analyses and address the issues identified by the research questions. The fifth chapter will provide a discussion of the results and provide context for the research and next steps.

Summary

This chapter introduced the realities of Texas' first generation college student population, discussing their strengths and weaknesses in navigating academic challenges. Also discussed was the role of dual enrollment in preparing students for college and the ability of dual enrollment to specifically address the needs of first-generation students. An introduction to the problem and guiding research questions was provided, as was a summary of research methods. Commonly used terms were defined and study limitations, delimitations, and assumptions were identified. The chapter concluded with a discussion of the significance of the study in real-world application and a short discussion of the organization of the study.

Chapter 2: Review of the Literature

In selecting the literature strands that might best inform this study, a primary focus was placed on developing a greater understanding of first-generation student characteristics, seeking insight into demographic, and socio-economic traits and challenges that persist in this population. As first-generation status is so closely aligned with familial status, research into the characteristics of first-generation families helped to inform this study. Another major literature strand focused on the characteristics and enduring challenges of first-generation students in academic settings. Additionally, explorations into literature regarding dual enrollment, Texas higher education policy, and early college intervention history were made to support this study.

What follows is a presentation of the literature surrounding the history, evolution, and impact of dual enrollment programs. This includes specific, if sometimes limited, research into outcomes for first-generation and underrepresented populations, as well as discussions into the collateral benefits of dual enrollment programs. These include the impact of relationships within the dual enrollment classroom, the influence imparted by peers and mentors, and the outcomes associated with increased exposure to the realities of college. The chapter concludes with a discussion of the theoretical frameworks that guided this study including social capital development theory and its relationship to student departure theory.

Historical Background

The State of Texas has maintained strong economic growth for over thirty years. A combination of business friendly legislation, high availability of land and resources has

led to job and population growth (McNichol & Johnson, 2012). Much of the employment growth is a result of the availability of an educated workforce within the state (Calnan, 2016). Continued economic success is threatened by a widening gap between older, predominantly White Texans and a younger, growing, population of Texans from traditionally underrepresented groups who have been unable to achieve similar levels of academic achievement. (Potter & Hoque, 2014).

Building a stronger Texas workforce through education is a priority that was set by the state legislature in 2000 (Texas Higher Education Coordinating Board, 2005). Since then efforts to expose Texas' high school students to college level preparatory coursework have come in a number of forms. In 2000, the THECB adopted *Closing the Gaps by 2015: The Texas Higher Education Plan*, a plan to minimize educational gaps in Texas as well as between Texas and comparison states (Texas Higher Education Coordinating Board, 2005). Two basic targets of *Closing the Gaps* were to increase participation in Texas higher education and to significantly increase the number of degrees awarded. *Closing the Gaps* specifically proposed increasing overall enrollment in degree and certificate programs from 5 percent to 5.7 percent, an increase of over 500,000 students, by 2015.

To achieve these targets the plan called for the alignment of curriculum and partnership friendly policies that promoted the development of college preparatory and credit granting programs. Expansion of existing programs including Advanced Placement[®] and International Baccalaureate[®] were encouraged resulting in their current availability in over 23 percent of Texas high schools (Texas Education Agency, 2015).

In addition, many dual enrollment and dual credit programs were designed and implemented and ultimately provided coursework to over 100,000 students in 2014, up from 17,784 in 2000 (Texas Higher Education Coordinating Board, 2014b). In 2005, the state approved the development Early College High Schools, campuses that allow those students least likely to attend college an opportunity to earn both a high school diploma and 60 college credit hours. Since 2005, early college high school programs have expanded to over 100 campuses in Texas with another 44 schools designated as Early College High School campuses for the 2016-2017 academic year. Much of the growth in credit granting programs can be credited to the passage of House Bill 1 (HB1) during a special session of the Texas Legislature in 2006. HB1 mandated that all Texas school districts must provide an opportunity for students to earn at least 12 hours of college credit while still enrolled in high school ("Tex. H.B. 1," 2006). Since the passage of HB1 and its codification in the Texas Education Code ("Texas Education Code," 2015) expansion of credit granting programs has continued such that the Texas Education Agency (2015) reported that over 97 percent of Texas' public high school students now have access to some kind of college preparatory or college level coursework while still attending high school. The bill has resulted in a proliferation of early college intervention programs designed for high school students. In addition to traditional offerings including Advanced Placement[®] and International Baccalaureate[®], high schools across Texas now offer a number of unique dual credit, dual enrollment, and early college high school programs (Texas Higher Education Coordinating Board, 2014b). Each of

these programs is different in scope and process, yet each program yields an opportunity to experience college level coursework and earn college credit.

With an increase in the availability of early college intervention programs, more and more Texans have been able to complete advanced coursework while still in high school. Unfortunately, Texas' underrepresented student populations have not participated in these programs at a representative level. The Texas Education Agency (2015), reported that in 2013, 31.4 percent of Texas' high school students completed at least one advanced course, up from 24.6 percent in 2010. Texas' high school students from underrepresented populations, however, participated in advanced courses at lower levels, with only 27.2 percent of Hispanics and only 24.0 percent of African-American students completing advanced coursework in 2013. A longitudinal study of Texas high school students enrolled in advanced coursework did find increased completion percentages for all ethnic groups between 2005 – 2013 but reported statistically significant differences in the achievement gaps among ethnic groups with large disparities between completion rates for White and Asian students in comparison to Black and Hispanic students (Fowler, Combs, Slate, & Moore, 2014).

The overall increase in completion percentage helped *Closing the Gaps* to be considered successful in reaching its 2015 goals (Texas Higher Education Coordinating Board, 2015b). With the efforts identified in *Closing the Gaps* coming to an end, the THECB later developed the *60x30TX* plan that proposes an increase in student completion to a total of 550,000 Texans with degrees or certificates by 2030 (Texas Higher Education Coordinating Board, 2015a). In order to reach this goal, the THECB

(2010) identified that increasing completion in Texas' postsecondary education would require increases in enrollment by historically underserved populations and specifically identified first-generation students as a key student block.

Demographics

Demographic and economic factors have been the driving force behind the development of these initiatives. According to Potter & Hoque (2014) of the Texas State Data Center, between 2010 and 2015, Texas was expected to add almost three million more children under age 18, and one million more adults between the ages of 18-20, the traditional college age population. Throughout this timeframe, the number of Texans between the ages of 25 and 64 expanded to almost 7 million, while the numbers of those over 65 grew to more than 5 million. Despite the increase in the number of children and young adults, the percentage of people age 24 and younger dropped, from 37 percent to 33 percent. At that same time, people over the age of 65 grew from 10 percent to 19 percent of the Texas population. As a result, Potter & Hoque (2014) project that by 2050 the state will not only go from majority-Anglo to majority-Hispanic but will also experience a significant change in age differential throughout the population. At that time, up to 63 percent of children under 18, 61 percent of adults between 18 and 24, and 56 percent of adults 25 to 44 will be Hispanic. In comparison, only 41 percent of those 65 and older will be Hispanic. The African-American population will remain relatively stable, at 9 percent to 11 percent of each age group. As a result, the Texas economy will thus more heavily depend on the educational attainment of the non-white population, and more specifically, its Hispanic population. A population that has historically struggled

with low-SES, low educational achievement, and larger numbers of dropouts and first-generation families (Bordoloi, 2015; Contreras, 2011). It is thus unlikely that the economic needs of the state will be met through current educational means.

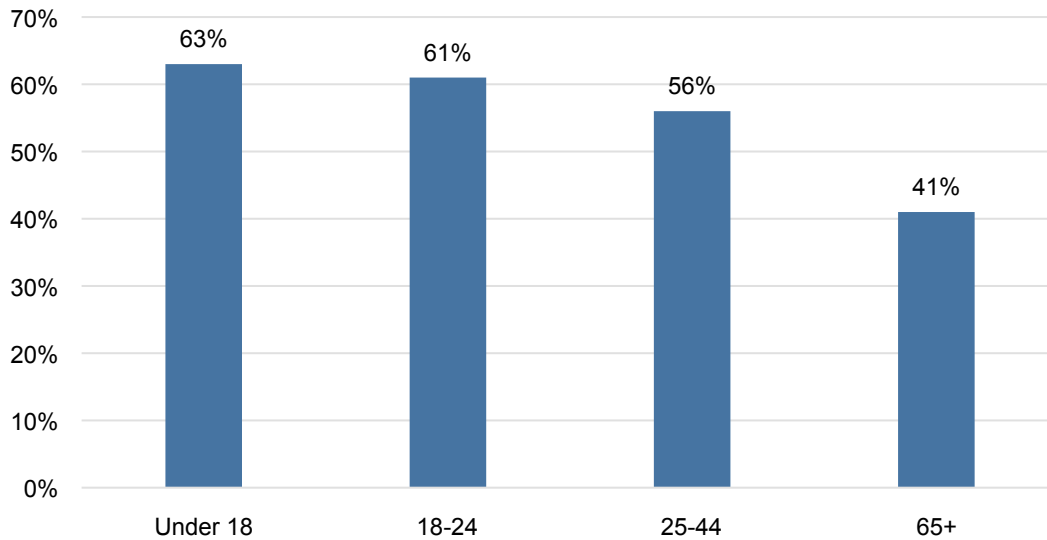


Figure 2.1. Percentage of Hispanic representation of the 2050 Texas population by age range.

The Texas economy, much like the national economy requires an educated workforce. As the population becomes more diverse, Texas will need to explore methods for increasing college enrollment, persistence, and graduation among all populations. Research has shown that people who earn bachelor’s degrees earn twice as much as those who have only a high school diploma (U.S. Bureau of the Census, 2010). Beyond lifetime earning potential, a bachelor’s degree also holds the promise of a more secure lifestyle. Degree holders are more likely to hold stable employment, have greater earnings over their lifetime, and contribute to the local and national economy through discretionary spending and taxes (Bowen, 1977; Hansen, 1981; Kim, 2012; Pear, 1992).

In Texas, residents whose highest level of educational attainment is a high school diploma can expect to earn an average annual income of \$20,853 (Texas Workforce Commission, 2014). For students who have earned a bachelor's degree, average annual income increases to \$39,725 (Schneider, 2012). Educational attainment has been found to be a strong indicator of socio-economic status (National Student Clearinghouse Research Center, 2012), indicating that student exposure and completion of higher levels of education may serve as a gateway to the middle class. Jiang, Ekono, & Skinner (2014) found that in Texas, 86 percent of children whose parents did not graduate from high school live in low-SES families, compared to just 33 percent of children whose parents have some college experience. Eighty-six percent of Texas' Hispanic children and 58 percent of Texas' African-American children come from low-SES backgrounds in comparison to just 25 percent of Texas' Anglo children. They also found that over 47 percent of urban kids and 55 percent of rural kids live in low-SES communities. It is thus reasonable to recognize that addressing educational attainment issues as early as possible would greatly benefit these populations, and by extension, the economic future of the state.

At less than 57 percent, Texas currently ranks 41st in the nation in the number of high school graduates advancing to college (Department of Assessment and Accountability, 2016). Kena et al. (2014) reported that the national average for high school graduates taking the next step to college is 64 percent. This difference in percentage of students continuing to college results in lower overall degree attainment. In Texas, only 32 percent of the population aged 25-34 has an associate degree or higher,

less than the national average of 41 percent (Potter & Hoque, 2014; Schneider, 2012; You & Potter, 2014). Even when students do enroll, they take longer to graduate. Less than 60 percent of the nation's first-time students who enrolled at four-year institutions in 2006 completed a bachelor's degree within six years (Kena et al., 2014). In Texas, only 46 percent of the first-time students who enrolled at four-year public universities in 2000 graduated with a bachelor's degree within six years (Texas Higher Education Coordinating Board, 2005). Attainment statistics for the underrepresented populations of Texas are also disappointing with only 32 percent of African Americans and 41 percent of Hispanics graduating from a four-year institution within six years, compared with 59 percent of Anglos (You & Potter, 2014).

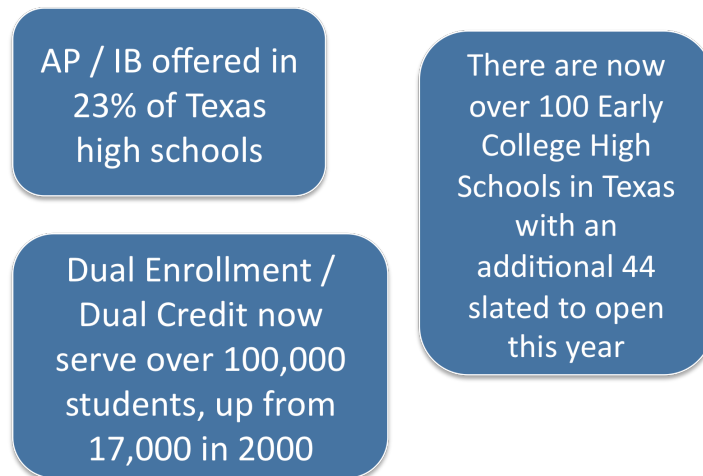


Figure 2.2. Various facts about the growth of early college intervention programs in Texas.

Persistence and completion once enrolled in college are thus major issues for Texas' underrepresented populations. Recognizing that the design and implementation of early college intervention programs that challenge and engage all students are a step towards meeting the state's educational and economic needs, the state has taken action to

promote their development.

Impact on Society

In the U.S., only 31 percent of admitted college freshmen graduate with a bachelor's degree in four years, and just 56 percent graduate in six years (IHEP, 2012). For first-generation students, just 11 percent graduate in six years (Riggs, 2014). Similarly, in Texas, 24 percent of freshmen admitted into a bachelor's degree program graduate within four years, and only 49 percent graduate in six years (Struhl & Vargas, 2012). Texas' first-generation students suffer from much lower graduation rates with only about five percent graduating in six years (Engle et al., 2006).

With these statistics in mind, dual enrollment programs hold the promise of preparing and empowering all students to expand their higher education options by providing a college experience and a supportive environment that encourages a college-going culture. In Texas, high school students who take at least one dual-enrollment course are more than twice as likely to enroll in a four-year college, and almost 50 percent more likely to complete their degree within six years (Struhl & Vargas, 2012). Lower-SES students who complete dual enrollment coursework while enrolled in high school are more successful in college than their lower-SES peers who did not participate in dual enrollment (Karp et al., 2007). Building upon this finding, An (2013) highlights that college students from lower-SES and underrepresented backgrounds achieved higher performance gains in their first year of college after completing dual enrollment coursework in high school than similar students who did not participate.

The Get Ready Today dual enrollment program stands at the nexus of underrepresented, lower-SES, first-generation students and an increased likelihood of degree completion and the subsequent higher lifetime earning potential. Although the link to first-generation students is tenuous, research shows that first-generation students make up approximately 35 percent of the Texas high school student population (Engle et al., 2006) and greater research is necessary to determine the impact of dual enrollment on first-generation students.

The issue of persistence among first-generation students is of great importance. Dual enrollment programs may result in increased rates of college enrollment, but often first-generation students encounter additional barriers across campus that threaten their ability to remain enrolled and complete a degree. Contreras (2011) reported that limited access to preparatory curricula prevents underrepresented students from preparing for college and experiencing the rigors of college coursework. First-generation students are additionally challenged by a lack of knowledge about the college processes and must often find this information outside of the typical classroom (Thomas R. Bailey et al., 2002). Dual enrollment programs help to overcome these issues by providing role models and academic rigor, while fostering positive peer and student-faculty relationships. Access to these relationships is vital for underrepresented students to gain the social capital necessary to support the necessary levels of engagement (Gañdara, 1995; Stanton-Salazar & Spina, 2005).

Partnerships with postsecondary institutions play a large role in exposing first-generation students to higher education (Contreras, 2011). Traditionally, post-secondary

institutions have offered low levels of access including field trips, tours, and visits by college personnel. Dual enrollment provides an immersive college experience, including access to academic programs, teaching, and rigor (Contreras, 2011). Students participating in dual enrollment programs are able to benefit from academically challenging programs while also developing a better sense of their college options, strengthening ambition, and improving their self-perception (Stanton-Salazar & Spina, 2005). Despite criticism of dual enrollment programs for lack of rigor and inconsistency in design and implementation, dual enrollment continues to represent the opportunity to expose students to college realities. This is important because students with above-average experience with postsecondary education options are more likely to pursue research projects, seminars, assistantships, summer programs, field studies, internships, and most importantly mentor relationships (Conley, 2005). First-generation students, however, often enroll in college with great trepidation, often intimidated by the everyday processes associated with college life. First-generation students who enroll at four-year institutions are twice as likely to withdraw when compared to non-first-generation peers (Hoffman & Robins, 2005). First-generation students often work to supplement their income while attending courses, resulting in difficulties with persistence and extending time to degree (Mamiseishvili, 2010). Terenzini et al. (1996) found that first-generation students often work at least part-time to overcome financial difficulties. Other research found that first-generation students' financial status plays an important role in their academic success (Winkle-Wagner, 2011).

Texas Higher Education Policy

Part-time enrollment. According to the Texas Higher Education Coordinating Board (2014a) the public colleges and universities in Texas enrolled over 1.4 million undergraduate and graduate students in 2013. They reported that 81 percent of Texas' undergraduate students have chosen to enroll in Texas' two-year institutions, an increase from 76 percent in 2000 (Texas Higher Education Coordinating Board, 2005). The remaining 19 percent of students in the 2014 study enrolled in four-year institutions. While the number of two-year students has outpaced four-year totals, students enrolled in four-year institutions are more likely to enroll full-time with approximately 55 percent of Texas' four-year undergraduates classified as full-time students while only about 33 percent of Texas' two-year undergraduate students classified as such (Texas Higher Education Coordinating Board, 2013). While it is difficult to determine why individual students may choose to attend part-time, research has identified financial anxieties, employment, family responsibilities, and limited financial aid as reasons students choose to attend part-time (Holsendolph, 2005). This helps to explain why part-time students are at a higher risk of withdrawing from school than those who attend full-time (Alexander, 2001; Engle et al., 2006).

First-generation students

The most conservative definition of first-generation students describes them as students having no parent with higher education experience (Pascarella et al., 2004; Terenzini et al., 1996; Warburton et al., 2001). The THECB uses a similar definition, describing first-generation students as those who are the first members of their immediate

family to attend a college or university; neither of their biological or adoptive parents having ever attended a college or university (Texas Higher Education Coordinating Board, 2012).

Characteristics. Overall, first-generation students are overrepresented in the racial, ethnic, socio-economic and gender classifications that demonstrate the highest risk of not attending, or not completing a college education (Lohfink & Paulsen, 2005). Sharing characteristics with other underrepresented populations, first-generation students are likely to come from lower socio-economic status (SES) households (Terenzini et al., 1996), be Hispanic (Pyne & Means, 2013; Saenz, Hurtado, Barrera, Wolf, & Yeung, 2007), and struggle with academics throughout K-12 (Pascarella et al., 2004). In preparing for college, first-generation students are often funneled into courses that do not provide adequate preparation for college (Riggs, 2014). Either by choice or through poor advising, these students may choose the easiest route through high school, never considering that their curriculum choices might prevent them from efficiently progressing to college (Blackwell & Pinder, 2014; IHEP, 2012). Exacerbating the situation is the lack of extracurricular and social activities in which first generation students might engage. The result is that first-generation students are challenged to make progress towards college because of a lack of experience, preparation, and knowledge (ACT, 2013; Blackwell & Pinder, 2014; Terenzini et al., 1996; Winkle-Wagner, 2011). Their challenges do not cease upon entry to college, as first-generation students are at higher risk of dropping out of college in their first year (Pascarella et al., 2004), it is therefore important to analyze the effectiveness of early college intervention programs in preparing

first-generation students for the rigors of college. This is important because while first-generation students may have numerous challenges to face, they are also likely to possess a number of strengths that might serve them well in a college environment. Studies have shown that first-generation students may be more self-sufficient and tenacious than non-first-generation students (Trevino & DeFreitas, 2014). Often overcoming a number of disadvantages throughout life, some first-generation students learn to navigate challenges and engage both socially and emotionally, are often able to persist to graduation (O'Neal et al., 2016; Vela et al., 2014).

Unlike non-first-generation students, first-generation students often seek to pursue higher education as a means of gaining respect and securing lucrative employment, leveraging this new status to bring honor to the family, and more importantly assisting the family financially in the future (Atherton, 2014; Kuh, Kinzie, Buckley, Bridges, & Hayek, 1997; Pascarella et al., 2004; Trevino & DeFreitas, 2014). Research has shown that there is no significant difference in how first-generation and non-first-generation students regard the importance of earning a college degree (Blackwell & Pinder, 2014; Moschetti, 2015). Intrinsic motivation towards greater achievement is generally tied to both pride in and loyalty to the family and community. Encouragement from influencers in the family, community, and peer group plays a strong part in developing and maintaining this motivation (Blackwell & Pinder, 2014; Pascarella et al., 2004; Stanton-Salazar, 2011; Stanton-Salazar & Spina, 2005; Trevino & DeFreitas, 2014).

Influence of family. First-generation students and their parents often differ in opinion concerning the value of a college education, and generally to a greater extent

than do their non-first-generation peers (O'Neal et al., 2016). The difference in opinion often grows as the student advances through high school and on to college. Terenzini et al. (1996) found that first-generation students report a lower degree of encouragement from family and friends concerning their college aspirations than do their non-first-generation peers. While this dearth of encouragement does negatively impact first-generation student college attendance, it does not prevent all first-generation students from pursuing a degree. First-generation college students thus must experience and filter both support and non-support family and peers. Research has shown that parent support, or non-support, for college attendance plays the most significant role in influencing student decisions (Atherton, 2014; Saenz et al., 2007; Warburton et al., 2001). Parent's limited experiences and lack of involvement serve to hamper their understanding of the social, cultural, and academic pressures that their child must overcome. While in most cases this difference of opinion only serves to limit the student's understanding of options regarding college attendance, there is also a chance that the widening gap between parent and student is too large, resulting in the student's decision to leave college and return home to placate the family. Gaps in community understanding can also serve to discourage students from pursuing higher education, or preventing the students from completing their education (Balemian & Feng, 2013; Engle et al., 2006). To overcome these gaps in understanding, early college intervention programs may attempt to educate parents and peers thus encouraging the creation of advocating relationships. Early college interventions are therefore challenged to provide additional support to students, parents, and communities. Peers and educators also play a reduced but important role in

influencing first-generation student academic decisions. Terenzini et al. (1996) found that first-generation students spend considerably less time participating in social activities with peers than non-first-generation students. This lack of social interaction seems to be a result of increased interaction (both social and non-social) with family and may prevent some first-generation students from building the volume of influencers that might help them to overcome barriers to academic success.

Financial issues. Financial pressures abound for first-generation students. Even in high school, first-generation students are more likely than non-first-generation student to work part-time jobs (Coffman, 2011; Pascarella et al., 2004; Pyne & Means, 2013; N. Reyes & Nora, 2012; Saenz et al., 2007; Terenzini et al., 1996; Trent, Lee, & Owens-Nicholson, 2006). Pressure to financially assist the family often takes a toll on first-generation student's educational accomplishments. Even in high school, these students may choose to forgo traditional academic opportunities, including test prep and college counseling because their work schedules prevent them from expending the time (Atherton, 2014; Blackwell & Pinder, 2014; Engle et al., 2006; N. Reyes & Nora, 2012; Saenz et al., 2007; Trevino & DeFreitas, 2014; Warburton et al., 2001; Winkle-Wagner, 2011). When confronted with the choice to advance their academics versus working extra hours, first-generation students are more likely to choose work as they more highly value the immediate payoff.

Dependents play a role in providing both motivation and challenge to first-generation students. Previous research has found that first-generation students are more likely to have dependents including parents, grandparents, siblings and their own children

(Engle et al., 2006; Saenz et al., 2007; Terenzini et al., 1996; Tym, McMillion, Barone, & Webster, 2004). These dependents rely on them for both financial and emotional support, resulting in pressure to work and remain present in their lives, often displacing education as a priority.

When they do make the decision to attend college, first-generation students continue to consider familial needs above other considerations. Research suggests that first-generation students consider living at home while attending college a must as it reduces costs and allows them to remain engaged with the family (Pyne & Means, 2013; Saenz et al., 2007; Terenzini et al., 1996). Community colleges and other institutions with flexible course schedules are thus highly regarded by first-generation students as they allow the student to continue employment while slowly chipping away at their degree requirements. While this is convenient, it is not without risk. Students who do not live on campus, who also spend significant amounts of time working off campus, are less likely to graduate in 4 years than students who both live and work on campus (NSSE, 2011).

Transition to college. In making the leap from high school to college, first-generation students report greater levels of difficulty in making this transition. Non-first-generation students often have family members and others who prepare them for the nuances of college life. First-generation students must enter this environment with little to no systemic knowledge, often finding the process confusing and intimidating (Engle et al., 2006; Pyne & Means, 2013; Riggs, 2014). Without a base of support, first-generation students may become discouraged by the sheer challenge of navigating the day-to-day

processes of college life, resulting in poor performance, low levels of engagement, and ultimately a desire to leave. Without adequate academic, emotional, and experiential support, first-generation students are left to their own devices to navigate this complex system. Poor preparation for the realities of college thus serves to limit perceived choices and to make the process more confusing and frustrating.

First-generation students show lower levels of self-efficacy when discussing degree completion and persistence. First-generation students often report expectations of taking much longer to graduate than their non-first-generation peers (ACT, 2013; Balemian & Feng, 2013; Pascarella et al., 2004; Warburton et al., 2001). They also report that they expect to achieve lower overall grades than do their non-first-generation peers (Trevino & DeFreitas, 2014; Winkle-Wagner, 2011). Terenzini et al. (1995) found that first-generation students reported lower levels of confidence in teacher's engagement with students and teaching. They also found that first-generation students are more likely to enter college with a strong opinion about academic major than their non-first-generation peers who more likely to change their major.

Strengths. Research regarding first-generation students is largely deficit-focused. Recognizing the strengths of first-generation students allows us to better frame the impact of academic programs on their college choices. First-generation students have proven to be highly resilient and flexible (R. Reyes, 2012). These characteristics, along with many others, serve as assets in their preparation for college. Holley and Gardener (2012) found that highly motivated first-generation students were more willing to go beyond the norm than their non-first-generation peers when it came to time spent on assignments. They

also found that these students tended to frame their accomplishments, in part, as a function of their first-generation status. In other words, a sense of pride in being first-generation served to motivate their actions. Other research found that first-generation students utilized their marginalized status as a tool for motivation and resolve (Blackwell & Pinder, 2014; Engle et al., 2006; R. Reyes, 2012).

Alvarado, Spatariu, and Woodbury (2017) found that many first-generation students were more apt to doggedly pursue goals, often ignoring naysayers and overcoming numerous challenges. They also found that this population was likely to have a greater appreciation for the process of learning, be unafraid of hard work, and have overcome their fear of asking for assistance. First-generation students may recognize their trailblazer status, embracing the opportunity to determine their own future (Balemian & Feng, 2013; Warburton et al., 2001). This includes embracing an appreciation of the learning process, recognizing the opportunity to engage with others to maximize learning. This is often in contrast to their home communities, where there might be little sophisticated discussion. This represents a major shift in mindset for these students as they seek to move beyond the norms of their communities. Through persistence and fortitude, first-generation students can differentiate themselves from their non-first-generation peers, as they recognize that the sacrifice they make by committing to an education is worthwhile in comparison to their alternatives.

Overcoming the fear and shame associated with asking for assistance is a key strength for many first-generation students. With little to no background information to support their academic decisions and actions, these students must choose to utilize

institutional resources to support decision-making. Overcoming the fear to seek assistance is a challenge, but once accomplished, these students benefit from receiving answers to their questions and from creating relationships with faculty and staff. First-generation students also bring an independent outlook and enthusiasm that other populations may not (R. Reyes, 2012). These strengths are often based on pride in accomplishment that stems from their first-generation status rather than in spite of it.

In their study Alvarado, Spatariu, and Woodbury (2017) found that first-generation students bring with them experiences and characteristics that make them ideal students. Amongst these experiences and traits, they found that first-generation students often have first-hand knowledge of the day-to-day challenges faced by people around the world. They have had success overcoming similar challenges, thus uniquely preparing them for higher education in a way that many students are not. They also found that these traits made first-generation students both more competitive in the classroom and more sensitive to issues of equality and parity. Stephens (2012) found that first-generation students were more likely than their non-first-generation counterparts to bring with them higher levels of appreciation for collaboration and interdependence. With a strong connection to their heritage and community, first-generation students are uniquely suited to work collaboratively and with tenacity within their college environment.

Challenges. Due in large part to the low levels of educational attainment in their family history, first-generation students and their families suffer from many of the same social maladies as other marginalized populations (Balemian & Feng, 2013). First-generation students tend to be low-SES (Engle et al., 2006; N. Reyes & Nora, 2012),

come from underrepresented populations (Atherton, 2014; Winkle-Wagner, 2011), and are likely to be of Hispanic heritage (Pyne & Means, 2013; Saenz et al., 2007; Terenzini et al., 1996), and often struggle with academics throughout K-12.

Having fewer opportunities to participate in quality education programming, first-generation students are prone to lower verbal and quantitative reasoning skills and lower academic aspirations than their non-first-generation peers (Terenzini et al., 1996). Due to various social and environmental factors, first-generation students often lack a significant number of high-achieving peers (Darling-Hammond, 2010; Gañdara & Contreras, 2009) giving them limited access to peer role models. They are more likely to work at least part-time (Riggs, 2014), have dependent children (Engle et al., 2006; Terenzini et al., 1996) and a come from multi-generational homes (IHEP, 2012).

A multitude of social, academic, and financial challenges serve to discourage first-generation students from pursuing postsecondary education. Familial pressures, lack of academic preparedness, poor motivation, and inadequate knowledge of college admission and financial aid policies have been identified as the most common issues faced by first-generation populations (Balemian & Feng, 2013). Even after enrolling in college, the challenges continue as first-generation students are more likely to attend part-time and are more than twice as likely to drop out than non-first generation students (Riggs, 2014). They must navigate the college environment without the benefit of first-hand knowledge that comes from college-going parents. This results in a lack of familiarity with the tacit norms of college. First-generation students are up to 30 percent less likely to attend college, and when they do attend college, they are more likely to

attend two-year institutions (Contreras, 2011; Walpole, 2003), often taking longer to complete their degree (Winkle-Wagner, 2011). Terenzini, Springer, Yaeger, Pascarella and Nora (1996) reported that students are more likely to persist when they have parents with even minimal experience with postsecondary education, finding that first-generation students have lower average persistence rates than their non-first-generation peers.

In addition, these students report receiving lower levels of family support and encouragement, often under pressure to contribute to family needs resulting in a lower likelihood of prioritizing college (Balemian & Feng, 2013; Blackwell & Pinder, 2014). When they do matriculate, first-generation students are motivated to attend college based on their desire to lead their families further up the socio-economic ladder, providing a positive example to peers and later generations (Pyne & Means, 2013; Terenzini et al., 1996). In comparison to 39 percent of non-first-generation students, 69 percent of first-generation students report that they are attending college to help their families (Riggs, 2014).

In beginning their college search, first-generation students are challenged to identify the relevant questions that must be answered. With limited information about deadlines, requirements, financial aid, and costs, first-generation students and their families are challenged to navigate the enrollment process (Dehne & Brodigan, 2005). Lack of experience and support from family may adversely impact a student's decision to enroll (Balemian & Feng, 2013; Blackwell & Pinder, 2014; Engle et al., 2006; Terenzini et al., 1996).

In many ways, the greatest challenge that first-generation populations face is the lack of proper preparation for college level work. Terenzini, Springer, Yaeger, Pascarella, and Nora (1996) found that first-generation students often enter college lacking preparation in basic coursework including math and English. This may result in the student enrolling in remedial coursework, both slowing their time to graduation while also increasing their cost.

First-generation family characteristics. Parents with no college experience are likely to provide limited financial and informational support for their children as they explore higher education opportunities (Blackwell & Pinder, 2014; Engle et al., 2006; McCarron & Inkelas, 2006; Pyne & Means, 2013; Terenzini et al., 1996). As a result, first-generation students must self-advocate in almost every aspect of the college enrollment process. When parents with no college experience do participate in the college process, they do so with a limited framework in comparison to non-first-generation families (McCarron & Inkelas, 2006). One of the most striking differences in approach is the campus visit. Employment pressures and family needs often prevent parents from taking the time to accompany students on a campus visit, as a result, students are left to either visit alone, or not visit at all. This often results in limited choices and uninformed decisions, neither of which is beneficial to the student's success. Lack of parent experience and advice often leads first-generation students to feel overwhelmed by the process, leading to a higher likelihood that they will or misunderstand many of the important details (ACT, 2013; Balemian & Feng, 2013; McCarron & Inkelas, 2006). First-generation students are thus less likely to attend

colleges far from home, or even inconvenient to their homes because their family responsibilities conspire to keep them close to home.

First-generation families often recognize the sacrifice they must make along a spectrum. This may be perceived anywhere along a range from a small disruption of the family dynamic to a full-scale rejection of family culture (Terenzini et al., 1996). While the families of first-generation students may generally support higher education, it is also common for these families to perceive college as a threat to the status quo in the family dynamic. While families may acknowledge college as a conduit to the middle-class, the student's desire for upward social mobility may be mistaken as a repudiation of the family heritage (Terenzini et al., 1996). Traditional family assignments often conflict with academics, and a lack of understanding within the family about the purpose and outcomes of higher education may evolve into anger or hostility towards the student as they disrupt the intergenerational continuity (Pyne & Means, 2013). As a result, these students often suffer from guilt and isolation for perceived abandonment of the family to pursue a degree, even when the final result may serve to benefit the entire family (Coffman, 2011).

Preparation for college. Adelman (1999) found that the quality of underrepresented student's high school curriculum is the most influential predictor of success in postsecondary education. A less-rigorous course load results in poor preparation for college admissions tests and college coursework. First-generation students nationwide continue to lag in academic performance, college readiness, and collegiate performance (Hoffman, Vargas, & Santos, 2009). Their socio-economic

situation often dictates that they attend high schools without college-prep programs (Hurwitz, Smith, Howell, & Pender, 2012). Lack of access to demanding courses often forces first-generation students into less rigorous curricula. While 20 percent of non-first-generation students take a rigorous course load in high school, just 9 percent of first-generation students do so (Warburton et al., 2001).

The ACT (2013) found that 52 percent of tested, first-generation students failed to meet four college readiness benchmarks, including academic standards in English Composition, College Algebra, Social Science, and Biology. A lack of access to quality coursework, combined with a lack of exposure to the benefits of college enrollment leaves them unprepared and often unwilling to apply to college. As a result, they are less likely to take college entrance exams, and when they do, are more likely to have lower scores (Warburton et al., 2001).

Because they face a number of social, environmental, and economic challenges, first-generation students are often behind academically, limiting their chances of being admitted to some colleges. When they do enroll in college, they are not ready for college level work and are challenged to catch up and keep up. They enter college with inadequate academic preparation that results in poor writing and communication skills, as well as issues with math mastery (McCarron & Inkelas, 2006).

Upon entering college, it is likely that the institution is not equipped to support them (Coffman, 2011). Academic assistance programs are designed to be reactionary, relying on the student to self-identify and seek assistance. First-generation students may not know that these programs exist, and if they do, they may be reluctant to admit to

weakness (N. Reyes & Nora, 2012). The result of these challenges is frustration with their college experience and constant questioning of their ability to succeed (Engle et al., 2006; N. Reyes & Nora, 2012; Terenzini et al., 1996).

Academic and campus experiences. The transition from high school to college is often a perplexing time for first-generation students. Pascarella, Pierson, Wolniak, and Terenzini (2004) found that first-generation students often reported more troubles in transitioning to college than did their non-first-generation peers. Without parental guidance, first-generation students must navigate the process alone or actively seek additional guidance that may or may not be easy to find (Blackwell & Pinder, 2014; Engle et al., 2006; McCarron & Inkelas, 2006).

Once they enroll, first-generation students must continue to overcome barriers to persistence and degree attainment. Research has shown that first-generation students are more likely to stall their progress towards a degree based on financial and family responsibilities (Alexander, 2001; Balemian & Feng, 2013; Saenz et al., 2007). Lower levels of preparation in high school may also serve to discourage persistence, often trapping these students in a remediation cycle that leads to slower progress and higher costs (Warburton et al., 2001).

While first-generation students report similar levels of commitment to completing a degree, they do report significantly different levels of expectation regarding their highest level of academic achievement. While non-first-generation students report that they seek to earn a degree beyond the baccalaureate level, first-generation students are mainly focused on completing the bachelors and entering the workforce (Blackwell &

Pinder, 2014; Pascarella et al., 2004). Earning a bachelor's degree is often enough to advance these students into the middle class, affording them greater opportunity to support families.

Dual Enrollment

Opportunities for accelerated learning are an increasingly common strategy for encouraging both high school completion and college enrollment. Existing early college interventions including Advanced Placement[®] (AP), International Baccalaureate[®] (IB), and dual enrollment serve as mechanisms for earning college credit while still in high school, offering rigorous coursework that prepares students for college. By exposing students to the challenges and expectations of college, these courses serve as opportunities to increase motivation and self-confidence for students prior to enrolling in college. By offering college credit, these courses offer both academic and financial incentives. In recent history, dual enrollment has become the popular choice for school districts seeking to enhance their curricula and encourage college enrollment.

Much like AP and IB, dual enrollment seeks to both prepare students for college level work while offering a challenging curriculum. Unlike the structured curriculum of AP and IB, dual enrollment programs often have varied curriculum that is influenced by institution type, class makeup, and instructor. At its core, dual enrollment offers college level coursework, taught in the high school classroom with high school students as the primary audience. Students receive college credit by completing college level course requirements while also earning credit towards their high school graduation. Through agreements between individual high school campuses or districts and higher education

institutions, college level courses are offered to high school students with the expectation that the student will experience college level rigor and will be prepared to enroll in subsequent college coursework.

All fifty states now support dual enrollment programs (Hoffman et al., 2009). Forty of the states have specific policies that regulate dual enrollment programs, although they vary greatly in the level of oversight (Hunt & Carrol, 2006). Hoffman (2005) reports that the oversight of dual enrollment programs often includes policies regulating eligibility for enrollment, the awarding of credit, cost and payment regulations, advising requirements, data sharing agreements, and measurement of program effectiveness. She also explains that there are no consistent metrics for success of these programs, leading to confusion about the effectiveness of dual enrollment in providing true college preparatory services. Raymond Paredes, the former Texas Commissioner of Higher Education reported in 2016, that the state has completed no studies into the effectiveness of dual credit/dual enrollment courses and that institutions were reporting lower grade point averages earned by students in their first college courses than expected (McGee, 2016). In Texas, the Texas Education Agency and the Texas Education Commissioner reported that the state needs better metrics to determine if dual credit courses provide the rigor necessary to prepare students for college (McGee, 2016). With no consistent forms of assessment in place, it is impossible to know if these students are receiving sufficient preparation for college coursework (Speroni, 2011). As a result, questions of rigor persist.

Although many question the rigor of dual credit courses offered through community colleges, in at least 13 states, community colleges are specifically assigned as the primary providers of dual credit (Pretlow & Patterson, 2015). Another 17 states designate dual enrollment as the program of choice for increasing college readiness for marginalized populations, although they do not provide guidance for measurement (Pretlow & Patterson, 2015). In 2005, the National Center for Educational Statistics (NCES) began reporting dual enrollment statistics using data from the Postsecondary Education Quick Information System (PEQIS) (Tab, 2005). This report indicated that over half of the public postsecondary institutions in the United States offered programs permitting high school students to enroll in coursework for college credit. With increased opportunities for participation, over 800,000 enrollees representing approximately five percent of all American high school students are currently enrolled in dual enrollment programs nationwide.

Performance of Dual Enrollment Programs

An and Taylor (2015) explored the academic preparation of dual enrollment students by examining longitudinal data from the Wabash National Study of Liberal Arts Education. They found students who completed dual enrollment and enrolled in subsequent coursework in college were statistically more successful than students who did not participate in dual enrollment. They discovered no statistical differences in academic performance in subsequent college coursework when controlling for the locations where the dual enrollment coursework were offered. This implies that regardless of location where dual enrollment may be offered, there is an overall benefit to

students. Brian An (2013) found that socio-economic status played a large role in student performance in and after dual enrollment experiences. He identified significant differences in college grades based on student socio-economic status with students from higher socio-economic backgrounds receiving higher college grades than those from lower socio-economic backgrounds.

Allen and Dadgar (2012) found that high school students who completed dual enrollment courses were more likely to attend college than students who did not. They reported that over 70 percent of students who graduated from high school after completing dual enrollment courses later enrolled in college, compared to only 59 percent of those who did not. Hoffman (2005) found that students participating in dual enrollment programs performed just as well as students enrolled in similar coursework in two-year institutions, and that these students performed equally well when they entered four-year institutions. This research implies that dual enrollment provides a benefit to students in terms of ultimate college enrollment. It also points out that dual enrollment may be equivalent to the experience of students enrolled in two-year institutions. This is important as it connects the dual enrollment and two-year experience to success in four-year institutional enrollment, implying continued success through graduation.

According to Swanson (2008) college credit earned through dual enrollment reduced the time-to-graduation and increased the likelihood of graduation for participants. She reported that students who completed at least one dual enrollment course and later earned a bachelor's degree, the greater the number of credits earned through dual enrollment, the shorter the time-to-graduation. She found that dual

enrollment students averaged 4.25 years-to-graduation while similar non-dual enrollment students averaged 4.65 years-to-graduation. Swanson also reported that dual enrollment participation might serve to increase student persistence. She discovered that for students who participated in dual enrollment and continued to college, the likelihood of remaining enrolled without a break for more than one semester through two years of college increased significantly.

Existing research reports that dual enrollment programs have proliferated across the country but that gaps still exist in assessment. In Texas, the state's leaders in K-12 and higher education both report that there are no policies in place to measure the effectiveness of dual enrollment programs in preparing students for college. While national studies imply that dual enrollment experiences result in higher levels of college success in terms of grades, persistence, and graduation, data from Texas implies that students are not as college ready as some might hope. Variations in teaching and delivery may result in wildly different outcomes, but without a consistent system of assessment, there is no way to know. Further variations exist depending on institution type, instructor, and course. In summary, consistency within dual enrollment programs could result in more efficient assessment and greater opportunity for continuous improvement.

First-generation Students in Early College Intervention Programs

In order to better prepare all students for college level work, states have encouraged districts and campuses to offer a greater number of early college intervention programs. Through increased engagement in rigorous college level coursework, states hope to increase college enrollment and graduation rates. First-generation student access

to early college intervention programs has been limited. Barriers to enrollment in these courses has included both academic and availability issues. State rules regarding readiness testing has prevented many first-generation students from enrolling in these courses. Additionally, availability of these courses has often been limited to larger, wealthier districts, while smaller, poorer districts were unable to offer the courses.

Conley (2010) identifies dual enrollment as an opportunity to build understanding of the purpose and opportunities associated with college. He explains that many underrepresented students may falsely identify college as just an extension of high school, unaware of the unique challenges or the multitude of outcomes. Creating a positive motivational force, dual enrollment offers a strong form of mentor modeling where a formal simulation of college coursework is provided, with peers and mentors able to directly discuss the college experience. Maximizing this experience is a successful method of providing higher levels of confidence and skill for students who have few outlets for obtaining this support (Struhl & Vargas, 2012). Dual enrollment offers the opportunity to create excitement about higher education. Students participating in dual enrollment are more willing to go beyond the minimum effort to reach their goals (Conley, 2005). Attinasi (1998) reinforces the importance of these types of experiences by emphasizing the strong influence of examples and expectations set by mentors on Hispanic students college-going attitudes.

Dual enrollment shows the greatest promise in positively influencing first-generation students to greater academic success. Dual enrollment creates an environment where first-generation students are able to obtain experience in college-level coursework

while developing positive relationships with peers and mentors. Completing college level coursework while still enrolled in high school enables these students to role-play, promoting the development of the college student mindset (An, 2015). This role-play combined with positive social pressures from peers and mentors increases student *social capital* thus empowering students to undertake the college enrollment process.

Exposure

Conley (2005) recognized that students require specific knowledge and skills to successfully navigate the transition to college, but that this information is privileged and not equally accessible to all populations. Historically marginalized groups, including first-generation students, are least likely to have access to this information. Lack of access to college preparatory curriculum or reluctance to enroll in challenging coursework puts first-generation students at a disadvantage (Balemian & Feng, 2013). For example, these populations struggle to understand the importance of graduating on time and with the correct number of academic credits. They often lack understanding of the test preparation process and the test scores necessary to be admitted. They may find the college admission process confusing and intimidating, making it difficult to navigate the various processes associated with admission and financial aid. Overcoming the strain of deciphering college majors and their relationship to careers, and learning to self-advocate within the foreign college culture is difficult for first-generation students as they enter college (Conley, 2005). A lack of exposure to the details of college enrollment results in an inability to picture themselves within that environment (Blackwell & Pinder, 2014). More importantly, inadequate knowledge about navigating the college

environment often prevents first-generation students from seeking help, resulting in further difficulties. These difficulties stem from a lack of experience, exposure, and motivation (Conley, 2005).

While many underrepresented populations have limited exposure to the realities of college, first-generation students often have no such benefit and may find themselves at a greater disadvantage. Participation in a college preparatory program while in high school can help first-generation students to gain greater knowledge and experience in a college-like setting. Exposure to college experiences, including dual enrollment experiences, allows these students to develop the familiarity and confidence to consider college enrollment (Allen & Dadgar, 2012). This is important because it helps to promote greater academic and social engagement by first-generation students later in life (IHEP, 2012). Without realistic expectations, first-generation students on college campuses are reticent to develop peer networks, utilize campus resources, or connect with others across campus resulting in isolation and a greater chance of dropping out (Engle et al., 2006). To overcome these challenges, first-generation students require active support throughout their educational careers to navigate their unique social, academic, and emotional concerns. Support systems should include opportunities for first-generation students to experience college realities first-hand, learning as much as possible about what to expect and what is expected (Engle et al., 2006). Support systems should also focus on proactive programs to address shortcomings in student's "common knowledge" early in their academic career (Conley, 2005).

Student's lack of knowledge about even the most basic aspects of college makes it increasingly difficult for them as they navigate the college application and enrollment process. With their unique characters, environments, and languages, colleges can be difficult for first-generation students to understand. Often, a lack of experience within other cultures puts first-generation students at a disadvantage when they encounter students from diverse backgrounds (Hurwitz et al., 2012). These challenges puts them at higher risk of withdrawing emotionally and socially (Rendon, Jalomo, & Nora, 2000). They often struggle with feelings of inadequacy and isolation; early negative experiences on campus only serve to discourage these students from further engagement (Blackwell & Pinder, 2014).

Postsecondary institutions recognize this challenge, introducing programs to support first-generation students, creating opportunities for students to engage in campus culture, adapting teaching styles, and offering additional services in hopes of attracting, retaining, and graduating these students (O'Conner & Justice, 2008a). In an attempt to proactively address the needs of this population, some institutions have developed programs that provide services to first-generation students while they are still enrolled in high school, with the goal of better preparing them for the transition to college (Engle et al., 2006).

Relationships

Students who take advantage of dual enrollment opportunities are often exposed to serendipitous relationships with mentors, teachers, and peers that provide information, advice, and support (Stanton-Salazar & Spina, 2005). Mehan et al. (1996) found that

underrepresented students often struggle to find and nurture these relationships outside of the classroom. Exposure to a more diverse group of mentors and peers creates greater levels of comfort in diverse settings, and helps prevent students of color from isolating themselves later in life (Granovetter, 1973). Once in college, these students are likely to encounter a largely Anglo population and must develop strategies for successfully interacting within this environment (Griffin & Hurtado, 2010). Dual enrollment offers an opportunity to practice these skills in a more protected environment (An & Taylor, 2015). In addition, exposure to diversity in the dual enrollment classroom may assist students in developing social networks in college; networks that may provide additional support for persistence and success (Maldonado, Rhoads, & Buenavista, 2005). Underrepresented populations have the opportunity to share in the social and academic challenges of dual enrollment coursework resulting in positive peer support systems (Stanton-Salazar & Spina, 2005).

Dual enrollment experiences inform future educational choices and play an important role in motivating students to expand their aspirations. Through the development and nurturing of diverse relationships in the dual enrollment classroom, students are encouraged to further their education through college enrollment (Cowan & Goldhaber, 2015). The sharing of a college-like experience among students in the dual enrollment classroom and the cultivation of college-going expectations by teachers and mentors encourage the creation of supportive social networks (Attinasi, 1998). For underrepresented populations, a major benefit of dual enrollment is the development of these networks producing social, emotional, and academic support systems that continue

throughout their educational careers (IHEP, 2012).

Theoretical Frameworks

First-generation students struggle with college on both an intellectual and psychosocial level due to having no significant baseline knowledge of the expectations and realities of college life (Padgett et al., 2012). As a result, first-generation students who make it to college often disengage and are tempted to drop out, selecting to return to the more comfortable reality provided by family and friends (Winkle-Wagner, 2011). Furthermore, first-generation students often report that they are unable to establish emotional connections to their institutions (Coffman, 2011; Pyne & Means, 2013), and as a result are reticent to engage in college life outside of the classroom (Pascarella et al., 2004). Academic and social challenges in the college environment, combined with social, emotional, and financial pressures from peers and family is a constant threat to first-generation student college persistence (Pyne & Means, 2013). Research of long-term student outcomes found that 49 percent of non-first-generation students who entered college in 2003 graduated within six years, while only 15 percent of first-generation students did so (Aud et al., 2010). It thus becomes valuable to examine the factors that influence student engagement, both positive and negative, to inform the framework of this study. Theories of social capital and departure theory were selected as optimal to describe and inform this study of first-generation student outcomes from dual enrollment program completion. Social Capital theory informed this study by providing greater understanding of the social and emotional factors that prevent first-generation students from aspiring to college, or later applying or enrolling. The specific iterations of social

capital theory utilized by this study also provide insight into methods to overcome the challenges faced by underrepresented and first-generation populations. Departure theory serves to inform this study by offering theories of how challenges in academic settings might influence student persistence. Departure theory thus helps to provide context to the specific challenges faced by underrepresented and first-generation populations in academic settings.

Social Capital

Bourdieu (1977) defined social capital as the resources integral to the social relationships that drive cooperative actions. He explained that social capital includes those sets of knowledge, behaviors, acuties, and skills that influence social advancement. Bourdieu's concepts have been utilized in the study of college choice, access, and overall attainment (DiMaggio & Mohr, 1985). Social capital has also been determined to be an important factor in examining undergraduate persistence (Berger & Braxton, 1998). Tinto (1987), theorized that the establishment of both a social and emotional connection with the institution is key to the academic and emotional success as it promotes social engagement. He noted that social capital might play a role in student departure, although he observed that most studies had focused on race as a stronger influence than social capital. McDonough (1994) developed a theory of student persistence that focused on the ways that social and cultural capital affect student success. Astin (1984) studied a national sample of American college students, finding that completion of college is more likely among students with high levels of social capital. DiMaggio and Mohr (1985) reported that high levels of social capital resulted in increased opportunities for student

involvement. They also found that social capital exerts strong influence on college choice and persistence

Stanton-Salazar (2001) utilized the concepts of social capital, social networks, and a help-seeking orientation to understand the educational experiences of low-income Hispanic students. His findings explained how elements of a student's experience (community, school, family) are organized to reduce social inequality. Their social circles, and key players within them create a protective environment where student's social capital is maximized. He argued that peer academic networks could lead to resource sharing, greater self-advocacy, and greater access to new educational opportunities and resources. This finding corresponds with a later finding that within the overall community of classmates, underrepresented students in dual enrollment programs benefit from network development among their diverse peers and within their own racial and ethnic communities (An, 2013). Dual enrollment programs, whether by design or by chance, hold the promise of enhancing student connections to their own cultural heritage through peer networking and mentor example (Maldonado et al., 2005). These networks may also result in positive peer pressure that improves motivation and aspiration (Stanton-Salazar & Spina, 2005).

Attinasi (1998) found that underrepresented students benefit from interaction with like-cultured students in a challenging academic environment. He found that through this interaction, collective social capital is increased. The reinforcement of cultural identity through successful completion of the academic challenge results in greater social capital, promoting future academic achievement. Dual enrollment offers and opportunity for

students from diverse backgrounds to interact. For first-generation students, dual enrollment offers the chance to participate in a challenging academic environment, with other first-generation students, building upon their collective strengths, offering opportunities for increased academic success and increased social capital. Dual enrollment experiences may also help to fortify the individual's bond to their own culture and community, validating the student's cultural capital.

Impact of relationships on social capital development. Stanton-Salazar (2011), building upon Bourdieu's (1986) definition, argued that an individual's ability to enhance his or her social capital is limited and often hampered by institutional and societal forces. Stanton-Salazar argued that social capital could be enhanced through the development of social networks with key influencers. Stanton-Salazar's theory informs research on the challenges faced by underrepresented populations as they utilize unique social strategies for navigating social and academic obstacles and cultivating relationships. Stanton-Salazar and Spina (2005) proposed that social relationships, specifically those developed by underrepresented, low SES, Latino students, show great promise in providing increased emotional support. Bourdieu's (1977) theories of social capital also focused on the role played by the individual's culture in addressing inequity across social and economic barriers. He explained that cultural comprehension and cultural confidence result in increased social capital and greater resilience in the face of social and emotional challenges. Bourdieu (1986) later opined that social capital could be increased through the exploitation of large networks. He believed that the development of informal relationships, both personal and institutional is necessary to provide higher levels of

confidence when encountering barriers. Concern over the opportunities of students from diverse backgrounds to nurture their cultural knowledge, such that they can overcome challenges later in life, is what drives much of the application of social capital theory.

Influencers. Stanton-Salazar and Spina (2005) identified seven key influencers in the lives of adolescents: older siblings, parents, extended family members, family friends, school personnel, informal mentors, and role models. They found that for many students, these influencers are unable to provide the guidance and example necessary to promote success in higher education. Mentors can fill this void, providing positive influence resulting in an increase in their aspirations (Contreras, 2005, 2011). Attinasi (1998) found that students might benefit from interaction with both peers and mentors. Thomas (2002) argued that diverse social networks serve to create greater levels of confidence in navigating the social and academic intricacies of higher education. Granovetter (1973) noted that even weak social relationships may result in professional and economic benefits later in life. Bourdieu (1986) expanded on his theories of social capital to include the social networks and group identifications that support an individual's sense of social capital in relation to the group. Stanton-Salazar and Spina (2005) explained that peer networks thus serve to mitigate environmental stress, providing social support through friendship and shared experiences.

Recognizing that in comparison to their middle-class peers, underrepresented students lack many of the resources to support knowledge acquisition, Stanton-Salazar and Spina (2005) proposed that peer networks can help to fill this void. They found that peer networks serve as sources of information and support. Contreras (2011) noted that

programs that support peer interaction create a strong foundation for long-term support networks. She found that the experience of developing support networks early in their educational careers made underrepresented students more likely to both seek and create them later in life.

Peer networks provide context for the development of greater trust in institutional actors by nourishing an environment of shared challenges and mutual trust (Maldonado et al., 2005). Moll, Amanti, Neff, and González (1992) explain that *confianza* (trust) is crucial to the dynamics between Latino students and outsiders, especially outsiders that are affiliated with institutions. They observed that marginalized communities might hold institutions in high regard, but just as often feel apprehensive about their relationships with institutions until building adequate levels of trust. Yosso (2005) developed a cultural wealth model that identified six types of capital that institutional actors might utilize to frame their interactions with students. These include aspirational, linguistic, familial, social, navigational, and resistance. His model captures strengths and experiences of student to understand how students from underrepresented populations might experience school from a strength perspective. Through promotion of capital and by expanding exposure to key influencers and creating networks of peer and mentor relationships, institutions can assist underrepresented populations to gain greater confidence.

Theories of student departure

Models of student departure focus on complex human interactions that are influenced by other factors including social status, self-perception, and development of

social capital (An, 2015; Astin, 1984; González, Moll, & Amanti, 2005; Rendon et al., 2000; Stanton-Salazar & Spina, 2005). Departure studies tend to be longitudinal, multifaceted, and reliant on multiple variables across individuals, groups, and institutions. Studies have searched for commonalities in characteristics, behavior, and response that might isolate departing students (Astin, 1984). Braxton, Hirschy, and McClendon (2011) developed a meta-analysis of departure trends that examined theories beginning in the late 1960s through 2010. They found that in the 1970s, theories of student departure were based primarily in sociological theory. In the 1980s, psychological approaches attempted to reveal how individuals determine their place within the institution and how this might impact retention. By the 1990s, studies were developed to examine the role of economic factors in student departure, often focusing on the factors that affected retention decisions among underrepresented groups.

Tinto's (1975) model of student departure has influenced much of our understanding of why students stay or leave. His model identified that students enter college with individual and familial characteristics that create a number of often-conflicting pressures to persist and/or depart. He theorized that college academic processes lead to intellectual integration while the socialization process leads to social integration. Intellectual and social integration thus work together to influence retention decisions. He theorized that strong initial commitment to the institution encouraged academic and social integration, resulting in increased commitment and reducing the likelihood of departure. Tinto's model is derived from the work of Spady (1971) who identified a relationship between Durkheim's theories (Metz, 2005) of social factor

influence on suicide rates and social factor influence on student retention. He theorized that people chose to leave social systems due to a lack of value identification and insufficient support networking. Tinto (1975) adapted Spady's theory in identifying academic integration and social integration as factors in student departure. He theorized that academic integration is the result of shared academic values while social integration is the outcome of developing positive support networks with peers and mentors. Students who are unable to develop sufficient levels of academic or social integration are likely to depart.

Tinto (1993) later updated the model to further explain the theory of student departure. In this update, he explained that students failing to navigate the institutional rites of passage were at risk of departure. This theory postulates that students have a greater chance of remaining enrolled if they are able to sufficiently separate themselves from their culture, instead taking on the values of their fellow students and faculty. While Tinto's (1975; 1987; 1993) models focused on student integration at the academic and social level, Bean and Metzner's (1985) model explored the implications of integration with the institutional bureaucracy, and concurrent external pressures, such as the desire to contribute to family needs.

Differences of opinion in departure studies led to challenges by many scholars who recognized that Tinto's theory reinforced a deficit perspective, placing the onus on students to assimilate to the institution, both relieving the institution of any responsibility in creating social and emotional connections with students and placing extraordinary pressure on underrepresented populations to step well beyond their comfort zone. Tinto,

some argued, focused exclusively on the individual and his or her ability to create networks within the institution (Maldonado et al., 2005) overcoming their innate shortcomings to immerse themselves in the institutional culture, denying the value of their own learned experiences. Tierney (1992), for example, argued that Tinto's theory focused on assimilation, where underrepresented populations are forced to conform to an institutional environment that can be in conflict with their own experiences and traditions. Tinto (1993), later recognized these gaps and updated his model by explaining that the connection between students and institutions represented an interactive relationship. This updated theory better harmonized with the theories of various scholars whose work focused on equitable social integration. Placing responsibility for network development on institutions rather than students, these scholars argued that culturally myopic practices within institutions adversely impacted students of color and efforts to create special opportunities only highlighted the differences (Rendon, 1994; Tierney, 1993). These theories evolved with the goal of influencing institutional restructuring such that their policies and cultures are more reflective of the populations they serve (Maldonado et al., 2005).

Bean (1980) developed a model of student retention based on empirical and theoretical studies from the 1980s. This model utilized path analysis, examining student backgrounds, organizational elements, student satisfaction, and institutional commitment. Bean and Eaton (2001) later developed a model of student retention that was based on employee turnover in professional organizations. This model focused on psychological factors in developing both academic and social integration. They utilized self-efficacy

theory, coping behavior theory, and attribution theory to explain how students might approach relationship building within the institution. This model was the first to include environmental variables (factors outside of the college that would impact student retention) and student intentions as factors in predicting retention. This model theorized that individual characteristics, specifically student high school academic experiences, educational goals, and family support might influence student interaction within their higher education institution.

Summary and Analysis

Research on first-generation students often focuses on the deficits within their social, emotional, and academic lives. Solutions are often focused on large-scale student centered efforts and remediation programs. This study sought to inform future policy and program development regarding how first-generation students might benefit from unique teaching and delivery within a university administered dual enrollment program.

Research into first-generation students has identified numerous challenges faced by this population. The preceding literature strands served to inform this study about strengths and challenges common to both first-generation and underrepresented populations. The literature explains that a lack of exposure, experience, and understanding often hampers efforts by and for first-generation students when considering college. First-generation students thus require more comprehensive exposure when enrolled in early college intervention programs. In reviewing this strand of the literature, the goal was to inform the specific needs of first-generation students in gaining the necessary knowledge and experience about college realities. This study sought to

determine if the Get Ready Today experience provides a significantly different level of exposure to the college experience for first-generation students. More importantly, the literature identifies the unique situations and challenges that first-generation students must overcome in pursuing postsecondary education. In examining the application to dual enrollment, the literature informed the challenges faced by first-generation students and the interaction of these challenges within the dual enrollment environment. This also represents an opportunity to identify unique characteristics of the Get Ready Today program and how they might address the challenges faced by first-generation students. Within the literature this study identified an opportunity to perform specific research regarding the impact of dual enrollment completion on Texas' first-generation student outcomes.

The Stanton-Salazar (2011) model of social capital development via relationship building served as the theoretical framework for a quantitative study of first-generation success as a result of Get Ready Today dual enrollment program completion. Stanton-Salazar and Spina (2005) found that social relationships among low-socio-economic status Latinos, held great promise in offering the emotional support necessary for students to succeed socially, emotionally, and academically. By applying this theory to first-generation students within the Get Ready Today program this study sought to focus on this specific sample, to determine if the unique teaching and delivery provided by Get Ready Today significantly benefits first-generation participants.

The literature has reported that first-generation students often share characteristics in common with other underrepresented groups. It also detailed that dual enrollment

experiences might serve to both prepare students from underrepresented populations academically for college coursework and support them emotionally through a challenging program of study. Unfortunately, only a modest amount of research has been completed that attempts to analyze the relationship between first-generation status and dual enrollment program completion. Within the body of knowledge, Brian An (2013) reported important findings regarding the impact of dual enrollment on underrepresented minority populations. Stanton-Salazar (2005) focused on Latino students and their experience in college prep programs. Other research has focused on dual enrollment's impact on student performance, but often examined the population as a whole, resulting in studies that were not generalizable to any specific population (ACT, 2013; Engle et al., 2006; Loftin, 2012; Pascarella et al., 2004; Winkle-Wagner, 2011). Ultimately, the research tradition is limited and few studies have focused on first-generation students in dual enrollment programs with none studying a population similar to the one found in Get Ready Today. The review of the available literature found little research specific to this population and none that investigated first-generation, dual enrollment students.

As such, this study sought a greater understanding of the methods employed by the Get Ready Today program and if these methods might provide a positive impact for this distinct population. Figure 2.1 depicts the adapted theoretical model of the relationship of investigated variables to student outcomes. By defining the characteristics both shared and unique to first-generation students, and families, including a detailed discussion of the academic challenges faced by this population the review defined the unmet needs of first-generation students in the classroom.

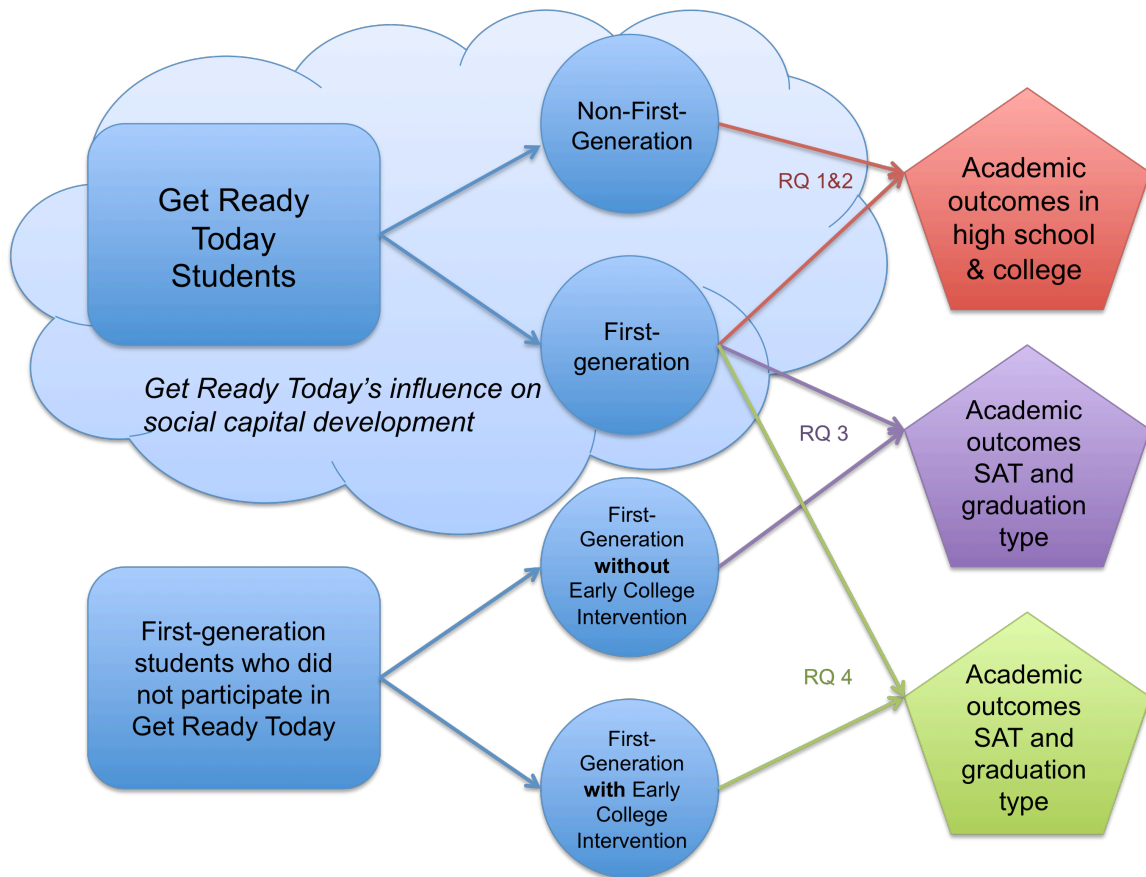


Figure 2.3. Theoretical framework model for analyzing first-generation, Get Ready Today participant academic outcomes.

Expansion of college preparatory and credit granting programs, including dual enrollment, across Texas has led to a discussion of the effectiveness of these programs in preparing students for college. As a sub-population, first-generation students face unique challenges that are not specifically addressed by these programs. The research found that first-generation students require both academic and emotional support to build stronger peer and influencer relationships such that a greater sense of purpose, direction, and ability is achieved, resulting in college enrollment and completion. For first-generation students in the Get Ready Today program, the unique teaching and delivery system may

promote the development of greater social capital, creating greater chances that these students will succeed academically and both enter and graduate college.

Chapter 3: Methodology

This chapter discusses the methodological approach used to address the research questions of the study, which explore the link between dual enrollment program participation and first-generation student performance. The purpose of this study is to determine if statistically significant relationships exist between Get Ready Today dual enrollment participation and academic outcomes for first-generation Get Ready Today students in comparison to their non-first-generation peers, and to other first-generation students. This chapter begins by stating the research questions and defining the tested hypotheses. It continues by clarifying the research design and data collection and preparation processes. This chapter also defines the research variables and discusses the motivation for their use. Finally, this chapter provides a description of the statistical methods used to address the research questions, and concludes with a summary of results.

Research Questions

During the proposal phase of this dissertation, two research questions were offered. Based upon the availability of first-year college student grade data, the original dissertation proposal required an analysis of both high school and first-year college academic performance. Initially, data from the 2014-2015 academic year was strategically chosen to allow for sufficient time to pass such that a subset could enter college and complete their first semester/year of coursework. When, during the course of completing this study, this information became available, it became evident that the sample of students that included this critical data would be prohibitively small.

As a result of the limited availability of data and the prohibitively small sample size, two changes to this study were requested and approved by the committee. To increase the sample size, the 2014-2015 Get Ready Today cohort dataset was replaced by the 2015-2016 cohort dataset. This increased the overall sample from fewer than 2,000 to approximately 3,500. In addition, due to more robust data collection methods in place at Get Ready Today, the 2015-2016 dataset contained additional survey response data that is used in this study. The second approved change resulted in modifications to the guiding research questions. The lack of college grade data made it further necessary to amend the research questions, allowing for similar analyses utilizing other student academic outcome variables.

The amended research questions were informed by research on first-generation student populations (ACT, 2013; Atherton, 2014; Blackwell & Pinder, 2014; Coffman, 2011; Engle et al., 2006; Pascarella et al., 2004; N. Reyes & Nora, 2012; Saenz et al., 2007; Terenzini et al., 1996; Trevino & DeFreitas, 2014; Warburton et al., 2001; Winkle-Wagner, 2011), as well as recent research into dual-credit and dual-enrollment programs (Allen & Dadgar, 2012; An, 2013, 2015; An & Taylor, 2015; Thomas R. Bailey et al., 2002; Cowan & Goldhaber, 2015; Ganzert, 2012; Hoffman, 2005; Hoffman et al., 2009; Hu, 2010; Hugo, 2001; Hunt & Carrol, 2006; Karp et al., 2007; Khazem & Khazem, 2014; Loftin, 2012; Lukes, 2014b; O'Conner & Justice, 2008b; Pretlow & Patterson, 2015; Speroni, 2011; Swanson, 2008). To simplify the analytical design, hypotheses for each research question are presented as null hypotheses.

The amended research questions guiding this study are:

RQ1: What significantly different outcomes in high school academic performance exist for self-identified first-generation students who participate in Get Ready Today in comparison to their non-first-generation peers?

H_0 : There are no significant differences in high school academic performance for self-identified first-generation students who participate in Get Ready Today in comparison to their non-first-generation peers.

RQ2: What significantly different outcomes in Get Ready Today college grade performance exist for self-identified first-generation students who participate in Get Ready Today in comparison to their non-first-generation Get Ready Today peers?

H_0 : There are no significant differences in Get Ready Today college grade performance for self-identified first-generation students who participate in Get Ready Today in comparison to their non-first-generation Get Ready Today peers.

The following research questions are similar in structure, yet have a small but significant difference in examined samples. A more detailed explanation follows the presentation of the questions.

RQ3: What significantly different outcomes in academic performance exist for self-identified first-generation students who participate in Get Ready Today in comparison to a representative sample of first-generation students who did not participate in other early college interventions including Get Ready Today, Advanced Placement, International Baccalaureate, early college high schools, or dual-credit?

H₀: There are no significant differences in academic performance for self-identified first-generation students who participate in Get Ready Today in comparison to a representative sample of first-generation students who did not participate in other early college interventions including Get Ready Today, Advanced Placement, International Baccalaureate, early college high schools, or dual-credit.

RQ4: What significantly different outcomes in academic performance exist for self-identified first-generation students who participate in Get Ready Today in comparison to a representative sample of first-generation students who did participate in other early college interventions including Advanced Placement, International Baccalaureate, early college high schools, or dual-credit?

H₀: There are no significant differences in academic performance for self-identified first-generation students who participate in Get Ready Today in comparison to a representative sample of first-generation students who did participate in other early college interventions including Advanced Placement, International Baccalaureate, early college high schools, or dual-credit.

An important distinction between Research Question 3 and Research Question 4 should be explained here. While Research Question 3 examines academic outcomes for self-identified first-generation students who participated in Get Ready Today in comparison to a representative sample of first-generation students who *did not* participate in other early college interventions, Research Question 4 focuses on comparing the same sample of Get Ready Today students to a representative sample of first-generation students who *did* participate in other early college interventions.

Research Design

This is a non-experimental study that will utilize extant student data from various sources. As a correlational research study, an initial analysis was performed to investigate associations between variables where none of the variables have been manipulated. This study is a cohort analysis that included primary data sourced from Get Ready Today and secondary data collected from large longitudinal datasets maintained by the Texas Education Agency (TEA) and the Texas Higher Education Coordinating Board (THECB), housed in the Education Research Center at the University of Texas at Austin (ERC).

The four research questions will be addressed through various statistical analyses that are shown in Table 3.1. It is important to note that Research Questions 3 and 4 utilize two separate control samples that are developed through propensity score matching. A detailed description of the process used to identify the control samples appears later in this chapter.

Table 3.1

Summary of Methods Used to Address the Research Questions

Research Question	Analysis	Dependent Variables	Condition
RQ1: What significantly different outcomes in high school academic performance exist for self-identified first-generation students who participate in Get Ready Today in comparison to their non-first-generation peers?	MANOVA & <i>t</i> -tests	First semester high school grade Second semester high school grade Difference between first and second semester high school grade	First-generation v. Non-first-generation

Table 3.1, cont.

<p>RQ2: What significantly different outcomes in Get Ready Today college grade performance exist for self-identified first-generation students who participate in Get Ready Today in comparison to their non-first-generation Get Ready Today peers?</p>	<p>MANOVA & <i>t</i>-tests</p>	<p>Mid-semester college grade Final college grade Difference between mid-semester and final college grade</p>	<p>First-generation v. Non-first-generation</p>
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Analyses utilizing control samples developed via Propensity Score Matching

<p>RQ3: What significantly different outcomes in academic performance exist for self-identified first-generation students who participate in Get Ready Today in comparison to a representative sample of first-generation students who did not participate in other early college interventions including Get Ready Today, Advanced Placement, International Baccalaureate, early college high schools, or dual-credit?</p>	<p><i>t</i>-test</p>	<p>SAT[®] score</p>	<p>Get Ready Today first-generation graduates v. control sample of first-generation who <i>did not</i> complete any other early college intervention</p>
<p>RQ4: What significantly different outcomes in academic performance exist for self-identified first-generation students who participate in Get Ready Today in comparison to a representative sample of first-generation students who did participate in other early college interventions including Advanced Placement, International Baccalaureate, early college high schools, or dual-credit?</p>	<p><i>t</i>-test</p>	<p>SAT[®] score</p>	<p>Get Ready Today first-generation graduates v. control sample of first-generation who completed at least one other early college intervention</p>
<p><i>t</i>-test</p>	<p>Graduation type</p>	<p>Graduation type</p>	<p>Graduation type</p>

Study Sample

The sample examined in this study is comprised of students from the 2015-2016 Get Ready Today cohort. This data is derived from registration data provided by Get Ready Today and includes information for the entire sample of students enrolled in Get Ready Today for the 2015-2016 academic year. This cohort represents over 60 campuses in over 30 school districts across Texas. Data for this study was obtained from the Get Ready Today registration database, the TEA Public Educational Information Management System's (PEIMS) Enrollment, Attendance_Annual, Course Complete, and Graduate datasets and the THECB CBM001 student report and CBM00B admissions report. Approval was granted by the University of Texas at Austin Institutional Review Board (IRB) as well as Get Ready Today, and the ERC to access and analyze this data.

Student registration data was collected and prepared into a supplemental data file by Get Ready Today staff to include only specific registration, course grade, and survey response data necessary for this study and other related research. Included in this dataset were student responses to two surveys. Get Ready Today performed two surveys during the 2015-2016 academic year. The first was administered within the first five weeks of the course start while a second, similar survey was administered within five weeks of the end of the course. The surveys asked Get Ready Today students to provide personal answers to a series of demographic, educational, household, readiness, and mindset questions. Seventeen pairs of student responses to readiness and mindset statements from both the pre- and post-program surveys were included in the supplemental data file

submitted by Get Ready Today to both the TEA and THECB for preparation and submission to the ERC.

Additionally, the Get Ready Today dataset contains student district, campus, mid-semester college grade, final college grade, first semester high school grade, second semester high school grade, and first-generation status based on self-reported survey responses. Upon completion of preparation work by Get Ready Today staff, this file was submitted to the TEA and the THECB where the information was checked for and stripped of any individually identifying information and assigned a unique identifying number (ID2) corresponding to additional student-level data housed at the ERC. The ID2 was then used to match Get Ready Today data to specific K-12 and postsecondary student datasets including PEIMS Enrollment, Attendance_Annual, Course Complete, and Graduate datasets. In addition, Get Ready Today data was also merged with select data from the THECB CBM001 student report and CBM00B admissions report.

First-Generation Status Identification

Get Ready Today survey data. While registration data exists for the entire Get Ready Today enrolled student population, Get Ready Today pre- and post-program survey responses were collected for only 2,452 (approximately 70 percent) of these students. Two survey items requested that students identify the highest level of education attained by each parent and/or guardian respectively. Utilizing the definition of first-generation students identified in earlier as a guide, responses were analyzed to identify instances where responses to both parent and/or guardian educational attainment was high school graduate or lower. Of the approximately 3,500 Get Ready Today students in

the 2015-2016 cohort, a total of 1,863 (approximately 50 percent) provided enough information via the surveys to classify them as either first-generation (N = 549) or non-first-generation (N = 1,314). The remaining students did not provide sufficient information to make a proper determination about their first-generation status.

ApplyTexas. To identify additional students for this study, the entire Get Ready Today cohort dataset was matched to parent/guardian educational attainment data found in the THECB CBM00B admissions report. This both verified our existing results and identified additional first-generation and non-first-generation students based on self-reported college application data.

Students in Texas, are generally required to utilize ApplyTexas, a statewide college application system to apply to state sponsored institutions. Although institutions may also maintain their own application systems, allowing students to apply for admission directly without utilizing ApplyTexas, the convenience to students of utilizing ApplyTexas to apply to multiple institutions at once results in a large number of students in the THECB CBM00B admissions report. While ApplyTexas does not require students to provide the highest level of educational attainment for parents/guardians, many students do provide this information as well as information about single parent/guardian households.

Utilizing data from both Get Ready Today and ApplyTexas, this study was able to increase the number of students identified as either first-generation or non-first-generation. An additional 156 students were identified as first-generation utilizing ApplyTexas data, resulting in 705 identified as first-generation, while 2,553 were

identified as non-first-generation. A breakdown of the process is shown in Figure 3.1. Students who did not submit information to either the survey or to ApplyTexas remained in unknown status. An examination of this sample of unknown status students found no characteristics that might have influenced the results of this study. These students were then deleted listwise from the dataset resulting in a total number of 3,258 students in the overall sample.

The 705 students who were identified as first-generation represent approximately 20 percent of the total Get Ready Today 2015-2016 enrollment, a percentage that is comparable to percentages found in other first-generation research including studies by Pyne and Means (2013), Alvarado, Spatariu, and Woodbury (2017), Saenz, Hurtado, Barerra, Wolf, and Yeung (2007), Riggs (2014), Atherton (2014) and the ACT testing service (2013).

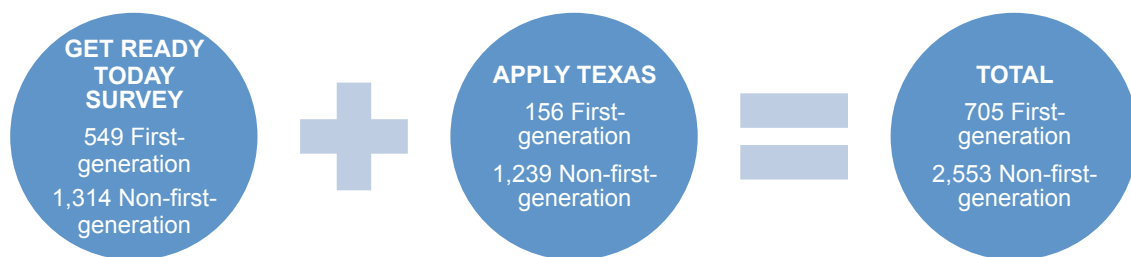


Figure 3.1 First-generation status sample size by source

Demographics. Within the pool of identified first-generation and non-first-generation students a number of comparisons were made. Comparing gender representation within these groups exhibited similar results with first-generation gender

percentages of 48 percent male and 52 percent female, while the non-first-generation sample had gender percentages of 50 percent male and 50 percent female. Gender distribution by first-generation status can be seen in Figure 3.2.

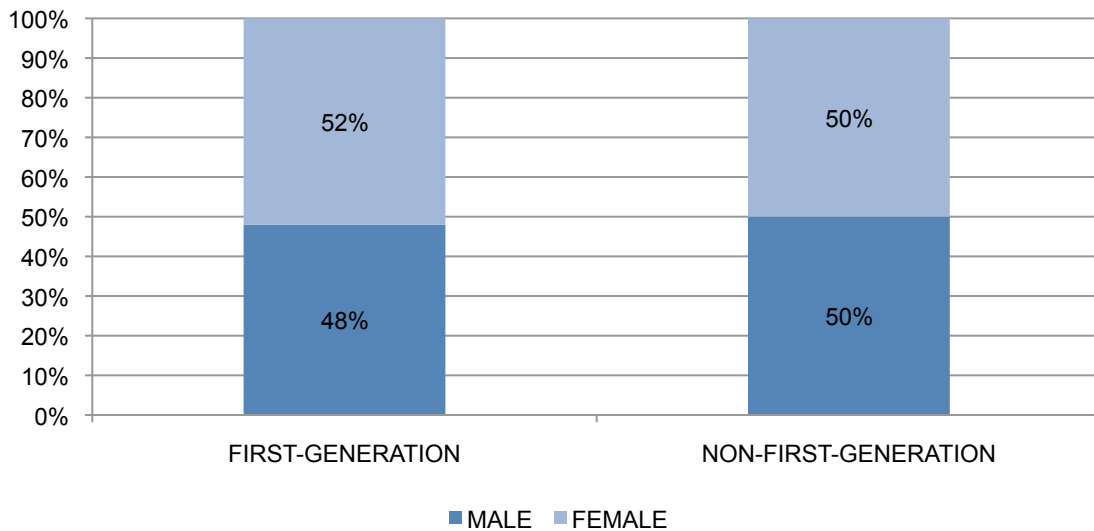


Figure 3.2 Gender distribution by first-generation status

Racial distribution percentages for the first-generation sample included 6 percent Asian, 6 percent African-American, 21 percent Native American, < 1 percent Hawaiian/Pacific Islander, 60 percent White, and 5 percent choosing multiple races. The non-first-generation sample had similar race distribution percentages of 9 percent Asian, 9 percent African-American, 4 percent Native American, < 1 percent Hawaiian/Pacific Islander, 70 percent White, and 7 percent choosing multiple races. The first-generation sample does, however, report a large percentage of Native Americans in comparison to the non-first-generation sample. A breakdown of race distribution by first-generation status can be found in Figure 3.3.

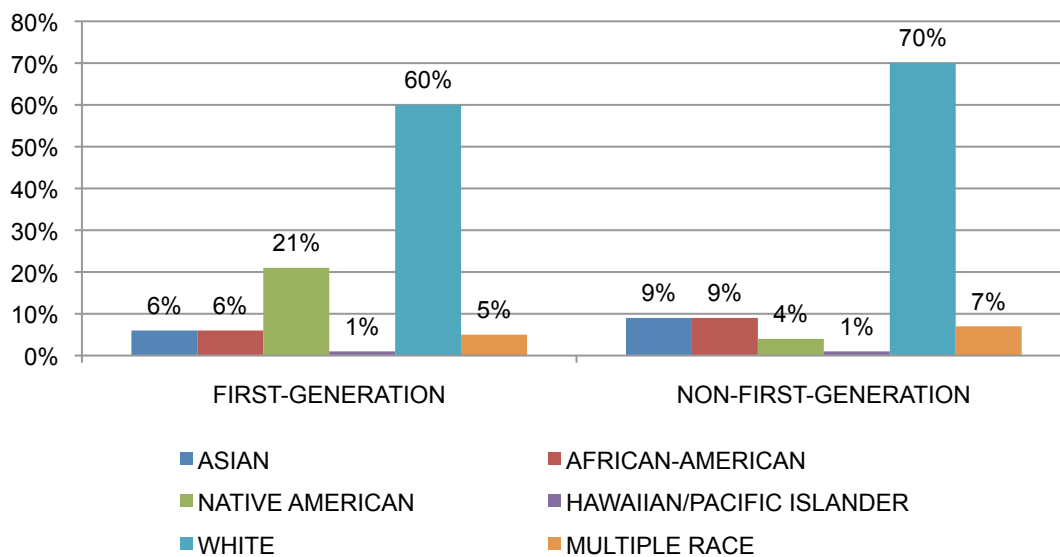


Figure 3.3 Race distribution by first-generation status

Ethnicity distribution was dissimilar as the first-generation sample had a much higher percentage of Hispanic representation. The first-generation sample had an ethnicity distribution of 81 percent Hispanic and 19 percent non-Hispanic while the non-first-generation sample had an ethnicity distribution of 32 percent Hispanic and 67 percent non-Hispanic. Ethnicity distribution by first-generation status can be found in Figure 3.4. The large percentage of Hispanic students in the first-generation sample is corroborated by other research findings including those of Saenz, Hurtando, Barrera, Wolf, and Yeung (2007), Terenzini, Springer, Yaeger, Pascarella, and Nora (1996), Pyne and Means (2013), Reyes and Nora (2012), and O’neal, Espino, Goldthrite, Morin, Weston, Hernandez, and Fuhrmann (2016).

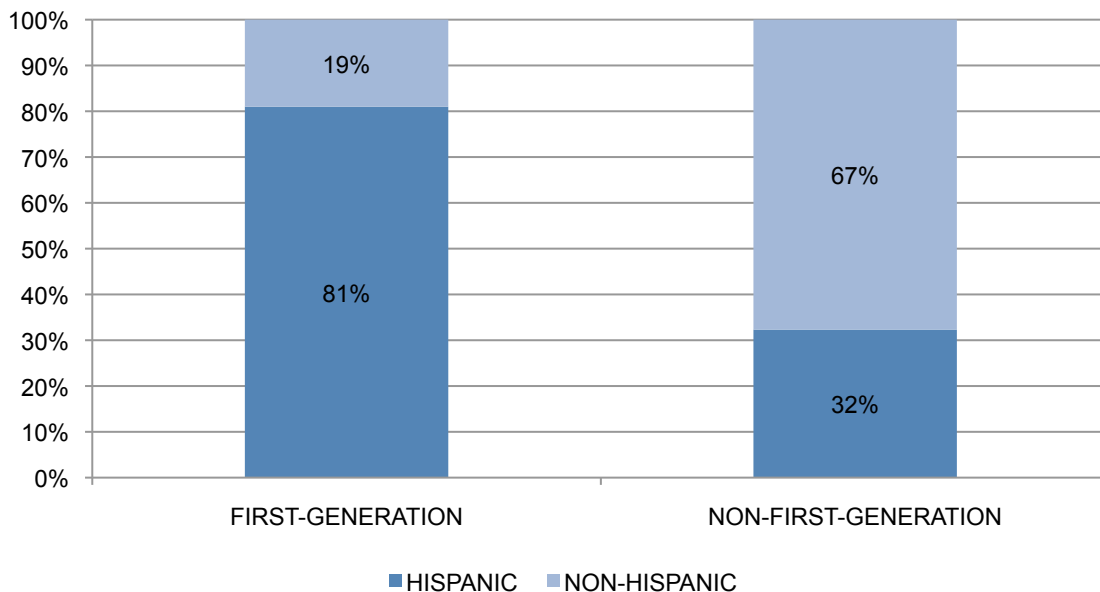


Figure 3.4 Ethnicity distribution by first-generation status

Variables

The variables selected for this study were identified through analysis of existing literature and current research into first-generation student academic performance, dual enrollment program assessment, and social capital development. These variables, and subsequent analyses were chosen as they are best suited to inform the conceptual framework and research questions that guide this study.

Independent variables

In his studies of underrepresented population participation in dual enrollment programs, Brian An (2013, 2015) found that suitable indicators of college success included race, ethnicity, gender, socio-economic indicators, and days absent. Although his studies focused on underrepresented populations, first-generation students share many of the same characteristics thus making it suitable to incorporate these factors into this

study. Building upon An's (2013) design, this study incorporated additional measures gleaned from current literature.

First-generation status is the key indicator used in this study. It is used as the primary identification parameter for all data used. In addition, this study also utilized race, ethnicity, and gender factors as they are consistently used in student persistence research (An, 2013, 2015; An & Taylor, 2015; Astin, 1970; Bean & Metzner, 1985; Pascarella et al., 2004; Terenzini et al., 1996). Socio-economic status has been identified in the literature as a key indicator of academic performance (An, 2013, 2015; An & Taylor, 2015; Balemian & Feng, 2013; Blackwell & Pinder, 2014; Pascarella et al., 2004; Terenzini et al., 1996; Warburton et al., 2001). Socio-economic status is measured through both family income and student eligibility for free or reduced price lunch variables. Research into dual enrollment course outcomes has found that student commitment measured by attendance is indicative of student success (An, 2013; An & Taylor, 2015). This study incorporates the percentage of days attended per year as a measurement of student commitment to the program. Student environment is also regarded as a strong indicator of future success in much of the literature (An, 2015; An & Taylor, 2015; Atherton, 2014; Blackwell & Pinder, 2014; Coffman, 2011; Pyne & Means, 2013; Terenzini et al., 1996; Warburton et al., 2001). Environmental factors to be considered include number of persons living in the home and language spoken at home.

To better understand the relationship between student social capital development and academic performance, three Get Ready Today survey items were selected to measure student mindset as a proxy for social capital development. The three survey

items chosen were originally designed to measure student mindset, and are loosely based on questions found in nationally normed and validated surveys including the Sources of Self-Efficacy in Science Courses – Physics (SOSEC-P) (Fencl & Scheel, 2005) and the Mindset Works Survey (Yeager & Dweck, 2012). Stanton-Salazar identifies mindset as a suitable indicator of student social capital (Stanton-Salazar, 2011; Stanton-Salazar & Spina, 2005). Other research (Contreras, 2005; Kraemer, 1997; Le, Casillas, Robbins, & Langley, 2005; Moschetti, 2015; Wells, 2008) also utilized mindset as a proxy for social capital.

Dependent variables

Course grades, standardized test scores, and graduation type have been utilized in previous research to indicate academic success (ACT, 2013; Engle et al., 2006; IHEP, 2012; Pascarella et al., 2004; Warburton et al., 2001). In this study grades earned in both the high school and college portions of Get Ready Today, standardized test scores, and graduation type data are used to compare first-generation students to their non-first-generation Get Ready Today peers. Get Ready Today consists of two academic parts that run simultaneously. A high school section that determines high school grade and a college section that determines college grade and credit. Graduation type is based on TEA designated curriculum ratings that categorize student high school academic achievement by curriculum difficulty. Standardized tests scores were developed by first identifying the highest SAT[®] and/or ACT[®] score. ACT[®] scores were converted to SAT[®] scores through use of the College Board's Concordance Tables (College Board, 2009). Standardized test scores and graduation type are used in comparisons to control groups of

first-generation students who both did and did not participate in early college interventions. These control samples were developed through propensity score matching. This process will be discussed later in this chapter.

Additionally, within this study, the difference between first semester and second semester high school grade as well as the difference between mid-semester and final college grade were calculated and used to measure the academic progress of students over time as they progressed through the Get Ready Today program. A description of each variable used in this study can be found in Table 3.2.

Table 3.2

Listing of Study Variables

Variable Name	Type	Scale/Range
Independent Variables		
First-generation Status	Categorical	0 = Non-first-generation 1 = First-generation
Get Ready Today Participant	Categorical	0 = did not participate 1 = did participate
Race/Ethnicity	Categorical	0 = Native American 1 = Asian 2 = African American 3 = Hispanic 4 = White 5 = Other
Language Spoken at Home	Categorical	0 = English 1 = Spanish 2 = Other
Gender	Categorical	0 = male 1 = female

Table 3.2, cont.

Economic Status	Categorical	0 = Not economically disadvantaged 1 = Free lunch eligible 2 = Reduced lunch eligible 3 = Other economic disadvantage
Family Income	Categorical	0 = < \$19,999 1 = \$20,000 - \$39,999 2 = \$40,000 - \$59,999 3 = \$60,000 - \$79,999 4 = >\$80,000
Percentage of days attended	Continuous	At end of year
Number of persons living in home	Continuous	Range: 1-9
I enjoy the demanding nature of classes in Get Ready Today.	Categorical	0 = Strongly disagree 1 = Disagree 2 = Neither Disagree nor Agree 3 = Agree 4 = Strongly Agree
It is important that I master the subject mater that Get Ready Today provides	Categorical	0 = Strongly disagree 1 = Disagree 2 = Neither Disagree nor Agree 3 = Agree 4 = Strongly Agree
I believe that I should make good grades in my Get Ready Today coursework	Categorical	0 = Strongly disagree 1 = Disagree 2 = Neither Disagree nor Agree 3 = Agree 4 = Strongly Agree
Dependent Variables		
First semester high school grade	Continuous	Grade at end of first semester
Second semester high school grade	Continuous	Grade at end of second semester

Table 3.2, cont.

Difference between first and second semester high school grade	Continuous	Algebraic difference between semester grades (2 nd semester – 1 st semester)
Mid-semester college grade	Continuous	Grade at middle of term
Final college grade	Continuous	Grade at end of term
Difference between mid-semester and final college grade	Continuous	Algebraic difference between semester grades (final – mid-semester)
Graduation type	Categorical	0 = Individual Education Plan (IEP) 1 = Minimum 2 = Recommended 3 = Distinguished
SAT [®] score	Continuous	Maximum reported score

Data Analysis

The original Get Ready Today dataset was recoded in Microsoft[®] Excel[®] 2013 v.15.0.4919.1000 and imported to SAS[®] v 9.4 for matching and merging with both TEA and THECB data and for statistical analysis. All analysis performed within this study, except where noted, utilized an alpha level of 0.05 as the predetermined level of significance between measures.

Correlation Analysis

A descriptive analysis was completed to provide a baseline of information regarding student social capital development as a result of Get Ready Today participation. This analysis examined three Get Ready Today survey items that were designed to rate student mindset. In this study, these mindset ratings served as proxy for social capital.

Non-first-generation student grade correlation. A Pearson correlation was calculated to determine the relationship between mean survey response for each item and final college grade for non-first-generation students. The hypotheses for this analysis are shown below.

$H_0 : \rho = 0$ (There is no correlation in the sample.)

$H_1 : \rho \neq 0$ (There is a real, nonzero correlation in the sample.)

A correlation matrix was developed, summarizing the data to determine if there is a significantly positive relationship among any of the survey responses and final college grade for non-first-generation students.

First-generation student grade correlation. A second Pearson correlation was calculated to determine the relationship between mean survey response for each of the three statements and final college grade for first-generation students. The hypotheses for this analysis are shown below.

$H_0 : \rho = 0$ (There is no correlation in the sample.)

$H_1 : \rho \neq 0$ (There is a real, nonzero correlation in the sample.)

A correlation matrix was developed, summarizing the data to determine if there is a significantly positive relationship among any of the survey responses and final college grade for first-generation students.

Mean response by first-generation status *t*-test. A series of independent samples *t*-tests were conducted to compare the mean survey responses for each of the three statements in first-generation and non-first-generation conditions.

The hypotheses for these analyses are shown below.

$$H_0: \mu_{\text{first-generation}} = \mu_{\text{non-first-generation}}$$

$$H_1: \mu_{\text{first-generation}} \neq \mu_{\text{non-first-generation}}$$

Multivariate Analysis of Variance

Two multivariate analyses of variance (MANOVA) were utilized to test the hypothesis that first-generation status has an effect on student high school and college grade variables as defined in Research Question 1 and Research Question 2. MANOVA was chosen because it reduces the experiment-wise level of Type I error in comparison to multiple ANOVA. In addition, individual ANOVA may not produce a significant main effect on the dependent variable, but MANOVA, by analyzing in combination may result in a significant main effect. The results of MANOVA may thus imply that the variables are more meaningful taken as a whole rather than considered separately. Finally, MANOVA was chosen as it takes into account the inter-correlations among the dependent variables.

Assumptions of MANOVA. MANOVA assumes multivariate normality — that all of the dependent variables are distributed normally. In addition, MANOVA assumes homogeneity of the covariance matrices. In MANOVA, the univariate requirement of equal variances must be in place for each of the dependent variables. This requirement is tested through the use of Box's *M*. Similar to Levene's test of homogeneity, Box's *M* tests the hypothesis that the covariance matrices of the dependent variables are significantly different across levels of the independent variable. Finally, MANOVA assumes the independence of observations.

Research Question 1 and 2: MANOVA

Research Question 1 sought to determine what significantly different outcomes exist in Get Ready Today student high school academic performance based on first-generation status. To answer this question, three variables have been identified to measure academic performance. A multivariate analysis of variance (MANOVA) was performed to determine if significant differences existed between 1st semester high school grade, 2nd semester high school grade, and the algebraic difference between the 1st and 2nd semester high school grades in first-generation and non-first-generation conditions. The hypothesis for this analysis is shown below:

$$\begin{aligned} H_0 : \quad & \mu_{\text{1st semester, first-generation}} = \mu_{\text{1st semester, non-first generation}} \\ & \mu_{\text{2nd semester, first-generation}} = \mu_{\text{2nd semester, non-first generation}} \\ & \mu_{\text{difference, first-generation}} = \mu_{\text{difference, non-first generation}} \\ \\ H_1 : \quad & \mu_{\text{1st semester, first-generation}} \neq \mu_{\text{1st semester, non-first generation}} \\ & \mu_{\text{2nd semester, first-generation}} \neq \mu_{\text{2nd semester, non-first generation}} \\ & \mu_{\text{difference, first-generation}} \neq \mu_{\text{difference, non-first generation}} \end{aligned}$$

Should the null hypothesis be rejected, a series of paired samples *t*-tests would be performed to determine the level of significance of difference in mean high school grades.

Research Question 2 sought to determine what significant differences exist in Get Ready Today college grade performance based on first-generation status. Similar to the

previous MANOVA, this analysis will utilize academic grade measurements taken at points throughout the course. A multivariate analysis of variance (MANOVA) was performed to determine if significant differences existed between mid-semester college grade, final college grade, and the algebraic difference between mid-semester and final college grade in first-generation and non-first-generation conditions. The hypothesis for this analysis is shown below:

$$H_0 : \mu_{\text{mid-semester, first-generation}} = \mu_{\text{mid-semester, non-first generation}}$$

$$\mu_{\text{final, first-generation}} = \mu_{\text{final, non-first generation}}$$

$$\mu_{\text{difference, first-generation}} = \mu_{\text{difference, non-first generation}}$$

$$H_1 : \mu_{\text{mid-semester, first-generation}} \neq \mu_{\text{mid-semester, non-first generation}}$$

$$\mu_{\text{final, first-generation}} \neq \mu_{\text{final, non-first generation}}$$

$$\mu_{\text{difference, first-generation}} \neq \mu_{\text{difference, non-first generation}}$$

Should the null hypothesis be rejected, a series of paired samples *t*-tests would be performed to determine the level of significance of difference in mean college grades.

Research Question 3 and 4: Propensity Score Matching

To address both Research Question 3 and Research Question 4, a need for two control samples of first-generation students was identified. For Research Question 3, a control sample was developed that was comprised of students that did not participate in any type of early college interventions. For Research Question 4 a control sample was identified of first-generation students that did participate in early college interventions that did not include Get Ready Today. This study utilized propensity score matching

(PSM) to match treatment and control units to reduce the effects of selection bias in observable pre-treatment characteristics.

Rosenbaum and Rubin (1985) defined propensity score matching as a method for identifying a control sample from a larger pool producing a representative group of reasonable size that is similar to the treatment sample based on a series of predetermined variables. Propensity score matching was chosen as it minimizes the effects of bias and effect modification when estimating treatment effects in observational data (Caliendo & Kopeinig, 2008).

A propensity score is simply a probability, a number between 0 and 1 that represents the chance that a subject will be assigned to a sample based on pre-determined covariates. The scores are developed through the calculation of a logistic regression. Scores are then matched to the experimental group scores to develop one or several comparison groups. This allows the treatment and control groups to become more balanced based upon observed characteristics, permitting a more precise estimation of the relationship between them.

Caliendo and Kopeinig (2008) reported that PSM, when correctly implemented, can prevent selection bias, but warned that adequate matching requires careful thought and evaluation of the control sample to determine the most appropriate method to employ. In this study, matching was performed using the nearest-neighbor method with replacement. This matching method was chosen because of the large relative size of the pre-match control samples, and the relatively small percentage of replacement necessary to create the post-match control samples.

Research has identified similar studies that have utilized PSM. The first, completed by Brand and Halaby (2006), analyzed the effect of elite college attendance on career outcomes. The second example was developed by Struhl and Vargas (2012) in their examination of dual credit outcomes in Texas. Although they did not focus on first-generation populations, their work will serve as a guide for this proposed study. The most pertinent example of the use of PSM in similar research can be found in Brian An's (2015) study of underrepresented student academic performance in dual enrollment programs.

PSM data preparation. To address Research Question 3 and Research Question 4, a new dataset was developed. This dataset included the sample of 179 first-generation Get Ready Today students who had completed the Get Ready Today coursework, graduated from high school, applied to college utilizing the ApplyTexas application and submitted standardized admissions test score found in the modified data set of 3,258 Get Ready Today students for whom a first-generation status had been identified. A large sample of first-generation students who did not participate in Get Ready Today was then identified from both TEA and THECB sources. This large sample included students from Get Ready Today school districts as well as adjacent districts. The sample was then used to support the development of two control samples of students. The first sample included first-generation students who had not participated in any early college intervention. The second sample included first-generation students who had participated in at least one early college intervention, not including Get Ready Today. Additional student level data was matched to all three samples. This information included gender, family income,

number of residents in home, ethnicity/race, language spoken in home, economically disadvantaged status, percent of the class year attended, SAT[®] score, and graduation type. This information was gathered from both TEA and THECB sources.

This query resulted in 1193 students identified for use in propensity score matching. Within this dataset, 179 students were first-generation students who completed Get Ready Today coursework, 526 students identified as being both first-generation and having not participated in any type of early college intervention, and 485 students identified as being both first-generation and having completed at least one early college intervention other than Get Ready Today while in high school. Figure 3.5 portrays the process used to develop the control samples. For all three samples, both SAT[®] and ACT[®] scores were collected. ACT[®] scores were converted to SAT[®] scores utilizing the College Board's Concordance Tables (College Board, 2009). The maximum score was then used in this analysis.

Selection of covariates. The covariates used in propensity score matching were identified through a review of relevant literature in first-generation student research. In addition to gender, and race/ethnicity, the other covariates chosen include language spoken at home, economic status, family income, percentage of school year attended, and number of persons in household. Gender and race/ethnicity were chosen as they are both recognized in the literature as key identifying factors for first-generation populations.

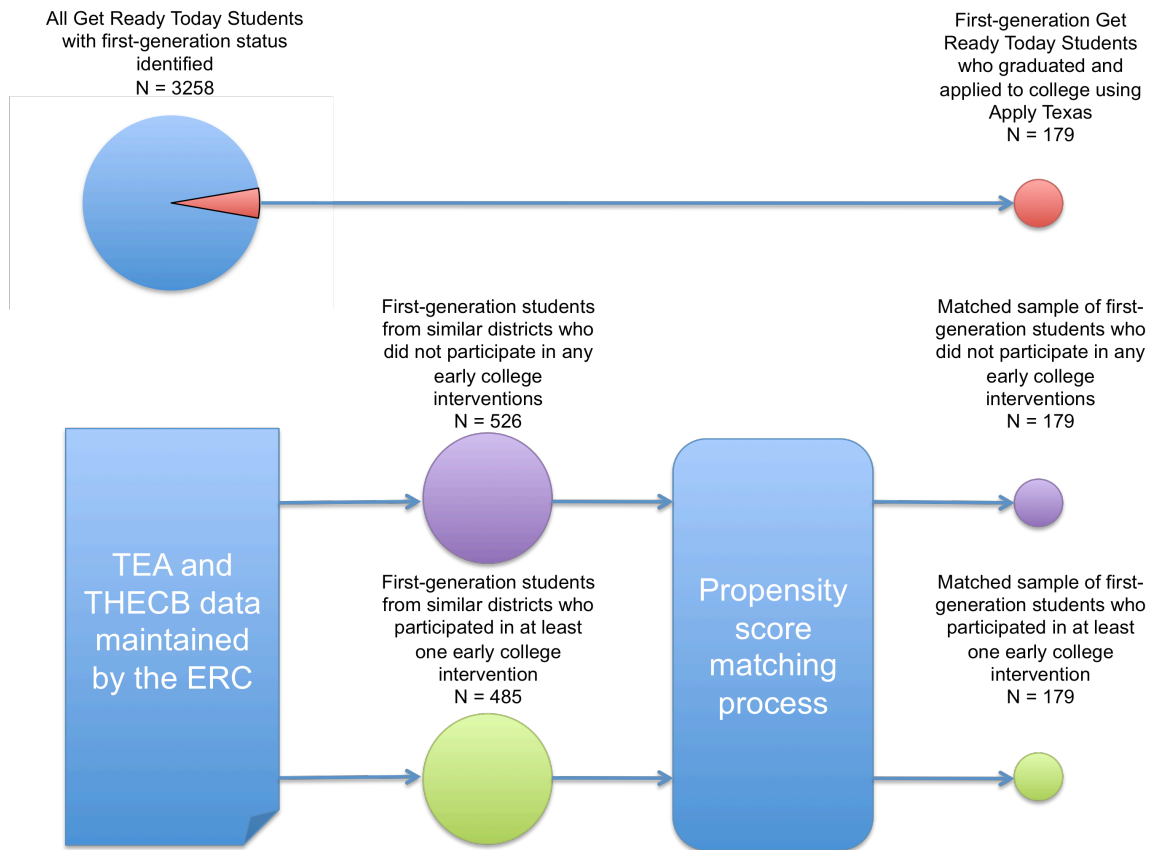


Figure 3.5 Control sample development process

Language spoken at home and number of persons in household have also been identified as unique markers for many first-generation student populations. Economic status and family income are used as they help to identify first-generation students from similar socio-economic populations. Percentage of school year attended allows us to identify students with similar attitudes and mindsets regarding their level of commitment. Baseline characteristics of the pre-match samples can be found in Table 3.3.

Table 3.3

Baseline Characteristics of First-generation Student in the Propensity Score Pre-match Sample

Variable	Get Ready Today	%	No early college interventions	%	At least one early college intervention	%
Gender						
Male	78	42%	238	45%	245	51%
Female	104	57%	288	55%	240	49%
Race/Ethnicity						
Native American	1	<1%	11	2%	16	3%
Asian	5	3%	25	5%	77	16%
African American	13	5%	66	13%	38	8%
Hispanic	91	50%	191	36%	111	23%
White	72	40%	232	44%	240	49%
Other	0	0%	1	<1%	3	<1%
Language spoken at home						
English	99	54%	54	10%	34	7%
Spanish	79	44%	446	85%	404	83%
Other	4	2%	26	5%	47	10%
Economic Status						
Not Econ. Dis.	102	56%	116	22%	72	14%
Free Lunch Eligible	21	12%	22	4%	25	5%
Reduced Lunch Eligible	20	11%	29	6%	6	1%
Other Econ. Dis.	39	21%	359	68%	382	78%
Family Income						
< \$20,000	38	38%	110	21%	87	18%
\$20K - \$40K	66	36%	91	17%	79	16%
\$40K - \$60K	44	24%	152	29%	144	30%
\$60K - \$80K	31	17%	102	19%	120	25%
>\$80K	3	2%	71	13%	55	11%

Table 3.3, cont.

Number of persons in household						
1	0	0%	7	1%	7	1%
2	11	6%	50	10%	35	7%
3	29	16%	95	18%	83	17%
4	48	26%	188	36%	157	32%
5	43	24%	96	18%	106	22%
6	30	16%	48	9%	56	12%
7	10	5%	29	29%	30	6%
8	8	4%	10	2%	5	1%
9	3	2%	3	<1%	6	1%
Percentage of year attended						
% Year Attended Avg.	96.39		96.16		96.54	

Propensity scores were developed using a logistic regression process. The logistic regression estimated the probability of each student’s likelihood of entering the experimental state, based on the identified covariates that may affect student participation in Get Ready Today. The dependent variable in the p-score model is *GRT Enrollment*, a binary condition into which students will be categorized.

The dataset used to develop a baseline propensity score consisted of 179 first-generation, Get Ready Today graduates who utilized Apply Texas to apply to college and provided either an SAT® or ACT® score, or both. Using a custom dialog in SAS® 9.4, a logistic regression analysis was performed to determine the probability of enrolling in Get Ready Today. The process calculated maximum likelihood estimates for each covariate, these may be found in Table 3.4.

Table 3.4

Analysis of Maximum Likelihood Estimates

Parameter	<i>df</i>	Estimate	Standard Error	Wald Chi-Square	Pr>ChiSQ
Intercept	1	1.87	2.38	0.62	0.43
Gender	1	0.10	0.19	0.28	0.60
Race/Eth	1	-0.19	0.11	2.94	0.09
Language at home	1	-1.72	0.19	78.18	<.0001
Econ Status	1	-0.48	0.08	39.97	<.0001
Percent Attend	1	0.01	0.02	0.32	0.57
Family Income	1	-0.08	0.08	0.91	0.34
Number in home	1	0.06	0.06	1.07	0.30

These estimates were then used to develop a logistic regression equation that was used to create a propensity score for each student in the pre-match control samples. The propensity score equation is shown below:

$$\text{Propensity Score} = 1.87 + 0.10 (\text{Gender}) - 0.19 (\text{Race/Ethnicity}) - 1.72 (\text{Language spoken at home}) - 0.48 (\text{Economic status}) + 0.01 (\text{Percentage of school year attended}) - 0.08 (\text{Family Income}) + 0.06 (\text{Number of persons at home})$$

Matching. After estimation of a propensity score, data was matched 1:1 against the Get Ready Today sample utilizing nearest neighbor matching with replacement. After the matching was complete, a comparison of the two matched control samples to the Get Ready Today sample was performed. This test is used to determine if matched observations with the same or similar propensity score have the same or similar distribution of observable covariates independent of treatment status. Figure 3.6 displays the distribution of propensity scores for the pre-match conditions for the Get Ready Today sample, the sample of students with no early college intervention, and the sample of students with at least one early college intervention.

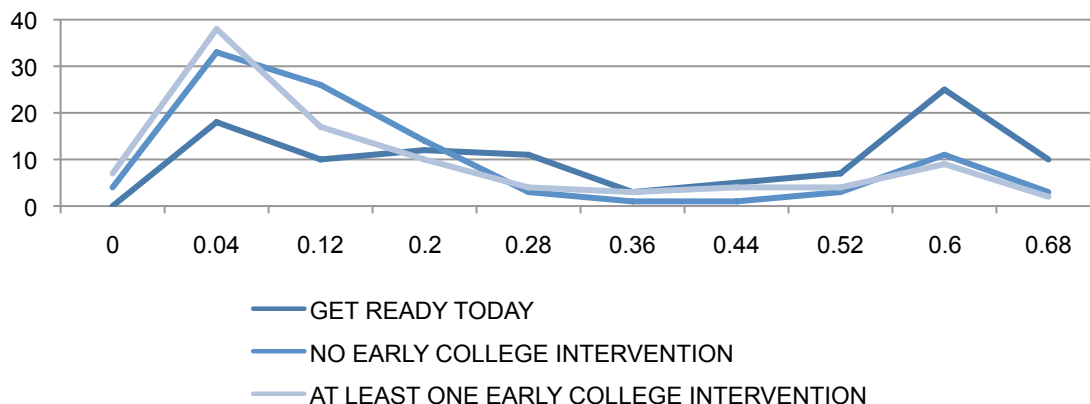


Figure 3.6 Pre-match sample distributions

In Figure 3.6 we can see that the distribution of propensity scores varies widely based on each sample. After matching was completed, the distribution of propensity scores should appear more uniform. Figure 3.7 displays the distribution of propensity scores for the post-match conditions for the Get Ready Today sample, the sample of students with no early college interventions, and the sample of students with at least one early college intervention. In Figure 3.7, we see that the propensity score matching process creates more closely matched subsets.

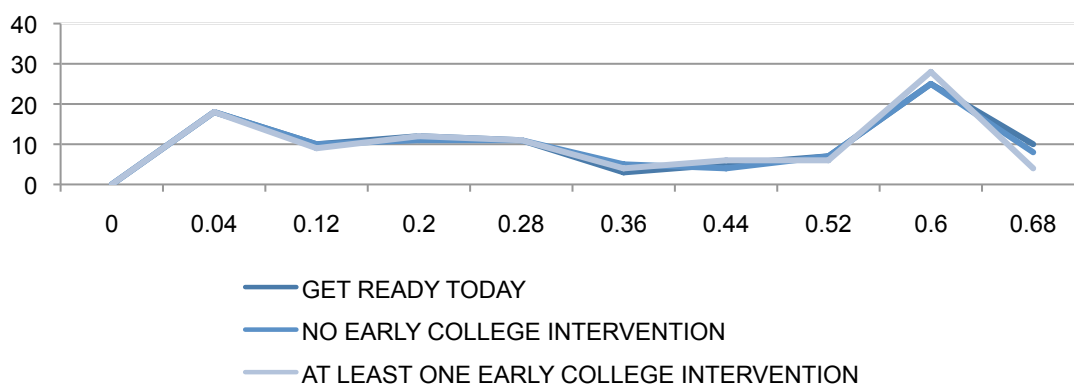


Figure 3.7 Post-match sample distributions

To better understand the samples resulting from propensity score matching, comparison of the post-match characteristics for each sample including the Get Ready Today sample was made. Baseline characteristics for the post-match samples are shown in Table 3.5.

Table 3.5

Baseline Characteristics of First-generation Student in the Propensity Score Post-match Sample

Variable	Get Ready Today	%	No early college interventions	%	At least one early college intervention	%
Gender						
Male	78	42%	66	36%	100	55%
Female	104	57%	116	64%	82	45%
Race/Ethnicity						
Native American	1	<1%	5	3%	8	4%
Asian	5	3%	3	2%	7	4%
African American	13	5%	27	15%	15	8%
Hispanic	91	50%	129	71%	126	69%
White	72	40%	17	9%	26	14%
Other	0	0%	1	<1%	0	0%
Language spoken at home						
English	99	54%	95	52%	96	52%
Spanish	79	44%	85	47%	84	47%
Other	4	2%	21	1%	2	1%
Economic Status						
Not Econ. Dis.	102	56%	102	56%	98	54%
Free Lunch Eligible	21	12%	19	10%	29	16%
Reduced Lunch Eligible	20	11%	19	10%	7	4%
Other Econ. Dis.	39	21%	42	23%	48	24%
Family Income						
< \$20,000	38	21%	53	29%	49	27%
\$20K - \$40K	66	36%	60	33%	49	27%
\$40K - \$60K	44	24%	37	20%	35	19%
\$60K - \$80K	31	17%	27	15%	41	23%
>\$80K	3	2%	5	3%	8	4%

Table 3.5, cont.

Number of persons in household						
1	0	0%	7	4%	6	1%
2	11	6%	14	8%	12	7%
3	29	16%	24	13%	31	17%
4	48	26%	43	24%	34	32%
5	43	24%	45	25%	25	22%
6	30	16%	15	8%	47	12%
7	10	5%	20	11%	23	6%
8	8	4%	14	8%	4	2%
9	3	2%	0	0%	0	0%
Percentage of year attended						
% Year Attended Avg.	96.39		96.45		96.54	

Research Question 3 and 4: *t*-tests

Upon completion of the PSM process and the creation of the control group of first-generation students with no early college interventions, a series of independent samples *t*-test was conducted to address Research Question 3. These tests were used to determine if any significant differences existed in academic performance first-generation students who had completed the Get Ready Today program compared to the control group of first-generation students who did not participate in any early college intervention programs. For these analyses, academic performance is measured utilizing SAT[®] score and Graduation Type. The first *t*-test was conducted to compare mean SAT[®] score in the Get Ready Today completion sample in comparison to the no early college intervention sample. The hypothesis for this *t*-test is shown below.

$$H_0 : \mu_{\text{GRT}} = \mu_{\text{no early college intervention}}$$

$$H_1 : \mu_{\text{GRT}} \neq \mu_{\text{no early college intervention}}$$

The second *t*-test compared mean graduation type in the Get Ready Today completion sample in comparison to the no early college intervention sample. The hypothesis for this *t*-test is shown below.

$$H_0 : \mu_{\text{GRT}} = \mu_{\text{no early college intervention}}$$

$$H_1 : \mu_{\text{GRT}} \neq \mu_{\text{no early college intervention}}$$

The effect size of both *t*-tests was then determined through the use of Cohen's *d*. A summary of the analyses was created and used to address Research Question 3.

To address Research Question 4 a series of independent samples *t*-tests were conducted to determine if any significant differences existed in academic performance first-generation students who had completed the Get Ready Today program compared to the control group of first-generation students who completed at least one early college intervention. For these analyses, academic performance is measured utilizing SAT[®] score and Graduation Type. The first *t*-test was conducted to compare mean SAT[®] score in the Get Ready Today completion sample in comparison to the at least one early college intervention sample. The hypothesis for this *t*-test is shown below.

$$H_0 : \mu_{\text{GRT}} = \mu_{\text{at least one early college intervention}}$$

$$H_1 : \mu_{\text{GRT}} \neq \mu_{\text{at least one early college intervention}}$$

The second *t*-test compared mean graduation type in the Get Ready Today completion sample in comparison to the no early college intervention sample. The hypothesis for this *t*-test is shown below.

$$H_0 : \mu_{\text{GRT}} = \mu_{\text{at least one early college intervention}}$$

H₁: $\mu_{\text{GRT}} \neq \mu_{\text{at least one early college intervention}}$

The effect size of both *t*-tests was then determined through the use of Cohen's *d*. A summary of the analyses was created and used to address Research Question 4.

Limitations

The study had three identified limitations, although more are certainly present. As this study is limited to a unique dual enrollment program in Texas, the results are not applicable to other programs. While the study's results may be useful for Get Ready Today, they cannot be generalized to other dual enrollment programs. The results, however, may serve to inform policy and process in other dual enrollment programs as they seek to emulate Get Ready Today to better serve their first-generation populations. A second limitation is the unavailability of certain academic performance data for Get Ready Today students as they entered college. To overcome this lack of data, this study chose to utilize standardized college admission test scores. This was not ideal as these scores represent academic achievement at a single point in time that may not have occurred at any point during a student's final year of high school. The third identified limitation regards the use of propensity score matching to create control samples of first-generation students who did not participate in Get Ready Today. As it was unlikely to develop a fully randomized sample for testing the hypotheses found in Research Question 3 and Research Question 4, propensity score matching represents the best course of action in developing the control samples. Careful and deliberate selection of covariates for use in PSM serves to increase the likelihood of creating representative control samples.

Summary

This chapter outlined the methodology that will be utilized to examine and answer the proposed research questions. The research design, data collection process and rationale were discussed. The variables to be utilized as well as their relationship to the literature were presented. The analysis procedures and a discussion of how each variable will be operationalized, was included. A discussion of propensity score matching was included as was an explanation of the process and outcomes. The chapter concluded with a discussion of the statistical techniques to be used in the proposed study and how they relate to the research questions.

Chapter 4

Get Ready Today provides a unique university administered dual enrollment program that offers both the benefits and rigor of courses offered to university students. As Get Ready Today has grown, so has the number of self-identified first generation students it serves. With a consistent percentage of approximately 20 percent of Get Ready Today students self-reporting as first-generation, the program offers a unique opportunity to examine first-generation academic performance in comparison to non-first-generation students within the same treatment conditions. This study sought to determine what, if any, significant differences exist in academic performance measures when comparing Get Ready Today' first-generation students to both non-first-generation students and other first-generation students.

This chapter will discuss the results of the research methods used to address the research questions. The chapter will begin with, a summary of the analysis and results of an examination into social capital development. Ensuing sections will examine each of the four research questions through the use of descriptive statistics. Each research question will be addressed independently and statistical analysis results will be presented and discussed. A summary of results concludes this chapter.

Descriptive Analyses

A baseline descriptive analysis was performed on Get Ready Today survey data to examine student mindset. Survey questions serve as a proxy for measurement of social

capital, allowing this study to measure social capital development for first-generation students in comparison to their non-first-generation peers.

Pearson Correlation – Social Capital Development

Three Get Ready Today survey items were chosen to measure student social capital development. These survey items were chosen to assist in the understanding of Get Ready Today's effect on the development of social capital in first-generation populations and how this might differ in comparison to their non-first-generation peers. Students in pre- and post-program survey conditions rated each item. A Likert scale requested students match their level of agreement with each statement with one of five ratings. These ratings included strongly disagree, disagree, neutral, agree, and strongly agree. The survey items chosen for this study include:

1. "I enjoy the demanding nature of classes in Get Ready Today."
2. "It is important that I master the subject mater that Get Ready Today provides."
3. "I believe that I should make good grades in my Get Ready Today coursework."

Non-first-generation Student Grade Correlation

A Pearson Correlation was calculated to determine the relationship between each mean survey response and final college grade for non-first-generation students. The results of the Pearson correlation are shown in Table 4.1. A Pearson Correlation was computed to assess the relationship between the average score for the statement, "I enjoy the demanding nature of classes in Get Ready Today.," and final grade for non-first-generation students. There was a modest positive correlation between the two variables, $r = 0.164$, $N = 912$, $p < .001$. A second Pearson Correlation was computed to determine

the relationship between the average score for the statement, “It is important that I master the subject mater that Get Ready Today provides,” and final grade for non-first-generation students. There was a fairly small positive correlation between the two

Table 4.1

Pearson Correlation Coefficients – Non-first-generation Students

Variable	Result	Statement 1 Average score	Statement 2 Average score	Statement 3 Average score	Final Grade
Statement 1 Average score	Pearson Correlation	1			
Statement 2 Average score	Pearson Correlation	0.420***	1		
Statement 3 Average score	Pearson Correlation	0.180***	0.379***	1	
Final Grade	Pearson Correlation	0.164***	0.191***	0.159***	1
N = 912	Note: *** $p < .001$				

variables, $r = 0.191$, $N = 912$, $p < .001$. Finally, a third Pearson Correlation was computed to better understand the relationship between the average score for the statement, “I believe that I should make good grades in my Get Ready Today coursework,” and final grade for non-first-generation students. There was a moderate positive correlation between the two variables, $r = 0.159$, $N = 912$, $p < .001$. The null hypothesis was rejected in all cases.

First-generation Student Grade Correlation

A second Pearson correlation was calculated using only first-generation student data. This analysis was performed to determine if the relationship between each mean first-generation student survey response and final college grade. For first-generation students, these r coefficient values are higher for all three statements. The results of a correlation analysis of the statements and final grade data for first-generation students is shown in Table 4.2. There was a small positive correlation between statement 1 and final grade, $r = 0.257$, $N = 373$, $p < .001$. There was also a moderate positive correlation between statement 2 and final grade, $r = 0.292$, $N = 373$, $p < .001$. Finally there was a modest correlation between statement 3 and final grade, $r = 0.234$, $N = 373$, $p < .001$. The null hypothesis was rejected in all cases. The r coefficients for each statement

Table 4.2

Pearson Correlation Coefficients – First-generation Get Ready Today Responders

Variable	Result	Statement 1 Average score	Statement 2 Average score	Statement 3 Average score	Final Grade
Statement 1 Average score	Pearson Correlation	1			
Statement 2 Average score	Pearson Correlation	0.498***	1		
Statement 3 Average score	Pearson Correlation	0.320***	0.594***	1	
Final Grade	Pearson Correlation	0.257***	0.292***	0.234***	1
N = 373	Note: *** $p < .001$				

indicate that there is a weak correlation between student perceptions of each statement and final college grade for first-generation students. This correlation indicates that students with higher levels of agreement to each statement are only slightly more likely to have higher final college grades. A comparison of correlation coefficients for final grade by mean student survey item response for the non-first-generation and first-generation samples is shown in Table 4.3.

Table 4.3

Comparison of Correlation Coefficients

Variable	Correlation Coefficient Non-first-generation survey responders N = 913	Correlation Coefficient First-generation survey responders N=372	Difference
Statement 1	0.164 ***	0.257 ***	+0.093
Statement 2	0.191 ***	0.292 ***	+0.101
Statement 3	0.159 ***	0.234 ***	+0.075

Note: *** $p < .001$

Mean Response by First-generation Status *t*-test

To more thoroughly examine the progression of first-generation students through the Get Ready Today course and how this experience may have impacted their social capital development, a series of independent samples *t*-tests were conducted to compare the mean survey responses for each statement in first-generation and non-first-generation conditions. A summary of these analyses can be found in Table 4.4. These analyses found:

1. There was not a significant difference in mean survey responses to the statement

- “I enjoy the demanding nature of classes in Get Ready Today.” for first-generation students ($M = 3.81$, $SD = 0.49$) versus non-first-generation students ($M = 3.88$, $SD = 0.47$), $t(1283) = 1.87$, $p = 0.06$. The null hypothesis was not rejected.
2. There was not a significant difference in mean survey responses to the statement “It is important that I master the subject mater that Get Ready Today provides” for first-generation students ($M = 4.40$, $SD = 0.37$) versus non-first-generation students ($M = 4.50$, $SD = 0.37$), $t(1283) = 2.59$, $p < 0.05$. The null hypothesis was not rejected.
 3. There was not a significant difference in mean survey responses to the statement “I believe that I should make good grades in my Get Ready Today coursework” for first-generation students ($M = 4.49$, $SD = 0.37$) versus non-first-generation students ($M = 4.53$, $SD = 0.40$), $t(1283) = 1.03$, $p = 0.30$. The null hypothesis was not rejected.

These results imply that for the statements “I enjoy the demanding nature of classes in Get Ready Today.” “I believe that I should make good grades in my Get Ready Today coursework,” and “It is important that I master the subject mater that Get Ready Today provides,” there is no significant difference in perception between first-generation and non-first-generation students. This one finding represents a positive development, as the results indicate that first-generation students regard these statements in light of Get Ready Today programming in a way that is similar to non-first-generation students.

Table 4.4

Sample Descriptives Using t-test for Equality of Mean Survey Responses

Statement	First-generation (N = 372)		Non-first- generation (N = 913)		<i>t</i> -test	Cohen's <i>d</i>
	M	SD	M	SD		
I enjoy the demanding nature of classes in Get Ready Today.	3.81	0.49	3.88	0.47	1.87	0.146
It is important that I master the subject mater that Get Ready Today provides	4.40	0.37	4.50	0.37	2.59**	0.270
I believe that I should make good grades in my Get Ready Today coursework	4.49	0.37	4.53	0.40	1.03	0.104

Note: ** $p < 0.05$

An examination of the values calculated for Cohen's *d* for all three statements finds that all three effect sizes are small (Creswell, 2007; Meier, 2009). Statement 2 has the largest effect size with a Cohen's *d* of 0.27, this signifies that 61 percent of non-first-generation student responses will be above the mean of the first-generation responses. This results in a 58 percent chance that a person picked at random from the non-first-generation sample will have a higher score than a person picked at random from the first-generation sample.

This baseline descriptive analysis showed that correlation coefficients between statement survey scores and final grade for first-generation students were higher than for

non-first-generation students. Three *t*-tests were then computed to examine each of the three statements in first-generation and non-first-generation conditions. Each of the three *t*-tests resulted in no significant differences in mean statement score between first-generation and non-first generation students. The results of these examinations on survey items designed to measure student mindset serve as a proxy to social capital development among Get Ready Today' students. These results imply that Get Ready Today' first-generation students maintain similar mindsets and thus social capital, as their non-first-generation peers.

Research Question 1 – High School Academic Performance

Multivariate Analysis of Variance on High School Grade

To address Research Question 1, this study utilized three dependent variables including first-semester high school grade, second semester high school grade, and the difference between first- and second-semester high school grades. A multivariate analysis of variance (MANOVA) was conducted to assess grade differences on first-generation and non-first-generation samples. A non-significant Box's *M* test ($p > 0.01$) indicates homogeneity of covariance matrices of the dependent variables across all levels of grade.

Multicollinearity. A Pearson Correlation was computed as a means for checking for multicollinearity. The results of this analysis can be found in Table 4.5. As none of the dependent variables had a correlation above .80, the variables were used as-is without need to create composite variables. As noted before, the Box's *M* Test of Equality of Covariance Matrices was utilized to check on the assumption of homogeneity of

covariance among the groups utilizing an alpha level of 0.01. For this study, Box's M (4.58) was not significant, $p > 0.01$, indicating that there are no significant differences between the covariance matrices. As a result, this key assumption is not violated and the value for Wilk's Lambda produced by the MANOVA is the appropriate result to use.

The MANOVA analysis produced results as shown in Table 4.6. Utilizing Wilk's Lambda test we see that the results are significant, Wilk's $\Lambda = .983$, $F(2,1992) = 17.62$, $p < .001$. This F indicates that there are significant differences between first-generation and non-first-generation students on a linear combination of the dependent variables.

Table 4.5

Pearson Correlation Coefficients

Variable	Result	1 st Semester high school grade	2 nd Semester high school grade	Difference between 1 st and 2 nd semester high school grade
1 st Semester high school grade	Pearson Correlation	1		
2 nd Semester high school grade	Pearson Correlation	0.769 ***	1	
Difference between 1 st and 2 nd semester high school grade	Pearson Correlation	- 0.143 ***	0.522 ***	1

N =1995 Note: *** p<.001

Table 4.6

Multivariate Analysis of Variance

Statistic	Value	F Value	Num DF	Den DF	Pr > F
Wilk's Lambda	0.983	17.62	2	1992	< .0001
Pillai's Trace	0.017	17.62	2	1992	< .0001
Hotelling-Lawley Trace	0.018	17.62	2	1992	< .0001
Roy's Greatest Root	0.018	17.62	2	1992	< .0001

Levene's Test of Equality of Error Variances tests the assumption of MANOVA that the variances of each variable are equal across the groups. For this study Levene's test was not significant and the assumption was met for all three dependent variables (First semester high school grade, $p > 0.05$, second semester high school grade, $p > 0.05$, and difference between first and second semester high school grade, $p > 0.05$).

Because the MANOVA was significant, it became necessary to examine the univariate ANOVA results. Results for the univariate analyses are shown in Table 4.7. The univariate ANOVA results indicate that first semester high school grades, $F(1,1993) = 35.25, p < .0001$ are significantly different for first-generation students versus non-first-generation students in Get Ready Today courses. The null hypothesis is rejected. Similarly, second semester high school grades, $F(1,1993) = 21.07, p < .0001$, were significantly different for first-generation students versus their non-first-generation peers. The null hypothesis is rejected. The ANOVA also indicated that the difference between first semester high school grade and second semester high school grade. $F(1,1993) = 0.62, p = 0.4307$, is not significant. The null hypothesis is not rejected.

Table 4.7

Tests of Between-Subjects Effects

Source	Dependent Variable	Type III Sum of Squares	<i>df</i>	Mean Sq	<i>F</i>	Sig.
First Generation Status	1 st Sem. Grade	2754.76	1	2754.76	35.25	< .0001
	2 nd Sem. Grade	2230.56	1	2230.56	21.07	< .0001
	1 st to 2 nd Diff.	27.64	1	27.64	0.62	.4307
Error	1 st Sem. Grade	155737.99	1993	78.14		
	2 nd Sem. Grade	211013.13	1993	105.88		
	1 st to 2 nd Diff.	88678.04	1993	44.49		
Corrected Total	1 st Sem. Grade	158492.75	1994			
	2 nd Sem. Grade	213243.68	1994			
	1 st to 2 nd Diff.	88705.68	1994			

Paired Samples *t*-tests High School Grade

As a secondary test of the results of the previously described MANOVA analysis, paired-samples *t*-tests were performed to compare first semester high school grade, second semester high school grade, and the difference between first and second semester high school grade in first-generation and the non-first-generation conditions. The analysis found a significant difference between first semester high school grades for first-generation ($M = 83.07$, $SD = 8.82$) and non-first-generation ($M = 85.83$, $SD = 8.85$) conditions; $t(1993) = 5.94$, $p < .0001$. The null hypothesis was rejected. These results suggest that first-generation status is related to first semester high school grade. Specifically, the results suggest that Get Ready Today' first-generation students do not perform as well as non-first-generation students based on first semester high school grade performance.

The second *t*-test analysis similarly examined first-generation and non-first-generation student academic performance based on their second semester high school grade. A paired-samples *t*-test was conducted to compare final grade in first-generation and the non-first-generation conditions. The analysis found that there was a significant difference between mean second semester grade for first-generation ($M = 81.87$, $SD = 9.68$) and non-first-generation ($M = 84.35$, $SD = 10.47$) conditions; $t(1993) = 4.59$, $p < .0001$. The null hypothesis was rejected. These results suggest that first-generation status is related to second semester high school grades. More directly the results suggest that Get Ready Today' first-generation students do not perform as well as non-first-generation students based on second semester high school grade performance.

A third analysis was performed comparing the mean difference between first semester high school grade and second semester high school grade. This variable was developed by subtracting the first semester grade from the second semester grade to determine the difference between the two as a measurement of student performance over a range of time. A paired-samples *t*-test was conducted to compare the mean difference in grades in first-generation and the non-first-generation conditions. The analysis found that there was no significant difference between the mean difference in grades for first-generation ($M = -1.21$, $SD = 7.13$) and non-first-generation ($M = -1.48$, $SD = 6.52$) conditions; $t(1993) = -0.79$, $p = 0.43$. These results suggest that first-generation status has no effect on the mean difference between first semester and second semester high school grades. The null hypothesis is not rejected. A summary of *t*-test results is shown in Table 4.8. Ultimately the results of both the MANOVA and *t*-tests suggest that Get

Ready Today' first-generation students are reacting to the high school portion of Get Ready Today in a fashion similar to their non-first-generation peers. While both their first semester and second semester grades are significantly lower than their non-first-generation peers, first-generation students are maintaining similar level of performance across time.

An examination of calculated Cohen's *d* values finds that all effect sizes can be considered small. First semester high school grade has the highest effect size with a Cohen's *d* of 0.312. 62 percent of the non-first-generation sample will be above the mean of the first-generation sample. This resulted in a 59 percent chance that a person picked at random from the non-first-generation sample will have a higher first semester grade than someone picked at random from the first-generation sample.

Table 4.8

Paired Sample's t-test results – High School Grade Comparison

Variable	First-generation		Non-first-generation		<i>t</i> -test	Cohen's <i>d</i>
	M	SD	M	SD		
First semester high school grade	83.07	8.82	85.83	8.85	5.94***	0.312
Second semester high school grade	81.87	9.68	84.35	10.47	4.59***	0.246
Difference between first and second semester high school grade	-1.21	7.13	-1.48	6.52	-0.79	0.040

N = 1993

Note: ** $p < 0.05$ *** $p < .001$

Research Question 2 – College Academic Performance

Multivariate Analysis of Variance on College Grade

A second MANOVA was performed utilizing mid-semester college grade, final college grade, and the difference between mid-semester college grade and final grade as dependent variables. The MANOVA allowed this study to determine if changes in first-generation status had significant effects on the dependent variables.

As before, a correlation analysis was performed on this dataset to check for multicollinearity. The results of this analysis can be found in Table 4.9. Once again, none of the dependent variables had a correlation above .80. As a result the variables were used as-is without need to create composite variables.

Table 4.9

Pearson Correlation Coefficients

Variable	Result	Mid-semester college grade	Final college grade	Difference between mid-semester and final college grade
Mid-semester college grade	Pearson Correlation	1		
Final college grade	Pearson Correlation	0.737 ***	1	
Difference between mid-semester and final college grade	Pearson Correlation	-0.070 ***	0.281 ***	1

N = 2795 Note: *** $p < .001$

Box's M (5.22) for this analysis was not significant, $p > .001$, indicating that there are no significant differences between the covariance matrices. As a result, assumption is not violated and Wilk's Lambda produced by the MANOVA will be appropriate result to use. The MANOVA analysis produced results as shown in Table 4.10. Utilizing Wilk's Lambda test we see that at an alpha level of .05 the test is significant, Wilk's $\Lambda = .963$, $F(2,2794) = 54.20$, $p < 0.001$. This significant F indicates that there are significant differences between first-generation and non-first-generation students on a linear combination of the dependent variables.

Table 4.10

Multivariate Analysis of Variance

Statistic	Value	F Value	Num DF	Den DF	Pr > F
Wilk's Lambda	0.963	50.20	2	2794	< .0001
Pillai's Trace	0.037	50.20	2	2794	< .0001
Hotelling-Lawley Trace	0.039	50.20	2	2794	< .0001
Roy's Greatest Root	0.039	50.20	2	2794	< .0001

Levene's Test of Equality of Error Variances test the assumption of MANOVA that the variances of each variable are equal across the groups. For this study Levene's test was not significant and the assumption was met for all three dependent variables (mid-semester college grade, $p > 0.05$, final college grade, $p > 0.05$, and difference between mid-semester and final college grade, $p > 0.05$).

Table 4.11

Tests of Between Subjects Effects

Source	Dependent Variable	Type III Sum of Squares	<i>df</i>	Mean Sq	<i>F</i>	Sig.
First Generation Status	Midsem Grade	39971.06	1	39971.06	101.57	< .0001
	Final Grade	31103.61	1	31103.61	72.41	< .0001
	Mid to Fin Grade	555.33	1	555.33	10.38	.0013
Error	Midsem Grade	1099903.74	2795	393.53		
	Final Grade	1200579.47	2795	429.55		
	Mid to Fin Grade	149506.48	2795	53.49		
Corrected Total	Midsem Grade	1139874.80	2796			
	Final Grade	1231683.08	2796			
	Mid to Fin Grade	150061.81	2796			

Because the MANOVA was significant, it is necessary to examine the univariate ANOVA results. These results can be seen in Table 4.11. The univariate ANOVA results indicate that mid-semester college grade, $F(1,2795) = 101.57, p < .0001$, final college grade, $F(1,2795) = 72.41, p < .0001$, and the difference between mid-semester and final college grade, $F(1,2795) = 10.38, p < .05$, were significantly different for first-generation students versus their non-first-generation peers. All three null hypotheses were rejected.

Paired Samples *t*-Tests - College Grade

Additional paired-samples *t*-tests were performed to compare mid-semester college grade, final college grade, and the difference between mid-semester and final college grade in first-generation and the non-first-generation conditions. The analysis found a significant difference between mid-semester college grades for first-generation

($M = 61.41$, $SD = 19.38$) and non-first-generation ($M = 70.26$, $SD = 19.98$) conditions; $t(2795) = 10.08$, $p < .0001$. The null hypothesis is rejected. These results suggest that first-generation status is related to mid-semester college grade. This implies that Get Ready Today' first-generation students do not perform as well as their non-first-generation Get Ready Today peers based on mid-semester college grade performance.

A second *t*-test analysis examined first-generation and non-first-generation student academic performance based on their final college grade. A paired-samples *t*-test was conducted to compare final grade in first-generation and the non-first-generation conditions. The analysis found that there was a significant difference between mean second semester grade for first-generation ($M = 59.64$, $SD = 19.31$) and non-first-generation ($M = 67.45$, $SD = 21.15$) conditions; $t(2795) = 8.51$, $p = <.0001$. The null hypothesis is rejected. These results suggest that first-generation status is related to final college grade. More directly the results suggest that Get Ready Today' first-generation students do not perform as well as non-first-generation students based on final college grade performance.

The third *t*-test analysis performed compared the mean difference between mid-semester college grade and final college grade. This variable was developed by subtracting the mid-semester college grade from the final college grade to determine the difference between the two, and serving to measure student performance over time. A paired-samples *t*-test was conducted to compare the mean difference in grades in first-generation and the non-first-generation conditions. The analysis found that there was a significant difference between the mean difference in grades for first-generation ($M = -$

1.76, SD = 7.17) and non-first-generation (M = -2.81, SD = 7.35) conditions; $t(2795) = -3.22, p < 0.01$. The null hypothesis is rejected. Results of the three t -tests can be found in Table 4.12. These results suggest that first-generation status has an effect on the mean difference between mid-semester and final college grade.

Table 4.12

Paired Sample's t-test results – High School Grade Comparison

Variable	First-generation		Non-first-generation		t -test	Cohen's d
	M	SD	M	SD		
Mid-semester college grade	61.41	19.38	70.26	19.98	10.08***	0.450
Final college grade	59.64	19.31	67.45	21.15	8.51***	0.386
Difference between mid-semester and final college grade	-1.76	7.17	-2.81	7.35	-3.22**	0.145

N = 2795 Note: ** $p < 0.05$ *** $p < .001$

The combined results of both the MANOVA and t -tests suggest that Get Ready Today' first-generation students are responding to the college portion of Get Ready Today more positively than their non-first-generation peers. While both their first semester and second semester grades are significantly lower than their non-first-generation peers, first-generation students are making significantly higher performance gains across time.

The effect sizes for each variable were calculated utilizing Cohen's d . The effect sizes for final college grade and difference between mid-semester and final college grade can be considered small. The effect size for mid-semester grade, however, should be considered medium with a Cohen's d of 0.45. This score indicates that 67 percent of the

non-first-generation sample will be above the mean of the first-generation sample. The effect size for the difference between mid-semester and final college grade is small with a Cohen's d of 0.145. This signifies that only 56 percent of the non-first-generation sample is above the mean of the first-generation sample.

Research Question 3 – No Early College Intervention

To address Research Question 3, both SAT[®] and College Graduation Type were compared for the Get Ready Today first-generation sample and the control sample of students who did not participate in early college interventions that was developed through the propensity score matching process. For Research Question 3, a control sample was developed that was comprised of students that did not participate in any type of early college interventions. This study utilized propensity score matching to match treatment and control units to reduce the effects of selection bias in observable pre-treatment characteristics.

Independent Samples t -test - SAT[®]

An independent samples t -test was conducted to compare mean SAT[®] score for Get Ready Today graduates in comparison to a matched sample of students who did not participate in an early college intervention. The analysis found that there was no significant difference between mean SAT[®] score for Get Ready Today graduates ($M = 958.8$, $SD = 145.6$) and the matched sample that did not complete any college preparatory coursework ($M = 947.9$, $SD = 166.8$) conditions; $t(362) = 0.66$, $p = .508$. The null hypothesis is not rejected. A Cohen's d of 0.069 is considered very small. These results

suggest that Get Ready Today participation has no significant effect on standardized college entrance exam score performance.

Independent Samples *t*-test - Graduation Type

Independent samples *t*-tests were also performed to identify significant differences in graduation type for Get Ready Today graduates in comparison to a matched sample of students who did not participate in early college intervention programs. Texas rates student graduation type based on the difficulty of the overall curriculum completed by the student. This test found that there was a significant difference between mean graduation type for Get Ready Today graduates ($M = 3.73$, $SD = .253$) and a matched sample of students who did not complete any early college interventions ($M = 2.98$, $SD = 0.386$); $t(362) = 12.7$, $p < .0001$. The null hypothesis was rejected. With a Cohen's *d* of 2.24, the effect size can be considered very large. 99 percent of the Get Ready Today sample will be above the mean of students who did not complete any early college interventions. There is a 94 percent chance that a person picked at random from the Get Ready Today sample will have a higher graduation type score than a person picked at random from the sample of students who did not complete any early college interventions. The results suggest that Get Ready Today graduates are competing more challenging high school curricula than students who do not participate in early college interventions.

Research Question 4 – At Least One Early College Intervention

Independent Samples *t*-test - SAT®

An independent samples *t*-test was conducted to compare mean SAT® scores for Get Ready Today graduates to scores for a matched sample of high school graduates who completed at least one early college intervention program. This analysis found that there was a significant difference between mean SAT® score for Get Ready Today graduates ($M = 958.8$, $SD = 145.6$) and students who completed at least one early college intervention ($M = 1069.0$, $SD = 217.8$); $t(362) = 5.68$, $p < .0001$. The null hypothesis was rejected. A Cohen's *d* of 0.595 results in a medium effect size. Approximately 79 percent of the sample of students who completed at least one early college intervention has an SAT® score above the mean of the sample of Get Ready Today students. This results in a 66 percent chance that a person chosen at random from the sample of students who completed at least one early college intervention will have a higher SAT® score than a student chosen at random from the Get Ready Today sample. These results imply that students who complete college preparatory courses including Advanced Placement and International Baccalaureate, score significantly higher than Get Ready Today graduates on standardized college entrance exams.

Independent Samples *t*-test - Graduation Type

An independent samples *t*-test was conducted to compare Get Ready Today graduates to a matched sample of students who completed at least one early college intervention program. The analysis found that there was no significant difference between mean graduation type score for Get Ready Today graduates ($M = 3.73$, SD

=.253) and a matched sample of students who completed at least one early college intervention ($M = 3.65$, $SD = .371$); $t(362) = 1.31$, $p = .189$. The null hypothesis was not rejected. Calculation of Cohen's d resulted in a score of 0.252. This effect size would be considered to be small, with just 60 percent of the sample of Get Ready Today having a score above the mean of the sample of students who completed at least one early college intervention. These results imply that Get Ready Today graduates are completing a high school curricula that is at least as challenging as students who completed at least one other early college intervention program.

Summary

This chapter discussed the results of the research methods used to address the research questions. Results of an examination of survey items to measure social capital development found no significant differences between first-generation and non-first-generation students. In addressing Research Question 1, analysis found significant differences in first and second semester high school grades, but found no significant difference in the differential between first and second semester high school grades. The results of analyses addressing Research Question 2 found significant differences in mid-semester, final, and algebraic difference between mid-semester and final grade for first-generation students in comparison to their non-first-generation peers. Of note is the finding that first-generation students had a significantly more favorable differential between mid-semester and final grade than non-first-generation students. Both Research Question 3 and Research Question 4 necessitated the use of propensity score matching to develop two control samples of students. In addressing Research Question 3, analysis

found that there was no significant differences between SAT[®] scores for a sample of Get Ready Today graduates in comparison to a control sample of students who did not participate in early college interventions. Analysis also found that there was a significant difference in graduation type for a sample of Get Ready Today graduates in comparison to a control sample of students who did not participate in early college interventions. Finally, in addressing Research Question 4, analysis found that there is a significant difference in SAT[®] score for a sample of Get Ready Today graduates in comparison to a control sample of students who participated in at least one early college intervention. Additionally, analysis found that there was no significant difference in graduation type for a sample of Get Ready Today graduates in comparison to a control sample of students who participated in at least one early college intervention.

Chapter 5: Discussion and Recommendations

First-generation students in Texas are often hidden in plain sight. Although they represent 20-25 percent of all students in Texas (You & Potter, 2014), these students must navigate an educational system that does not often meet their needs. By definition, these students have little parental experience or advice to guide them along their academic path. While parents may provide significant personal support, their lack of experience navigating the college search and enrollment process limits their ability to assist their children. As a result, these students often find themselves unprepared and unmotivated for college and may make decisions that limit their prospects (Struhl & Vargas, 2012). Ultimately this results in many of these students entering the job market at its lowest and most volatile levels.

To help address this situation, the State of Texas implemented both *Closing the Gaps: The Texas Higher Education Plan in 2000*, and *60x30TX* in 2015, committing the state to increase education partnerships, including the expansion of programs that grant college credit to high school students. As a result, early college intervention programs including dual credit, dual enrollment, Advanced Placement[®], International Baccalaureate[®], and early college high school programs have grown across the state.

Dual Enrollment

Unique among these early college interventions is dual enrollment. While dual enrollment exists in many variations, they generally offer a realistic college experience. Within the dual enrollment classroom, students complete both college and high school

coursework simultaneously, earning credit towards both high school graduation, and college. Students are exposed to the expectations and responsibilities of college coursework, helping to prepare them for the realities of college attendance. Within these programs, teachers, mentors, and fellow students provide a supportive environment where relationships serve to empower students to greater achievement. For first-generation students the dual enrollment classroom may represent the only exposure they have to college realities, and represents an opportunity to build supportive relationships, gain experience, and develop greater confidence in their abilities.

Get Ready Today

Get Ready Today is a dual enrollment program administered by a four-year, university. The program provides dual enrollment coursework identical to coursework offered to first-year students on the university campus. Get Ready Today insures that the coursework is identical through intensive instructor training and support and through a mixture of fact-to-face and virtual course and student support systems.

A distinctive characteristic of the student sample served by Get Ready Today is the consistent subset of first-generation students who enroll and complete coursework en route to both a high school grade and a college grade. Analysis of Get Ready Today' student sample found that approximately 20 percent of its students self-identified as first-generation.

Purpose

The purpose of this study was to investigate the development and implementation of early college interventions to improve academic achievement in first-generation

student populations in Texas. An analysis of first-generation student response to a specific early college intervention, specifically the Get Ready Today dual enrollment program, could inform parent, instructor, administrator, and policymaker decision making. This could result in improved program design to promote first-generation student success. By seeking to determine if first-generation students participating in Get Ready Today receive significantly different benefits from enrollment than do their non-first-generation peers, this study sought to inform continued improvement of dual enrollment programs, resulting in greater academic achievement for first-generation students. The theoretical framework that guided this study included theories of social capital development as well as theories of student departure. Stanton-Salazar's (2001, 2011), theories on social capital and social network development as a means to reduce social inequality served as a primary guide. These theories served to guide the examination of Get Ready Today's unique programmatic offerings and how they might benefit first-generation populations. In examining student departure theory, both Tinto (1975, 1987, 1993) and Bean and Eaton's (2001) theories served as primary guides. The examination of first-generation student curricula, and the differences in the level of challenge undertaken by various first-generation populations was guided by these theories.

Research Questions

Four research questions guided this study. The questions were informed by a review of relevant literature and were designed to examine academic outcomes for first-generation students enrolled in Get Ready Today in comparison to non-first-generation

peers as well as other samples of first generation students. The research questions that guided this study were:

RQ1: What significantly different outcomes in high school academic performance exist for self-identified first-generation students who participate in Get Ready Today in comparison to their non-first-generation peers?

RQ2: What significantly different outcomes in Get Ready Today college grade performance exist for self-identified first-generation students who participate in Get Ready Today in comparison to their non-first-generation Get Ready Today peers?

RQ3: What significantly different outcomes in academic performance exist for self-identified first-generation students who participate in Get Ready Today in comparison to a representative sample of first-generation students who did not participate in other early college interventions including Get Ready Today, Advanced Placement, International Baccalaureate, early college high schools, or dual-credit?

RQ4: What significantly different outcomes in academic performance exist for self-identified first-generation students who participate in Get Ready Today in comparison to a representative sample of first-generation students who did participate in other early college interventions including Advanced Placement, International Baccalaureate, early college high schools, or dual-credit?

Methodology

To address Research Question 1, this study compared Get Ready Today' first-generation students to their non-first generation peers utilizing three high school academic performance variables. Student's first semester high school grade and second

semester high school grade, as well as the algebraic difference between the first and second semester high school grades were compared in first-generation and non-first-generation conditions. The algebraic difference between first and second semester grades was designed to measure student progress over time. This comparison was performed through the utilization of both MANOVA and *t*-tests.

In addressing Research Question 2, similar analyses were performed. Utilizing both MANOVA and *t*-tests, this study compared mid-semester college grade, final college grade, and the algebraic difference between mid-semester and final college grade for Get Ready Today's students in first-generation and non-first-generation conditions.

In order to address the remaining two research questions, two separate control samples were created. Two samples of first-generation students who did not participate in Get Ready Today were identified from Get Ready Today school districts and adjacent districts utilizing state datasets. One of the samples consisted of first-generation students who did not participate in any early college intervention programs, while the other sample participated in at least one early college intervention. These two samples were matched to a sample of first-generation Get Ready Today graduates utilizing propensity score matching.

To address Research Question 3, two comparisons were made of the control sample of first-generation students who did not participate in any early college interventions versus the sample of first-generation Get Ready Today graduates. The first comparison utilized a *t*-test to compare SAT[®] scores. The second comparison also utilized a *t*-test to compare mean graduation type scores.

Research Question 4 utilized a control sample of first-generation students who participated in at least one early college intervention. Two comparisons were made between the control sample and a sample of first-generation Get Ready Today graduates. The first comparison of SAT[®] scores utilized a *t*-test. A second comparison also utilized a *t*-test to compare mean graduation type scores.

Summary of Major Findings

This study produced four major findings based upon analyses used to address the research questions. The first major finding was identified during an analysis of the algebraic difference between first- and second-semester high school grades. The analysis found that there was no significant difference in these grades for first-generation students in comparison to their non-first generation peers, implying that first-generation students are able to maintain a similar change in grade over time. The second major finding was identified during analysis of the algebraic difference between mid-semester and final college grade. This study found that there was a significant difference in this score for first-generation students in comparison to their non-first generation peers, with first-generation students making more positive progress over time. This implies that first-generation students are able to close the gap between them and their non-first-generation peers. A third major finding identified that Get Ready Today students have a significantly higher average graduation type score than first-generation students who do not participate in any early college intervention program. The fourth major finding identified that there were no significant difference between mean graduation type score for Get Ready Today graduates and a control sample of other first-generation students

who had participated in at least one early college intervention.

Major Finding #1

Research Question 1 asked what significantly different outcomes in high school academic performance exist for self-identified first-generation students who participate in Get Ready Today in comparison to their non-first-generation peers. In reviewing high school grades for first-generation students versus non-first-generation students in Get Ready Today, this study found that first-generation students are earning both first- and second-semester grades that are statistically significantly lower ($p < 0.001$) than their non-first-generation peers. This is not surprising as research has shown that first-generation students often lag non-first-generation students in academic performance (ACT, 2013; Atherton, 2014; Balemian & Feng, 2013; Engle et al., 2006; IHEP, 2012; McCarron & Inkelas, 2006; Pyne & Means, 2013; Riggs, 2014; Saenz et al., 2007; Warburton et al., 2001; Winkle-Wagner, 2011). This assessment score deficit is therefore unremarkable. The results of this analysis showed that first-generation students in Get Ready Today start out an average of 2.76 points behind and stay behind by an average of 2.48 points as the year progresses.

Further analysis of the algebraic difference between the first and second semester grade served to measure the change over time for both samples. This analysis found that the mean algebraic difference between the first and second semester high school grade for first-generation students was neither significantly higher nor lower ($p = 0.4307$) than it was for non-first-generation students. This result implies that first-generation students are advancing through the high school portion of Get Ready Today with a similar change

in grade over time as their non-first-generation peers. More simply stated, while first-generation student first and second semester grades are significantly lower than those of their non-first-generation peers, the mean change in grade over time is similar for both samples.

Major Finding #2

Research Question 2 asked what significantly different outcomes in Get Ready Today college grade performance exist for self-identified first-generation students who participate in Get Ready Today in comparison to their non-first-generation Get Ready Today peers. Similar to the analysis of high school grades, the first two analyses found that non-first-generation students score significantly higher ($p < 0.0001$) than first-generation students on both their mid-semester and final college grades. Like our earlier finding, this too is unremarkable. The third analysis, however, found that both first-generation and non-first-generation students experienced a significant negative change ($p < 0.05$) in grade from mid-semester to final. In other words grades fell from mid-semester to final for both samples. Perhaps more importantly, the third analysis found that there was a significant difference in this change in grade with first-generation students experiencing a smaller change in grade, and thus less of a decline in grade over time than non-first-generation students in the college portion of Get Ready Today. This result implies that first-generation students are able to close the gap between them and non-first-generation students in the college portion of Get Ready Today. It also implies that the college portion of Get Ready Today provides a benefit to first-generation

students, allowing them to make academic gains that are not seen in the non-first-generation sample.

Despite the finding that first-generation students were able to close the gap between them and non-first-generation students in the college portion of Get Ready Today, our results clearly showed that first-generation students are scoring significantly lower in both high school and college portions of Get Ready Today. It is unsurprising that first-generation students remain academically behind their non-first-generation peers. Lack of measures that identify first-generation strengths, and institutional norms that rely on traditional academic measures have historically resulted in lower assessment scores for underrepresented populations. It is therefore valuable to find that first-generation students in Get Ready Today are able to significantly close this gap in the college portion of the program.

Major Finding #3

Research Question 3 asked what significantly different outcomes in academic performance exist for self-identified first-generation students who participate in Get Ready Today in comparison to a representative sample of first-generation students who did not participate in other early college interventions including Get Ready Today, Advanced Placement®, International Baccalaureate®, early college high schools, or dual-credit. This analysis required the use of propensity score matching to develop a suitable comparison pool of students who did not participate in any type of early college intervention. Once this pool was identified, two separate analyses were performed to measure the differences between Get Ready Today graduates and the matched pool.

The first analysis sought to find any significant difference between these samples based on maximum SAT[®] score. This analysis found that there was no significant difference ($p = 0.508$) between SAT[®] scores for Get Ready Today students and the matched sample of students who did not participate in college preparatory programs. These results imply that Get Ready Today participation has no significant impact on standardized test score performance. This is not surprising as Get Ready Today was not designed to influence standardized college entrance exam performance. In addition, it is likely that these exams were taken early in each student's final year in high school, thus minimizing any impact of Get Ready Today enrollment.

A second analysis compared graduation type based on state standards. This analysis found that Get Ready Today graduates had significantly higher ($p < 0.0001$) mean graduation type scores than the control sample of students who did not participate in any early college intervention. This implies that Get Ready Today' first-generation students complete a much more rigorous overall curriculum than the control sample.

Major Finding #4

Research Question 4 asked what significantly different outcomes in academic performance exist for self-identified first-generation students who participate in Get Ready Today in comparison to a representative sample of first-generation students who did participate in other early college interventions including Advanced Placement, International Baccalaureate, early college high schools, or dual-credit? Similarly to the earlier analysis, a suitable control sample was determined through propensity score matching. Analysis of this group in comparison to Get Ready Today graduates found a

significant difference ($p < 0.0001$) in SAT[®] scores with students who had participated in at least one early college intervention, not including Get Ready Today, scoring significantly higher. This is likely due to the ubiquity of early college intervention programs in Texas, allowing students to participate in multiple programs over several years. While Get Ready Today has grown, it is able to offer neither the availability nor scope that other early college interventions currently offer.

An analysis of mean graduation type score found no significant differences ($p = 0.189$) in mean graduation type score. The implications of this result is that Get Ready Today' first generation students are maintaining a similar level of rigor in their high school curriculum in comparison to the control group of students who participated in other early college interventions.

Implications for Practice, Policy, and Theory

In Texas, dual enrollment programs exist in a number of forms with variations in delivery, curriculum, and expectations. As a result, it is often difficult to assess program impact on students, with even greater difficulty measuring effects on underrepresented students. Unlike other dual enrollment programs, Get Ready Today provides a unique dual enrollment program with proven delivery and support services, curriculum identical to first-year on-campus courses, and a robust training program that prepares teachers to provide authentic college coursework. In partnership with faculty and staff at school districts across the state, Get Ready Today provides a realistic college experience to a diverse cross section of students. This study sought to examine the academic outcomes of first-generation students enrolled in Get Ready Today, with the goal of informing

future practice.

The findings of this study serve to inform theory by identifying that a rigorous academic experience, consistently delivered, with intrusive support services can have a positive impact on first-generation students. The results of the analyses and associated findings may provide guidance for future practice in dual enrollment programming while also serving to inform future policy and theory development. The analyses found significant differences between first-generation and non-first-generation students enrolled in Get Ready Today. These results serve as a starting point for further examination of Get Ready Today as an exemplar for first-generation student success in an early college intervention programs. What follows is a presentation of how this study might inform practice, policy, and theory.

Practice

The findings of this study serve to inform practice in dual enrollment programs. Both K-12 and higher education practitioners may benefit from examination of the results and the recommendations of this study.

K-12 practitioners. The finding that first-generation students in Get Ready Today both begin and end the program with significantly lower high school and college grades may serve to inform the design or redesign of preparatory coursework. Adjustments to pre-requisite courses earlier in their high school careers could help to better prepare first-generation students for dual enrollment coursework. This finding implies that there is an opportunity to provide additional academic support earlier in the student's career that might result in greater achievement later. As first-generation

students are starting their dual enrollment experience at a deficit, any efforts to reduce this deficit serves to advance their academic performance.

In finding that Get Ready Today' first-generation students complete as rigorous a curriculum as other first-generation students in other early college intervention programs serves to inform K-12 practitioners that first-generation students may actively seek challenging coursework and should be encouraged to do so. Recognition that a challenging curriculum serves to benefit first-generation students might inform K-12 advisors to plant the seeds of dual enrollment early in these student's careers, steering them towards challenging curricula, both preparing them for future dual enrollment courses and promoting greater achievement overall.

Higher education practitioners. Other dual enrollment programs might look to Get Ready Today as a model for the design of dual enrollment programs. The finding that Get Ready Today' first-generation students in the college portion of the program are making significantly higher performance gains over time than their non-first-generation peers serves to inform existing and future dual enrollment programs regarding the development and delivery of college coursework. The unique combination of high school instructor training, extensive support from Get Ready Today faculty and staff, and the use of proven teaching and delivery methods has resulted in a closing of the gap between first-generation students and non-first-generation students. Adoption and continuous improvement of these unique program traits by new and existing dual enrollment programs may result in similar gains.

A factor for Get Ready Today to consider is the difference in instruction in the high school portion of Get Ready Today in comparison to the college portion. The analysis seems to imply that the high school portion is not producing any significant advantages to first-generation students, while the college portion does. An examination of the differences between both treatment conditions could help to identify the factors that benefit first-generation students, leading to an opportunity to emulate these factors in the high school portion, possibly resulting in higher performance results for first-generation students.

A further implication for higher education practitioners and administrators is an evaluation of the methods utilized to teach and assess students. Higher education actors should consider greater examination of the pedagogy, evaluation, and other measures of college courses to adequately assess the performance of first-generation students through strength based models.

Policy

As decision makers and stakeholders across Texas seek to find solutions to the states education and workforce challenges, they might look to Get Ready Today as an example of a program that is making a small but significant difference in the lives of first-generation students. State sponsored initiatives including *Closing the Gaps: The Texas Higher Education Plan* and *60x30TX* have sought to increase the number of opportunities for students across Texas to earn college credit while still in high school. Lost in these efforts is an expectation that these opportunities offer true college experiences, expectations, and preparation, while also producing measureable, positive

results.

The finding that first-generation students are able to maintain or exceed the levels of academic performance over time of their non-first-generation peers serves to show that Get Ready Today is able to make a positive impact on academic performance for first-generation students. The examination of student social capital development also found that first-generation students are maintaining a similar level of social capital as measured through mindset as their non-first generation peers. These results might inform policy makers and administrators to emulate the unique traits of Get Ready Today in authorizing existing and additional early college intervention programs.

The success of Get Ready Today in providing college level courses and credit to students across Texas, and their success with first-generation students should not go unrecognized. Additional growth and expansion of Get Ready Today should be made a priority by decision-makers and stakeholders.

Of special note is the commitment made by Get Ready Today to collect program data. The design and implementation of their registration and data management system allowed for the collection of compelling information. Information that not only informed this study, but also provides greater opportunity for further study. Continued improvement of this system will undoubtedly benefit future studies. Policymakers and other leaders should examine Get Ready Today' data management system, paying close attention to the collection of student performance and survey data. Replication of this robust system within other early college intervention programs might help to provide timely and consistent data to inform future policy decisions.

Theory

Discussions regarding first-generation students often focus on the challenges facing the student (Balemian & Feng, 2013). This deficit perspective serves only to perpetuate the stereotype that first-generation students require significant attention and assistance due to the numerous trials they must face throughout life. Lost in these discussions is the recognition that first-generation students carry with them innate strengths that stem directly from their status. These often include increased levels of tenacity, pride, and loyalty. These traits may serve to encourage their success. The challenge is to determine what, if any, steps may be taken to identify and exploit these traits through programmatic efforts. Yosso's (2005) Cultural Wealth Model serves as a model for identifying and promoting the types of capital that could assist institutions in better understanding the experience of first-generation students. This study serves as a foray into this type of research. By focusing on how a structured, challenging, and deliberate dual enrollment program might impact first-generation student academic success, this study sought to reveal additional opportunities to explore theories of first-generation student achievement.

With Hispanic students representing 81 percent of Get Ready Today's first-generation student sample, comparisons can be made to existing literature regarding underrepresented student social capital development and academic success. The baseline descriptive analysis of Get Ready Today survey data found that student mindset, and by proxy student social capital, showed no significant differences for first-generation students in comparison to their non-first generation peers. In light of the theoretical

framework of this study, these results support Stanton-Salazar's (2001) concepts on social capital and social network development as a tool to reduce social inequality. More simply, first-generation and non-first-generation students enrolled in Get Ready Today maintain similar levels of social capital. An (2013) also identified that underrepresented student populations in dual enrollment classrooms could benefit academically from network development among their peers. Results of analysis of grades supports this theory. Combined with the results of both the high school and college grade studies, the baseline descriptive analysis results correspond with Attinasi's (1998) theories that underrepresented students, and in this case first-generation students, benefit from interaction with like-cultured students in a challenging academic environment. This is most notable in the college portion of Get Ready Today where first-generation students are able to close the gap between them and their non-first generation peers.

Another factor to consider is the influence of relationship building on first-generation students in early college intervention programs. What, if any, benefits might exist based upon the increased presence and interaction of influencers including Get Ready Today instructors and staff, high school teacher, and peers. Conley's (2005) views on exposure to college realities, coupled with Stanton-Salazar's (2011), Cowan and Goldhaber's (2015), and Contreras' (2011) theories on network and relationship building serve to inform the expansion of research into the impact of the relationships cultivated in challenging early college intervention programs. Unique to Get Ready Today is the level of interaction between student, teacher, and Get Ready Today faculty and staff. Examination of the benefits of these interactions for first-generation students might help

to both inform early college intervention program design, continuous improvement, and add to the greater body of knowledge. The implications on theory are most prevalent in light of Stanton-Salazar's (2011) argument that student's ability to increase their social capital is often hindered by institutional and societal forces. He further argued that these forces could be overcome through the development of social networks with key influencers. The findings of this study support these theories. The unique properties of Get Ready Today encourage the development of student social networks, as well as exposure to key influencers including their trained high school teacher as well as Get Ready Today faculty and staff. The impact of these influencers cannot be understated. Stanton-Salazar and Spina (2005), Contreras (2005, 2011), Attinasi (1998) and Thomas (2002) all argued that interaction with influencers in an academic setting could provide beneficial exposure and example to students and increase their social capital. The findings of this study support the theory that Get Ready Today's increased access to key influencers, including peers, may result in increased academic success for first-generation students.

This study has determined that first-generation students enrolled in Get Ready Today have significantly higher mean graduation type scores than first-generation students who did not participate in any early college intervention programs. This finding implies that a subset of first-generation students is actively seeking challenging curricula. This supports Tinto's (1975, 1987, 1993) evolving models of student departure that suggested that student integration at the academic and social level played a key role in persistence. Bean and Eaton's (2001) model relied on self-efficacy theory, coping

behavior theory, and attribution theory to explore student relationship building within the institution. While this study did not specifically explore student persistence, the implications on student departure theory remain through the analysis of student curriculum strength through graduation. The results of the baseline descriptive analysis and the exploration of student graduation type support Tinto's (1975, 1987, 1993) models by implying that first-generation students enrolled in Get Ready Today are maintaining a similar mindset, and by proxy similar levels of social capital as their non-first-generation peers while also seeking and persisting in more challenging curricula overall. The opportunity for increased integration with like and dissimilar peers may enhance satisfaction with the coursework, resulting in both persistent behavior and increased academic performance for first-generation students. Also supporting Bean and Eaton's (2001) theories, the findings of this study imply that first-generation students enrolled in Get Ready Today are able to maintain a positive mindset while also navigating a challenging academic environment throughout high school.

Limitations

This study had several underlying limitations, among others not addressed in this section. Primarily, the study was limited to a unique dual enrollment program in Texas. While the results are useful for Get Ready Today, they likely cannot be generalized nor are they relevant to other dual enrollment programs. Instead, the results may only serve to inform how other dual enrollment programs might be informed by Get Ready Today in an attempt to better serve first-generation students. To minimize the impact of this limitation, the results are framed as specific to Get Ready Today, without generalization

to other early college interventions. Another identified limitation is associated with the extensive amount of data merging performed in preparing the samples for analysis. In combining datasets from various sources, concerns arose regarding content validity. As data was collected from multiple datasets sourced from multiple agencies, it is difficult to know the extent to which a measure represents the desired variable. To overcome this limitation, efforts were made to identify variables that were as unambiguous as possible while also selecting variables that utilized standardized measures. In addition, for many variables, multiple sources were compared to ensure that the data was consistent across sources. Another limitation was the limited availability of data specific to academic performance in college forced this study to utilize standardized test scores to measure academic ability. This was not ideal as these scores represent academic achievement at a single point in time that may not have occurred at any point during a student's final year of high school. To minimize the impact of this limitation, additional analysis was performed on student graduation type data, allowing for examination of student performance at a single point at the end of their high school careers. Another identified limitation is specific to the use of propensity score matching to create control samples of first-generation students who did not participate in Get Ready Today. A fully randomized sample would have been ideal for testing the hypotheses found in Research Question 3 and Research Question 4, unfortunately, due to the high risk of self-selection bias amongst students in the Get Ready Today program, the development of suitable comparison samples of first-generation students required additional attention. While PSM has been shown to be an effective tool, errors in the process or variations in the pool

may result in a non-representative control sample. To mitigate the possibility that PSM might result in a non-representative pool, careful and deliberate selection of covariates was made based on variables used throughout the literature. The use of only three survey items in developing the baseline descriptive analysis represents another limitation to this study. An analysis of a larger dataset of student mindset, and by proxy student social capital, survey results would likely provide greater insight into the development of social capital by first-generation students enrolled in Get Ready Today. Finally, the inability of this study to determine if any first-generation student might have a sibling, or close family member who might have experience with college processes represents another limitation. Alternative sources of knowledge, experience, and exposure that may result from sibling experiences could affect student performance in ways that this study could not anticipate.

Future Research

There are a number of opportunities for further research. Expansion of Get Ready Today' program offerings since the inception of this study offers the opportunity to examine differences in how specific courses might influence first-generation student academic success. As Get Ready Today has evolved and grown, the program's data collection process has matured and now might offer both the volume and the detail to make more detailed examinations. Additionally, with larger volumes of students now enrolled in Get Ready Today, there are opportunities to study the impact of the program on first-generation students based on student gender, race, and ethnicity. These studies

may serve to enhance the understanding of both how and why enrollment in Get Ready Today might produce additional benefits for first-generation students.

Broader comparisons between Get Ready Today' first-generation students to their non-first-generation peers are made possible by the increase in enrollment. These comparisons might serve to identify any significant traits that influence academic performance in the dual enrollment classroom. Specific examination of both student and program traits for both first-generation students and their non-first-generation peers could result in a better understanding of how these traits interact within Get Ready Today and how they might be isolated and exploited to the advantage of both groups. One example might include an examination of Get Ready Today high school teacher experience and how it might influence student academic outcomes for first-generation students in comparison to non-first-generation students. This analysis might provide important information about the relationship between teacher experience and training and first-generation student academic outcomes.

Additionally, with increased data gathering capacity, and larger volumes of students, examination of survey results might also help to inform future research into student mindset and social capital as a result of enrollment. Analyzing differences in mindset and social capital between first-generation and non-first-generation students may result in greater understanding of their effects on student resolve.

Opportunities exist to compare Get Ready Today to other dual enrollment programs. While Get Ready Today provides a unique dual enrollment experience, much could be learned by comparing first-generation student performance in various dual

enrollment programs with the goal of determining what, if any, program traits produce significant benefits.

A final suggestion for future research involves the examination of first-generation students enrolled in early college intervention programs statewide. Examination of the differences between programs and their effect on first-generation student academic success could help to identify the key programmatic traits that positively influence first-generation academic success. Further examination might also identify significant traits in first-generation students that promote achievement.

Concluding Thoughts

First-generation students make up only about 20 percent of the students enrolled in Get Ready Today, but they represent a much larger population of students hidden in plain sight across Texas. State education initiatives seeking to promote student achievement cannot ignore this population if they want to meet their stated goals. Even though state efforts and resources have been allocated to promote success in underrepresented populations, few studies have been done to examine the academic progress of Texas' first-generation students in early college interventions.

This study sought to examine first-generation academic achievement in a university administered dual enrollment program with the promise of identifying if any significant benefits existed. The goal of this study was to inform policy, practice, and theory on first-generation student academic achievement in dual enrollment programs. This study also added to the body of knowledge by identifying instances where first-generation students are making significant strides in closing the academic gaps between

themselves and their non-first-generation peers. The results of the quantitative analyses and findings of this study may also serve as a basis for future research.

Appendix

Non-Human Subjects Research Determination



OFFICE OF RESEARCH SUPPORT

THE UNIVERSITY OF TEXAS AT AUSTIN

P.O. Box 7426, Austin, Texas 78713 · Mail Code A3200
(512) 471-8871 · FAX (512) 471-8873

FWA # 00002030

Date:

PI:

Dept:

Title:

RE: Non-Human Subjects Research Determination

Dear

The Office of Research Support (ORS) reviewed the above protocol submission request and determined it did not meet the criteria for human subjects research as defined in the Common Rule (45 CFR 46) or FDA Regulations (21 CFR 56). IRB review and oversight is not required because the activities involve:

- No human interactions
- Classroom activities used to teach methodology and technique
- Program evaluation where results are not generalized to other services or programs
- Secondary use of de-identified data set (no direct or links to identifiers)
- Obtaining information that is not about living individuals
- Obtaining information from publicly available sets
- Biographical research that is not generalizable beyond the individual
- Archival research using existing literature
- Other (Explain):

At this time you are free to begin your research as IRB approval is not necessary. You should retain this letter with the respective research documents as evidence that IRB review and oversight is not required.

If you have any questions contact the ORS by phone at (512) 471-8871 or via e-mail at orsc@uts.cc.utexas.edu.

Sincerely,

A handwritten signature in cursive script that reads "James P. Wilson".

James Wilson, Ph.D.
Institutional Review Board Chair

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