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Dual Enrollment And Its Impact on College Freshman Persistence: A Modification of Tinto's Model of Student Departure

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DUAL ENROLLMENT AND ITS IMPACT ON COLLEGE FRESHMAN PERSISTENCE: A MODIFICATION OF TINTO'S MODEL OF STUDENT DEPARTURE

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This dissertation is approved as a credible and independent investigation for the Doctor of Philosophy degree and is acceptable for meeting the dissertation requirements for this degree. Acceptance of this dissertation does not imply that the conclusions reached by the candidate are necessarily the conclusions of the major department

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TABLE OF CONTENTS

LIST OF FIGURES AND TABLES

ABSTRACT

DUAL ENROLLMENT AND ITS IMPACT ON PERSISTENCE OF COLLEGE FRESHMAN: A MODIFICATION OF TINTO'S MODEL OF STUDENT DEPARTURE

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2017

The purpose of this study was to investigate the extent to which dual enrollment programs directly or indirectly influenced persistence behavior at a small, public liberal arts university in the Midwest. Dual enrollment in this study broadly refers to high school students who take college courses for college credit. The second purpose was to explore the underlying processes whereby dual enrollment programs serve as a transition bridge for matriculating students.

This study employed a longitudinal case study using two survey questionnaires, four focus groups, and institutional data collected by the college. The subjects that participated in the study were first-year freshman. The survey questionnaires were administered to 172 students (37% of the total freshman class). Five indices were created: dual enrollment, degree aspiration, institutional commitment, social integration, and academic integration.

The results of this study add to the emerging literature on dual enrollment programs and how they influence persistence behavior. In the study, there was a weak yet positive association between mother's and father's education and social integration. The study

also found a weak yet positive association between the degree of dual enrollment experiences and academic integration. With social integration as a predictor variable, there was a modest contribution to the dependent variable of persistence. Finally, the study found that academic integration provided a weak contribution to the likelihood that a student would persist.

CHAPTER ONE: INTRODUCTION

Introduction

Education leaders have increasingly focused on preparing high school students to meet the academic demands of college life. Academic preparation for the rigors of college academics is important for postsecondary success and degree completion. Studies suggest that a rigorous curriculum in high school prepares students for academic success in college (Wyatt, Patterson, and Di Giacomo 2015:5). This is important because college success and persistence to completion of a college degree confers economic advantages upon graduates entering the workforce. The Bureau of Labor Statistics projects that 16 of the 20 fastest growing jobs between 2014 and 2024 will require postsecondary education in the form of an associate or higher degree (Bureau of Labor Statistics 2015; Wyatt, Patterson, and Di Giacomo 2015:5). This statistic alone strongly suggests that students need to attend an institution of higher education in order to achieve some degree of economic security and social mobility.

The pressure to matriculate into higher education academically prepared and to persist toward a college degree is high. An area of educational policy that has gained significant momentum to address college attendance and persistence are dual enrollment programs (Community College Research Center 2012). Dual enrollment is a program strategy designed to offer students the opportunity to earn college credit for course work during high school (Bailey and Karp 2003:7). Dual enrollment courses vary in considerable degree, by name and by form, but one distinctive characteristic is whether the college course is offered in the high school or on the college campus.

Dual enrollment courses were originally offered only to academically qualified high school students (Syracuse University 2016). In recent years, dual enrollment programs have focused on disadvantaged, first-generation, and middle-achieving students that meet minimum GPA requirements for eligibility (Community College Research Center 2012). The emergence and popularity of dual enrollment programs is growing in two- and four-year institutions, with studies showing high school students' participation at very high levels (Hanover Research 2014).

Education leaders point to the benefits of dual enrollment programs in providing a head start on college-level work and a realistic idea of what college requires, shortening the time to a college degree, and potentially reducing the overall cost of college by providing low or no-cost college credit (Community College Research Center 2012). In addition, researchers suggest that dual enrollment programs facilitate the transition between high school and college (Karp 2012). The ubiquitous nature of dual enrollment programs and studies that suggest matriculating students, who previously took dual enrollment programs, are more likely to persist beyond the first year of college are the basis for the focus of this investigation.

This study examined dual enrollment programs and the transition experience they provide using components of Tinto's (1993) Model of Student Departure. Although recent studies have found that dual enrollment programs assist students in matriculation and eventual persistence with the institution of choice (Karp *et al*. 2007; Swanson 2008; An 2012; D'Amico *et al*. 2013), no study has sought to operationalize dual enrollment programs and understand the theoretical basis for why participation in dual enrollment programs may influence persistence behavior. With this in mind, this

study modified Tinto's Model of Student Departure by incorporating dual enrollment as a transition experience.

According to Tinto (1993), students enroll in college with pre-entry attributes (family background, skills and abilities, and prior schooling) that form the basis for initial contact with the institution (Tinto 1993; Caison 2007:437). Once students are in college, students interact with the institutional environment as a whole, with these interactional experiences influencing the student's commitment to the goal of achieving a degree and the commitment to the institution. Strong goals and commitments reinforce persistence behavior. Likewise, successful integration into the academic and social systems of the institution also reinforces persistence (Tinto 1993:115). The Model of Student Departure and Transition proposed here took into account many of Tinto's theoretical constructs (Appendix A), but in order to further explore the impact of dual enrollment on college persistence, this study added student's participation and transition experience as it relates to dual enrollment programs. In terms of theory development, this study draws upon the work of researchers in the area of role transition theory and anticipatory socialization to complement the Tinto Model (Allen and Vliert 1986; Boyanowsky 1984; Burr 1972; Merton 1968). The inclusion of these theoretical perspectives to the Research Model represents the theoretical contribution of this study.

Purpose of the Research

One purpose of this study was to investigate the extent to which dual enrollment programs influence degree aspiration, institutional commitment, academic and social integration, and persistence. The second purpose was to explore why dual enrollment

programs did or did not serve as a transition bridge for matriculating students. To accomplish these two goals, this study employed a longitudinal case study, using two survey questionnaires, four focus groups, and institutional data on the students at a small public liberal arts university in the upper Midwest. The study subjects were initially new, first-year freshman enrolled in the 2014 Fall semester.

A principal outcome of this study was a better understanding of the efficacy of dual enrollment programs as a method of enhancing academic preparedness of matriculating students and as a retention strategy for education leaders. Such an understanding may serve to inform these leaders of the value of such programs and whether their continued expansion serves the interests of K-16 education. Specifically, the inclusion of role transition theory adds to the body of knowledge that exists with persistence as it relates to the Tinto Model. To date, little attention has been given to this theoretical perspective in dealing with student success and persistence.

Theoretical Model

This study used a preponderance of the constructs employed in the Tinto Model in order to examine how they influence persistence behavior. The Tinto Model has four core predictor theoretical constructs: pre-entry attributes, initial goals/commitments, integration (academic and social), and subsequent goals/commitments. The dependent variable in the Tinto Model is the outcome or the departure decision (Tinto 1993:114). This study did not examine subsequent goals/commitments, but did examine the other four core categories. In relation to these categories, this study looked at students' experiences with dual enrollment programs and to what extent they did or did not ease

the student's transition matriculating into higher education. Broadly understood, this study hypothesizes that participation in, and degree of and nature of experience with dual enrollment programs will influence degree aspiration, institutional commitment, academic integration, social integration, and persistence behavior. Transition experiences stemming from dual enrollment programs would occur prior to enrollment in an institution of higher education.

Research Methods

The study subjects were new, first-year freshman initially enrolled in the 2014 Fall semester at a rural, public liberal arts university in the upper Midwest, that is, Southwest Minnesota State University. This study used a mixed-methods approach to collect the data. The design strategy required a longitudinal case study, which occurred during the 2014-2015 academic year. After attrition and transfer through the course of the academic year, the population sample settled with 172 students (n=172), with these subjects participating fully in the study from its inception to conclusion in the Fall, 2015.

The sample was not random, but formed from convenience. Consequently, this study used the Spearman rho correlation coefficient and Chi-square tests of significance for the majority of the hypothesis testing. In addition, a direct logistic regression was used to determine whether participation and the degree of transition experiences in dual enrollment programs was a reliable predictor of persistence. In terms of hypothesis testing, five indices were created and checked for reliability and other quality measures. The five indices are dual enrollment, degree aspiration, institutional commitment, social integration, and academic integration. A sixth index, financial support, was created but

was deleted from the study because it failed testing for reliability. The five indices and other independent variables collected were used to test the twenty-one hypotheses.

Organization of the Dissertation

This dissertation consists of eight chapters and is organized in the following manner.

Chapter One (Introduction) provides the purpose of the study, an overview of the theoretical model, and the research methods employed to conduct the study. **Chapter Two (Literature Review)** provides a review of relevant reports and studies on dual enrollment programs.

Chapter Three (Theoretical Framework) provides the theoretical framework used in this study. This chapter first provides an overview of the Tinto Model, and then incorporates anticipatory socialization and role transition theory as they relate to dual enrollment for purposes of modifying the Tinto Model. The Research Model is then described.

Chapter Four (Research Methodology) provides an overview of research design, data collection methods, operationalization of variables, and procedures used for index construction. In addition, the chapter also provides a brief discussion of statistical techniques used in the study for descriptive statistics and hypothesis-testing as well as a discussion of procedures used to code the data from focus groups.

Chapter Five (Descriptive Statistics) presents the descriptive results of the study beginning with demographic characteristics, followed by frequency tables dealing with the questions used in each index. **Chapter Six (Hypothesis Testing)** provides the results of hypothesis-testing for this study. This study tested twenty-three hypotheses.

Chapter Seven (Focus Groups) provides the methodology employed to examine the qualitative data from focus groups and the results derived from first and second cycle coding.

Chapter Eight (Conclusion) provides the purpose of this study and an overview of the theoretical framework and the findings as they relate to the hypothesis-testing from Chapter Six. Finally, there is a discussion of other findings, theoretical implications, limitations of the study, future research, and practical implications.

CHAPTER TWO

REVIEW OF LITERATURE

Introduction

This chapter examines dual enrollment programs, their terminology, structure, perceived benefits and concerns from both a national and state of Minnesota perspective. To do that and provide context for the substantial support dual enrollment programs enjoy nationwide, I first provide baseline terminology and context for "credit-based transition programs," of which dual enrollment is one such program. In that discussion, and for purposes of distinction, I briefly contrast the most recognized popular credit-based transition programs with dual enrollment programs in order to reduce confusion and provide clarity for the focus of this study. Second, I explore the genesis of dual enrollment programs and show how they broadly nest within K-16 education policy. Third, this chapter delves into the general structure of dual enrollment programs and how they operate. Fourth, the benefits of and concerns of dual enrollment programs are examined. Fifth, an examination of the state of Minnesota's concurrent enrollment program is provided. Finally, Southwest Minnesota State University, the four-year public liberal arts university that is the subject of this study, is examined within the context of its concurrent enrollment program.

A Survey of Credit-Based Transition Program Terminology

Credit-based transition programs are a broad term that refers to program strategies that permit high school students to earn college credit for coursework completed during high school (Bailey and Karp 2003:1). Programs included within this definition are

Advanced Placement (AP), International Baccalaureate (IB) programs, Tech Prep, Middle College High Schools (MCHS), and dual enrollment (Bailey and Karp 2003). Each program model has unique characteristics that are designed to facilitate the transition from high school to college while earning college credit.

The uniqueness of each credit-based transition program stems from a number of factors, which include course content, course location (whether the course is taught at the high school, college or a mix), the type of instructor (college adjunct or certified high school instructor), whether college credit is guaranteed, how college credit is awarded (by third-party exam or passing a course), and the type of student (whether high achieving or low achieving students). For instance, ***AP courses*** are designed to permit students to earn college credit by taking an AP exam with a commensurate cutoff score for which college credit is granted (Bailey and Karp 2003). Students who take AP courses are generally academically advanced and ready for college work. The location of the course is at the secondary institution, with a third-party exam administered and coordinated through the College Board. The College Board is a not-for-profit organization that began in 1900. Its mission includes connecting students to college success and opportunity (College Board 2016). The AP exam model is quite popular, and in 2015 alone, 2,483,452 students took an AP Exam (College Board 2016).

The ***International Baccalaureate (IB)*** is more robust, and is designed to provide a broad-based education that includes science, the humanities, language, mathematics, technology and the arts (Minnesota Department of Education 2013:7). Like the AP exam, students take a third-party exam in the specific field and are awarded credit based

upon a cutoff score (Bailey and Karp 2003). Unlike AP, IB courses are worldwide and serve students from ages three to 19 (Minnesota Department of Education 2013).

Tech Prep is another model for awarding college credit to high school students. The central feature of this program is articulation and coordination between high school and college courses. High school students can earn college credit through articulated high school classes only after being admitted to a coordinated course of study at a community or technical college (Bailey and Karp 2003; Swanson 2008). The ***Middle College High Schools (MCHS)*** program serves as another variation for awarding college credit. The primary feature of this program is targeting students who are at risk of dropping out of high school and immersing them in postsecondary education (Bailey and Karp 2003). To do that, students take high school courses, and when ready, enroll in college courses for dual credit located on the college campus (Bailey and Karp 2003).

Like those credit-based transition programs already mentioned, ***dual enrollment*** is a program strategy to offer students the opportunity to earn college credit for course work during high school (Bailey and Karp 2003:7). Dual enrollment is ubiquitous. According to Bailey and Karp (2003), the biggest growth in credit-based transition programs is in the area of dual credit. Indeed, during the 2010-1011 academic year, 1,277,100 high school students were enrolled in a dual enrollment program that offered college credit (Marken, Gray, and Lewis 2013:3).

The most commonly used definition of a ***dual enrollment program*** is "an organized system with special guidelines that allows high school students to take college-level courses" (Kleiner and Lewis 2005:1; Swanson 2008). Within that broad definition, labels such as dual enrollment, dual credit, concurrent enrollment, joint

enrollment, or college in the high school, to name a few, are used interchangeably (Kleiner and Lewis 2005; Andrews 2010). While all these definitions ultimately refer to high school students participating in college-level courses for college credit, each label may also indicate how a high school student participated in a particular college course. For instance, the National Alliance of Concurrent Enrollment Partnerships (NAECP), the organization that accredits concurrent enrollment programs, distinguishes between "dual enrollment" and “concurrent enrollment," whereby ***dual enrollment*** refers to a program where high school students can earn college credit for a single course, but the course is generally offered at the postsecondary institution.

In contrast, ***concurrent enrollment*** is defined as dual credit programs that are offered at a student's high school and taught by high school teachers. (Hanover Research 2014:7). That is, NAECP considers where the course is taught, and if the college course is taught at a postsecondary institution, then the program is referred to as dual enrollment. In contrast, if the college course is taught at the high school, then the program is referred to as concurrent enrollment. In addition, and an important distinction, the concurrent enrollment model also permits high school students to earn high school and college credits simultaneously (Allen 2010:2). This is consistent with the Higher Learning Commission's (HLC) definition, that, while broader, simply states that "dual credit [or in this context concurrent enrollment] refers to courses taught to high school students for which the students receive both high school credit and college credit (Higher Learning Commission: Guidelines 2014).

To date, there is no consensus on consistent labels for the varied number of programs that offer college credits to high school students (Higher Learning

Commission 2013:vi). Indeed, one study found as many as 100 terms that were used as either as labels or descriptors of the activity of high school students enrolling in college-level courses for college credit (Higher Learning Commission 2013:13).

Because of the wide variation of credit-based transition programs, Bailey and Karp (2003) conceived of a loose typology to assist in differentiating and understanding the characteristics between AP, IB, Tech Prep, MCHS and dual enrollment. The typology, or classification framework, employs intensity and the ability to expose students to a wide range of "college-like experiences" as factors for differentiation (Bailey and Karp 2003). The three categories conceived are *singleton*, *comprehensive*, and *enhanced comprehensive programs*. *Singleton* programs' primary goal is to expose students to college-level academics and enrich the high school curriculum (Bailey and Karp 2003). A secondary benefit is that students may earn college credit. Advanced Placement and many **dual enrollment programs** are examples of singleton programs (Bailey and Karp 2003:ix). Singleton programs are less onerous in relation to intensity and college-like experiences, as students live a high school experience while taking a limited number of college-level courses. Generally, dual enrollment programs that offer stand-alone college courses to high school students are characterized as a singleton program (An and Taylor 2015:4).

Different than singleton programs, *comprehensive programs* increase in academic intensity for the student. Common with these types of programs is that students are more immersed with college level academics, taking many if not all of their courses in the last year or two of high school (Bailey and Karp 2003:ix). Depending upon the type of program, the student can take courses at the high school or college

campus, from a high school instructor or college instructor. A characteristic of the comprehensive program category is that the primary focus remains on academic preparation, exposure to rigorous coursework, and the ability to earn college credit (Bailey and Karp 2003:ix). International Baccalaureate, Tech Prep, and **some dual enrollment** programs fall within this category. In relation to dual enrollment, a feature of it in this category is that multiple college courses are typically offered during the junior and senior year of high school (An and Taylor 2015:4).

Enhanced comprehensive programs are the third category and the most robust in relation to intensity and the immersion into college-life experiences. Unlike singleton and comprehensive programs, the enhanced comprehensive programs offer counseling, assistance with applications, mentoring, and general personal support (Bailey and Karp 2003). Of the three categories, the enhanced comprehensive program is the most intense in relation to immersion of college-life experiences and college work. A primary goal of this program is to advance the secondary and postsecondary transition and supplant a majority of the students' high school experiences with a college experience. The most common type of enhanced comprehensive program is MCHS and **some dual enrollment** programs. A feature of this category is that students, through substantial exposure to college courses and support services, could complete an associate's degree by the time high school graduation occurs (An and Taylor 2015:4). The primary student population targeted for this type of program are middle or low achieving students who are socially or economically disadvantaged (Bailey and Karp 2003).

Dual enrollment programs are found throughout all three categories. This stems from the nature and uniqueness of dual enrollment programs. That is, dual enrollment

programs are a product of the relationship between the school or school district and both the postsecondary institution and the regulatory regime that governs it. Consequently, some dual enrollment programs may be stand-alone college courses offered to high school students (singleton programs), while other dual enrollment programs may envision the high school student attaining an associate's degree by the time high school graduation occurs (enhanced comprehensive program). The variation and depth of each program is unique, but what is common is that ultimately high school students who participate in dual enrollment programs earn college credit.

Dual Enrollment as a Strategy to Enhance K-12 Education

In its original form, dual enrollment's purpose began as an option for academically advanced students to remain challenged in their coursework (Cassidy, Keating and Young 2010:1). A pioneer in launching this effort in offering college courses to academically qualified high school students is Syracuse University. Dubbed "Project Advance," Syracuse University in 1972 began offering five introductory university courses to approximately 400 qualified high school students (Syracuse University 2016). In the decades that followed, dual enrollment programs picked up momentum nationwide, with states passing legislation to formally adopt such programs. According to Mokher and McLendon (2009), the adoption of state legislation steadily increased from three states in 1980 to 40 states in 2005 (Mokher and McLendon 2009:260), and, as of this writing, to 47 states and the District of Columbia (Education Commission of the States nd). The three states that do not have dual enrollment statutes

and/or regulations in place leave it to the discretion of local school districts and post-secondary institutions to develop policies (Education Commission of the States nd).

The emergence of dual enrollment programs in the 1970s and 1980s were designed primarily to keep talented students challenged, but also to provide a smooth transition from high school to college, provide vocational preparedness, and provide a stronger pathway toward a college degree (Klopfenstein and Lively 2012:60; Kleiner and Lewis 2005; Bailey and Karp 2003; Adelman 2006). The key reports that partly fueled the continuing momentum for the growth of dual enrollment programs was the publication of T*he Lost Opportunity of Senior Year: Finding a Better Way* and its follow-up publication, *Raising Our Sights, No High School Senior Left Behind*. Published by the National Commission on the High School Senior Year, these reports highlighted alarming findings that predicted a troubling future for the nation. For instance, the Commission recounted the disturbing reality that one-third of high school students are under-educated or mis-educated, many of these students are not prepared for either work or college, or simply do not graduate from college at all, and equally troubling, that the senior year is a lost opportunity because one-quarter of a student's high school learning time is wasted (National Commission on the High School Senior Year 2001a:16). With the latter, authors of the study attributed a student's senior year to "Senioritis," a time where the "senior year becomes party-time rather than a time to prepare for one of their most important life transitions." (National Commission on the High School Senior Year 2001a:20). Of the many problems identified by the report, one of significance is the lack of communication between K-12 and postsecondary education (National Commission on the High School Senior Year 2001a:33).

With an understanding of the pervasive problems associated with the senior year of high school, the Commission authored "Raising Our Sights: No High School Senior Left Behind," which offered a number of recommendations to address the educational needs of the nation's students (National Commission on the High School Senior Year 2001b:7). The study proposed a "strategic approach to encourage K-12 and higher education to become truly one system . . . [creating] a P-16 system of education" (National Commission on the High School Senior Year 2001b:16). The Commission further recommended “[i]ncreas[ed] opportunities for dual enrollment," which they believed would expand a high school students experience with college-level work and permit students to meet college admission requirements in the junior or senior year (National Commission on the High School Senior Year 2001b:32).

The significance of these two studies lies in their identification of the disconnect between secondary and postsecondary education system and the decreasing rigor in the senior year of high school, and, thus, the justification for dual enrollment as one potential option to increase the intensity and rigor of the high school curriculum (Swanson 2008:53). Against this backdrop, evidence further came to light that American students were simply unprepared for college, with nearly half of all postsecondary students needing at least one remedial course upon entering college (Karp, Bailey, Hughes, and Fermin 2004; Kleiner and Lewis 2005). Thus, dual enrollment was seen as a programmatic technique to encourage students to engage in demanding coursework for their final year of high school (Bailey and Karp 2002).

On the cusp of a national crisis in educational policy, the American Association of State Colleges and Universities (AASCU) proposed dual enrollment as a viable option to

bridge the gap between K-12 and postsecondary education (American Association of State Colleges and Universities 2002:3). Addressing the concerns of the lost opportunity of the senior year, AASCU claimed that "dual enrollment provides an opportunity to smooth the transition to postsecondary education . . . thereby increasing the likelihood that students will complete a postsecondary program and be better prepared for the demands of an information-based society" (American Association of State Colleges and Universities 2002:3). Dual enrollment would also address "Senioritis" and better prepare high school students for the work they will see in college (American Association of State Colleges and Universities 2002:4).

Even more importantly, the AASCU outlined a number of benefits to students, colleges and universities, communities, and society generally. All indicators led AASCU to conclude that dual enrollment programs "represent a trend with a strong future" (American Association of State Colleges and Universities 2002:10). This prediction has played out, as dual enrollment programs enjoy strong participation nationwide, are attractive to educators and policy makers who desire to enhance the academic rigor of the senior year, and, at the same time, provide a pathway that transitions students to college or work.

Structure of Dual Enrollment Programs

State dual credit policies vary in terms of policy approach and substance (Taylor, Borden, and Park 2015; Karp *et al.* 2004). This variation is best described as nonexistent to very detailed (Karp *et al.* 2004; WICHE 2006). Nonetheless, whatever form dual enrollment assumes, it is ultimately a structural reform that requires secondary and

postsecondary education to adapt to a new educational paradigm (Karp 2015:107). Each dual enrollment program, no matter how delivered, has common elements that are distinguishable from other credit-based transition programs. For one, dual enrollment programs require a partnership between a school or district and a postsecondary institution (Cassidy *et al*. 2010:1). The nature of the partnership is structured and contains agreements identifying the details of which courses are offered, where those courses are held, the qualifications of instructors, and the requirements for earning credit (Klopfenstein and Lively 2012:62). Second, the types of courses offered to high school students are highly variable and are subject, depending upon the state, to a number of restrictions and/or regulations. For instance, some states, like Georgia and Florida, prohibit remedial or developmental courses (Higher Learning Commission 2013:15). In another example, North Carolina is more broad, requiring courses that provide "academic transition pathways for qualified junior and senior high school students that lead to a career technical education certificate or diploma" (Higher Learning Commission 2013:15). Generally, each state is different with the type of courses restricted, the types of courses that are required, or conditions placed on those courses in relation to transfer of credits and articulation agreements (Higher Learning Commission 2013:15). The instrument to facilitate the transfer of credits is the college transcript, which is generated from the work of the student who successfully completes a dual credit course (Hanover Research 2014:5).

Each state to some degree regulates student eligibility to participate in dual credit programs. Nearly 80% of states (37 states) had policy language on student eligibility and participation in dual credit programs (Taylor *et al*. 2015:13). Criteria ranged from

the high school students' class rank, GPA, or exam/course prerequisite requirements (Taylor *et al*. 2015:13-14). For instance, states like Montana require the use of standardized exam scores for placement of students in mathematics and composition courses (Higher Learning Commission 2013:17). Other states, like South Dakota, are more elaborate in how they determine student eligibility for dual credit, establishing criteria like the student's coursework, class rank, or ACT/SAT score (Higher Learning Commission 2013:17). Relative to the number of credits, some states cap the total number a high school student can take, while other states like Mississippi provide high school students the opportunity to earn an unlimited number of university credits (Higher Learning Commission 2013:17).

Another common feature of dual enrollment programs are regulations on instructor eligibility. Thirty-one out of 37 states that had policies regulating instructors for dual credit courses had requirements that those instructors meet the same requirements for appointment as regular faculty at the collegiate institution granting credit (Taylor *et al*. 2015:14; Higher Learning Commission 2013:19). This provision is generally the requirement for most institutions' accreditation standards when it concerns the appointment of faculty to teach college courses (Taylor *et al*. 2015). In the selection of instructors, generally it is the secondary school and the postsecondary school who cooperatively identify instructors to teach dual credit courses. Whether the course is offered in the secondary school or on the postsecondary campus, it is the respective college/university department that approves credentials for teaching the college/university course (Higher Learning Commission 2013:19). A further nuance to instructor eligibility is that some state policies permit instructors to teach a concurrent

enrollment course (or a college course in the high school) if they hold a masters' degree and at least 18 credits in the discipline (Higher Learning Commission 2013).

Finally, the bulk of dual enrollment programs are found at two-year institutions (Hanover Research 2014). One study reported that 71 percent of these dual enrolled students took college courses from a public two-year institution, while only 21 percent at public four-year institutions, and 7 percent from four-year private institutions. Two-year institutions almost exclusively offered college courses at the secondary school using a mix of high school and college instructors (Hanover Research 2014). With four-year institutions, those that offered dual enrollment programs were more likely to offer it on the college campus than in the high school, and when offering it in the high school, used high school instructors about half the time (Hanover Research 2014).

Overarching the varied arrangements for how dual enrollment programs are delivered, where they are delivered, and who delivers them is the regulatory oversight, there are at least three ways in which dual credit programs are regulated. The most notable, and specific to concurrent enrollment, is the National Alliance of Concurrent Enrollment Partnerships (NACEP), a voluntary organization from which high school and college partnerships receive accreditation status. Since 2004, NACEP has served as the national accrediting body for concurrent enrollment programs (National Alliance of Concurrent Enrollment Partnerships 2016). That is, this accrediting body accredits concurrent enrollment programs where high school students are enrolled in college courses that are offered by a certified high school instructor in a secondary institution. Moreover, and important to distinguish, NACEP does not accredit dual enrollment programs, where high school students are enrolled in college courses offered in a

postsecondary institution. As of April 1, 2015, NACEP has member institutions in 46 states, which includes 218 two-year colleges, 104 four-year universities, 37 high schools and school districts, and 20 state agencies or system offices (National Alliance of Concurrent Enrollment Partnerships 2016). As of April 2014, NACEP has accredited 97 concurrent enrollment programs, which includes 59 two-year universities, 29 four-year public universities, and 9 four-year private colleges and universities (National Alliance of Concurrent Enrollment Partnerships 2016).

The second method employed to regulate dual enrollment programs is through the Higher Learning Commission (HLC). The Commission is a regional accreditation agency that is recognized by the U.S. Department of Education to accredit, or validate, the quality of degree granting institutions (Higher Learning Commission 2016). Institutions are evaluated based upon set standards from a system of peer review. The Commission as recently as 2014 published guidelines for dual credit programs that ranged from faculty qualifications and academic rigor, to learning outcomes (Higher Learning Commission 2014). Unlike NACEP, and beyond the comprehensive accreditation for a postsecondary institution, the Commission also accredits not only college courses taught in the high school by high school instructors (i.e., concurrent enrollment), but also college courses taught by college instructors on the college campus where high school students are enrolled (i.e., dual enrollment).

The third method employed to regulate dual enrollment programs is state policy. The degree of regulatory oversight by states is varied, with some states having more than one state agency involved in the oversight role. Some states have policy provisions in place on dual enrollment, while other states require or encourage NACEP

accreditation as the means to ensure quality (Higher Learning Commission 2013). With all three approaches, the regulatory landscape is under increasing scrutiny because some doubt exists whether academic rigor or the authentic college experience can be maintained with dual enrollment programs.

Benefits and Concerns over Dual Enrollment Programs

Dual enrollment programs maintain wide popularity and support. This stems in part from the many arguments advanced by educators and policymakers on the efficacy of such programs. Bailey and Karp (2003) highlighted a variety of arguments that have been advanced supporting dual enrollment. One popular argument is that enrolling in college-level courses provides challenging courses for high school students. Academic rigor is important, as research on the intensity and quality of a student's high school curriculum have been shown to be the strongest predictors of a bachelor's degree completion (Adelman 1999; Bailey and Karp 2003). Beyond academic rigor, additional benefits of dual enrollment include the belief that these programs facilitate the transition between high school and college (Karp 2012); accelerate students' progress toward degree completion (Karp 2015; Higher Learning Commission 2013; Cassidy *et al*. 2010); reduce costs for a college education (Cowan and Goldhaber 2015; Hanover Research 2014; Higher Learning Commission 2013; Bailey *et al*. 2002); prepare students for college work (Karp and Hughes 2008); enhance and diversify the high school curriculum (Higher Learning Commission 2013; Bailey and Karp 2003:4); make the senior year of high school more productive (AASCU 2002); raise the student's motivation to attend college (An 2015); improve collaboration and relationships between

high school and college (Higher Learning Commission 2013); and enhance college access to underrepresented students (Higher Learning Commission 2013: Hoffman 2005). Education and policy leaders alike continue to thrust support behind the efficacy of dual enrollment programs, yet concerns have been raised.

The literature on dual enrollment appears Pollyannaish with respect to curing the woes of ill-prepared high school students who aspire to enter college or the work place. In fact, some have raised concerns whether dual enrollment programs achieve the impact many researchers and educators have touted, and equally concerning, whether oversight and the administration of dual enrollment programs can be performed effectively. Other researchers have concluded that "there is relatively little evidence on the effects of dual enrollment programs on college attendance or completion" (Cowan and Goldhaber 2015:429). In addition, the Higher Learning Commission (2013) notes a common concern that dual enrollment programs may lack the academic rigor expected for collegiate quality and caliber (Higher Learning Commission 2013:viii). Instructor quality, the prospect of achieving an authentic college experience, and transfer of credits are continuing concerns raised by researchers and policymakers (Higher Learning Commission 2013:viii; Andrews 2010:10).

College faculty share these concerns, but also raise an additional concern that dual enrollment programs have a negative impact on the postsecondary institution's revenues because students pay only nominal fees (Kinnick 2012:40). In relation to Minnesota, this funding gap has been acknowledged with recent guidance from Minnesota State (formerly MNSCU), that the pricing structure will become uniform in order to cover direct costs associated with delivering college courses in the high school.

By 2020, all courses offered through the Minnesota State universities will have a uniform price that better reflects the cost of delivering college courses in the high school (Minnesota State 2016). As a result of these concerns, accreditors and policymakers have focused their attention on dual enrollment programs, providing guidance to ensure instructional quality and academic rigor are maintained, and in relation to Minnesota, that the pricing structure to offer these courses cover the direct costs (Minnesota State 2016; Higher Learning Commission 2014).

Minnesota's Post-Secondary Enrollment Options (PSEO)

Minnesota in the 1980s became an early adopter of state dual credit programs, providing a framework for offering college courses to high school students (Taylor *et al.* 2015:9). Indeed, with the adoption of the Post-Secondary Enrollment Options (PSEO) Act in 1985 (M.S. sec. 124D.09), Minnesota became the first state to legislate a framework where 11th and 12th graders were allowed admission to take college courses at state expense (Higher Learning Commission 2013; Kim 2008). The PSEO statute is the broad legislative authority for secondary and postsecondary institutions to structure agreements that permit eligible students to take college courses for college credit (Minnesota Department of Education 2013:25). The legislation specifically permits students who are in the 11th or 12th grade to participate in PSEO courses, and, in very limited circumstances, 9th and 10th graders (Minnesota Department of Education 2014:5-6).

In Minnesota, distinctions on the nature of dual enrollment programs is further drawn based upon which postsecondary institution is involved in the delivery and where

the college course is delivered. For instance, if students earn college credit when the course is offered on the college campus, this activity is commonly referred to as “traditional PSEO" (Minnesota Department of Education 2014:3). If the student enrolls in a college-credit bearing course, and the course is taught by a college-approved high school, then this activity is referred to as "concurrent enrollment" (Minnesota Department of Education 2014:3). Or, if the student enrolls in a college-credit bearing course that is arranged through the University of Minnesota, then the program activity is referred to as "College in the Schools." This arrangement normally means that the college course is taught by a qualified high school instructor approved by the University of Minnesota faculty (Minnesota Department of Education 2014:3). No matter how the program activity is defined or how it is administered, the legislative authority to offer dual enrollment courses is governed by the PSEO Act.

Minnesota's dual enrollment program is accredited through the Higher Learning Commission, and with respect to concurrent enrollment, NACEP. Within the state of Minnesota, 12 concurrent enrollment programs are accredited by NACEP, and as recently as 2014, HLC began reviewing concurrent enrollment practices as part of its regular review of postsecondary institutions (Minnesota Department of Education 2013:25). The accreditation standards of the NACEP and Higher Learning Commission are similar, with focus directed at teacher credentials, rigor of courses, expectations for student learning outcomes, access to learning resources, and oversight. In addition, NACEP also monitors transferability of credits earned through concurrent enrollment (Minnesota Department of Education 2013:25). This entails program evaluation and student surveys to assess the transferability of credits earned through concurrent

enrollment. Within Minnesota, the agreement between the University of Minnesota and Minnesota State (formerly Minnesota State Colleges and Universities (MNSCU)) for transferability is the Minnesota Transfer Curriculum (Minnesota Department of Education 2013:26).

The community and technical colleges and the universities implement their concurrent enrollment programs differently. The community college system uses a "direct instruction" model, where faculty develop and teach their own courses (Minnesota Department of Education 2013:26). In contrast, the universities employ a "teaching assistant" model, where university faculty design the course and curriculum, but permit the high school instructor to teach the course (Minnesota Department of Education 2013:26). With teacher qualifications, the accreditation requirement is that they hold a masters' degree in the discipline, or a masters' degree with at least 18 credits in the discipline. In some cases, teachers may be exempt from this requirement if he or she can demonstrate "exceptional experience" in the field (Minnesota Department of Education 2013:26).

Minnesota, through legislative appropriations, provides funding to support high school students who desire to enroll in credit-bearing college courses. The type of funding is dependent upon how the course is offered. If a high school student enrolls in a "traditional PSEO" course (i.e., offered on the college campus), then the postsecondary institution is directly reimbursed by the state of Minnesota (Minnesota Department of Education 2014:9). In this arrangement, students are provided textbooks and equipment, and in certain situations, may be eligible for transportation reimbursement to the postsecondary institution (Minnesota Department of Education 2014:9). In fiscal year

2013, postsecondary institutions in the state of Minnesota were reimbursed $28 million for costs associated with PSEO courses (Minnesota Department of Education 2013:43). Concurrent enrollment courses are funded differently. If the high school student enrolls in a concurrent enrollment course (i.e., offered in the high school and taught by a high school teacher) then the cost for the course is paid by the school district (Minnesota Department of Education 2014:9). In fiscal year 2013, Minnesota school districts were reimbursed $2 million dollars for costs associated with concurrent enrollment course (Minnesota Department of Education 2013:49).

Participation in concurrent enrollment programs, or college courses offered in the high school, has grown steadily from 2009 to 2013. In that time, the number of public school students who participated in a concurrent enrollment program grew from 18,980 in fiscal year 2009 to 23,583 in fiscal year 2013, a 24.2 percent increase (Minnesota Department of Education 2013:27). In addition, in 2013, the percentage of participants who were women was 58.4 percent, while for non-whites, the percentage of those participating was 10.1 percent (Minnesota Department of Education 2013:27).

Concurrent Enrollment at Southwest Minnesota State University

Southwest Minnesota State University's concurrent enrollment program, referred to as College Now, is the longest running concurrent enrollment program in Minnesota, offering courses since 1984. (Southwest Minnesota State University 2014). SMSU employs a "teaching assistant model" where college faculty design the courses and curriculum with the college course offered at the secondary school taught by a certified high school instructor. School districts that seek to participate are required to agree to

the conditions of partnership by signing a "Concurrent Enrollment Agreement Contract" (Southwest Minnesota State University 2014:16). The contract, in accordance with the PSEO Act, regulates the eligibility of high school students who participate in the program, taking into account grade level, class rank, and cumulative GPA (Southwest Minnesota State University 2014:16). In addition to the partnership agreement, each university academic department ensures the quality its course and the manner in which it is offered. Faculty mentors work closely with high school instructors to ensure the learning outcomes and course expectations for a course offered in the high school are the same for a course offered on the college campus. Beyond these policies, College Now, or SMSU's concurrent enrollment program, is accredited by NACEP and has been accredited since 2010 (Southwest Minnesota State University 2014:128). In relation to this study, SMSU's concurrent enrollment program is best characterized within the category of singleton programs. That is, high school students generally enroll once or twice in stand-alone classes that are offered at the secondary institution. This means that a significant majority of the dual-enrollment students in this study took their dual enrollment classes at secondary institutions in Minnesota.

SMSU's concurrent enrollment program is significant in relation to growth and size. The two largest concurrent enrollment providers in the state of Minnesota are SMSU and the University of Minnesota-Twin Cities (Southwest Minnesota State University 2014:16). As of 2012-2013, SMSU had partnerships with 97 school districts offering 425 courses, generating 30,403 credits (Southwest Minnesota State University 2014:127). These 30,403 credits represent 15.4% of the total number of concurrent enrollment credits offered in the state of Minnesota in 2013 (Minnesota Department of

Education 2013:49). In addition, the program revenue in 2013 from concurrent enrollment for SMSU totaled $1.4 million. The growth in the program has been substantial, growing from 2,388 students in the 2002 fall semester to 4,736 students in academic year 2012-2013 (Southwest Minnesota State University 2014:16). These numbers indicate that concurrent enrollment is an important feature of the university's outreach and service to the region and state.

Conclusion

The chapter's primary focus was to orient the reader and understand the dual enrollment landscape. While dual enrollment programs have matured since their inception in 1972, the terminology and variations are complex and confusing. Dual enrollment is closely linked with K-12 education policy, and because of that, variation with these programs is widespread. This is reflected in the different approaches which states choose (or do not choose) to regulate dual enrollment programs and how states choose to design their programs. Dual enrollment programs are widely popular, but at the same time, concerns about their efficacy, the threat of diminished academic rigor and financial implications are raised by educators and policymakers. Finally, this chapter offered a concurrent enrolment, or College Now, profile of the university, which broadly nests into the discussion of the efficacy of dual enrollment programs and their potential influence with student persistence behavior. This will assist in understanding the research that follows in later chapters.

CHAPTER THREE

THEORETICAL FRAMEWORK

The theoretical framework for this study is a modification of Tinto's Model of Student Departure (Tinto, [1987] 1993:114). The model presented uses most of the variables from Tinto's original work, but adds one significant theoretical perspective. This perspective is role transition theory which adds to Tinto's Model the process of transitioning from to college. This means that the model was modified so as to explore whether dual enrollment programs provide a transition experience for high school students which helps them better matriculate into higher education. This chapter begins with the theoretical overview of the Tinto Model, a summary of key ideas and components, and a description of the model as it relates to the research hypotheses introduced in Chapter 4.

The Tinto Model and Other Background Studies

Prior to discussing the Research Model for this study with selected modifications, this section provides an overview of the Tinto Model of Student Departure.

The Tinto Model: An Overview

Tinto advanced a model of student departure that explains the processes and factors that motivate students to leave college before graduation (Appendix A). A key feature of the Tinto Model is the degree and extent to which college students intellectually and socially integrate into college life (Tinto [1987] 1993). The roots of

Tinto's Model stem from the work of Spady, who is noted as the first theorist to incorporate Durkheim's notion of integration into a model of college persistence or departure (Hurtado and Carter 1997:325). Following the work of Spady (1970), Tinto reasoned that college departure shared some features with egotistical suicide (Pascarella, Duby, and Iverson 1983:88). Specifically, Durkheim concluded that suicidal behavior resulted from the inability to integrate socially and normatively into society.

Likewise, Tinto theorized that college students who depart from school do so because they have failed to share the norms and values of the group (Bean 1981:2). Tinto drew further inspiration from social anthropologist Van Gennep (1960) and his classic study entitled *The Rites of Passage* (1960). There, Van Gennep argued that the process of leaving one group (or community) for another succeeding group (or community) was marked by three distinct phases: separation, transition, and incorporation (Tinto 1993:92). Tinto applied Van Gennep's work on the so-called rites of passage to the experiences of high school students who leave home for college. The intersection of Durkheim's theory on suicide and Van Gennep's study on the process and orderly transmission of beliefs and norms of the society laid a fruitful foundation for studies on college attrition. This powerful explanation suggests that college students who fail to transition properly into college life are most at risk to drop out. In that transition, college students who have understood and accepted the norms and values of the new community (or achieved the necessary degree of incorporation) are more likely to persist with the institution and persist towards degree completion.

Tinto's work is distinct from psychologically based studies on student attrition because it is a longitudinal and interactional model of student departure. He essentially

argues that students enroll in college with pre-entry attributes (family background, skills and abilities, and prior schooling) that form the basis for initial contact with the institution (Caison 2007:437). Then, once students are in college, the students interact with institutional environment as a whole, and these experiences influence the students' commitment to the goal of achieving a degree and the commitment to the institution itself. Strong goals and commitments reinforce persistence behavior.

Likewise, successful integration into the academic and social systems of the institution reinforces persistence behavior (Tinto 1993:115). Tinto considered membership in the university community as critical for students to persist with the institution. He measured membership by the degree of social and academic integration. Broadly understood, Tinto argues that "[i]nteractions among students in that system are viewed as central to the development of the important social bonds that serve to integrate the individual into the social communities of the college" (Tinto 1993:118). It is this integration that positively influences a reinforcement of the student's goals and commitments and eventual persistence behavior as it relates to the institution.

The Tinto Model features four categories of variables longitudinally sequenced over the student's first year of college, with an additional category, pre-entry attributes, which exists prior to matriculation (Tinto 1993:114). Broadly, these five categories are pre-entry attributes, initial goals/commitments, integration (academic and social), subsequent goals/commitments, and the outcome (or the departure decision). This study did not examine subsequent goals/commitments, but does examine the other four categories with persistence discussed in relation to pre-entry attributes, initial goals and commitments, and academic and social integration.

Pre-entry Attributes

Pre-entry attributes of the first-year student form a central feature of the student's degree commitment and integration into the university community. Research has indicated that parent's education level was positively associated with the student's attainment of a bachelor's degree (Pascarella and Terenzini 2005:590). Hackman and Dysinger (1970) looked beyond the parent's education level and considered the degree of commitment of both the parents and student to the student obtaining a college education. The results of their study showed that the commitment of a student and his or her parents to a college education is significantly related to student persistence beyond the first year of college (Hackman and Dysinger 1970:315). In follow-up research, evidence suggests that students with parents who had a collegiate experience were more likely to have received encouragement and support from their parents, which in turn would increase the likelihood of their persistence (Caison 2007:441; Porter 1999).

Pre-college academic preparation has been thoroughly researched as a determinant of persistence. Academic achievement prior to college entrance has shown significant predictive power in persistence behavior. In fact, in some studies, the two most powerful predictors of "student persistence are the student's high school grade point average and college admissions test" (Astin 1993:187; Crissman and Upcraft 2005:33). Additionally, specific types of academic preparation may have more influence than others. For instance, Herzog's (2005) findings on high school preparation were more refined than Astin's. He found that the level of math comprehension in high school is the single most important preparatory factor for student success in college (Herzog 2005:916).

Initial Goals and Commitments

Initial goals and commitments are important constructs in Tinto's model. Tinto (1993), in explaining his model, indicated that commitments describe the degree to which students are committed to the attainment of an education (goal commitment) and to the institution to which the student seeks entry (institutional commitment) (Tinto 1993:115). Similarly, other research defines institutional commitment as the "extent to which students are confident in and satisfied with their selection of a college or university," and with degree commitment, "the level of importance the student attaches to earning a diploma" (Davidson, Beck, and Milligan 2009:374).

Cope and Hannah (1975:19-20) examined a number of studies on the topic and reached the conclusion that a student's educational expectations at the time of entering college may be an important variable to consider when explaining persistence behavior. Hackman and Dysinger (1970:318) found in their research that substantial support existed showing that commitment to a college education may be an important determinant as to who persists or departs from college. In testing the validity of the Tinto model, Pascarella and Terenzini (1983:225) found that for females, there is a direct, positive effect between initial goal commitment and persistence. In an earlier study, Pascarella and Terenzini (1979:208) agreed that educational aspirations do influence success or persistence in college. Munro's findings were largely consistent with Pascarella and Terenzini, finding that "educational aspirations, both the student's and his or her parents', were the most powerful predictors of the educational goal to which the student was committed" (Munro 1981:139). In that study, the educational goal referred to the level of education that the student plans to attain (Munro 1981:134).

Additional research has shown that institutional commitment, among other variables, was significant in predicting persistence behavior (Cabrera, Nora and Castaneda 1993).

Academic and Social Integration

Academic and social integration are central features of Tinto's model. While academic and social integration are conceptualized as distinct components, Tinto suggested that membership in the academic and social systems of the college are mutually interdependent and reciprocal (Tinto 1993:119). In similar research directed at persistence, Pascarella and Terenzini (1983:225) found that the social and academic systems of the institution directly affected persistence/withdrawal behavior. Characteristics of student persistence were further examined by Pascarella and Terenzini (1979). They looked at student persistence by investigating the interaction effects of student characteristics and measures of social and academic integration. They found that the quality of student-faculty relationships made significant contributions to the prediction of persistence (Pascarella and Terenzini 1979). Student and faculty interactions are also important variables in academic integration. Research on student-faculty interactions has shown that strong relationships, whether formal or informal, are associated with strong academic outcomes (Komarraju, Musulkin, and Bhattacharyra 2010:339). Liu and Liu's research is generally consistent, finding that student-faculty relationships were often crucial to student retention, and these relationships encompassed both formal and informal student-faculty interaction (Liu and Liu 1999:541).

Munro's (1981) research is largely consistent with that of Pascarella and Terenzini's finding that academic integration had a strong effect on persistence (Munro 1981:139). In another study looking at academic integration, Braxton, Milem and Sullivan (2000) examined the effects of active learning activities and whether they influence social integration, institutional commitment, and college departure. The author's prior research measured academic integration by the student's estimation of their academic and intellectual development, grade point average, and student's perception of faculty concern for teaching and student development (Braxton *et al*. 2000:571). This study specifically examined active learning activities and found that classroom-based academic experiences (as an antecedent to academic integration) influence student/persistence decisions (Braxton *et al*. 2000:581).

Similarly, additional research has shown that first semester GPA positively influences the academic integration of the student into the institution's intellectual community and eventual persistence (Caison 2007:441; Horn and Carroll 1998:24). Herzog's (2005:915) results were consistent with prior research, finding that college grade point average (next to success with college math courses) is the strongest retention predictor for new freshman. In contrast, other research suggests differently. Cabera Nora and Castaneda (1993) found that first semester GPA was a poor measure of academic integration (Carbera, *et al*.:128). As a component of academic integration, Schmidt *et al.* (2009) investigated the nature of active learning activities and whether it positively affects persistence. They found that standard course lectures negatively impact persistence.

Social membership in the social communities of the institution are central to integration (Tinto 2012). It is these communities that draw the attention of researchers in relation to persistence and retention strategies. Studies show consistently that students living on campus are more likely to persist (Pascarella and Terenzini 2005:421; Tinto 2012:65). In much the same way, the library is central to the academic and social systems of the institution (Clink 2015:12). Studies have looked at the impact of the ratio of library professional staff and retention and have found that a positive relationship exists between the two (Emmons and Wilkinson 2011:143).

More generally, Tinto explored the nature of the social system of the college. In doing so, he described social integration as "center[ed] about the daily life and personal needs of the . . . . students [which] goes on in large measure in the residence halls cafeteria, hallways and other meeting places of the college (Tinto 1993:106-107). Exploring the nature of social integration, Christie and Dinham (1991:433) extended Tinto's model by examining the complex role of external experiences in freshman social integration, exploring the influence of high school friends and family in relation to the degree of integration with the institution. Their finding is that external influences play a significant role in the lives of students and impact social integration and ultimately persistence behavior.

In another study that examined academic and social integration, Mannan (2007:160) studied the compensatory relationship between academic and social integration. He found a strong negative relationship between academic and social integration. This indicated that less integration in the social domain of the university was compensated by higher academic integration, which then led to student persistence.

Munro (1981) found that while academic integration was a significant predictor for persistence, social integration was not. Thomas's (2000) research examined student integration from a social network perspective. Using Tinto's Student Integration Model as framework, Thomas assessed the effect of structural integration on commitments, intentions, and persistence (Thomas 2000:592-593). The results showed that student acquaintances and their structural location produced important vital outcomes, such as satisfaction, grade performance, and persistence (Thomas 2000:609).

Socialization and Role Transition Theory

The Tinto Model and its components have evolved since its introduction to the field in 1975. Like many researchers who have adapted or modified the Tinto Model, this study draws attention to the original work of Tinto and highlights a gap in the model that requires further elaboration. The key modification to Tinto's model that this study examines is the nature of transition as it relates to a student's participation in dual enrollment programs prior to college. Tinto acknowledged that it would be difficult to understand persistence if one could not understand the transition process (Tinto 1988:449).

Consequently, there are three important concepts that deserve exploration in relation to this study's examination of dual enrollment programs. The first is the *nature of the transition* within the framework of Tinto's adoption of Van Gennep's "rites of passage." The second is the role *anticipatory socialization* plays in the individual's adjustments to a new social life. Finally, and related to anticipatory socialization, is the *role transition process* and how it may facilitate the student's incorporation into a new

group or community. An exploration of these three components provides more depth to understanding the transition processes within the context of dual enrollment programs.

A theoretical premise of The Tinto Model is Van Gannep's "Rites of Passage." Tinto essentially argued that the pathway for a student entering college is marked by three distinct stages: *separation*, *transition*, and *incorporation* (emphasis added). Nora (2001-2002) hypothesized a theoretical depiction of the interrelations between these three stages (Nora 2001-2002:42). In so doing, Nora describes each stage stemming from Tinto's original work and broadly outlines the theoretical linkages. With *separation*, Nora, citing Tinto, suggests that this stage requires students to "disassociate themselves, in varying degrees, from membership in the communities of the past," or in a sense, to break away or reject the norms of the past community, which is composed of friends, family, and the local high school (Nora 2001-2002:45; Tinto 1993). The *transition* stage encompasses the degree to which the student will "acquire the norms and patterns of behavior appropriate to incorporation into the new communities of the college" (Tinto 1993:97). This stage, as Nora describes it, is one where the student, who has matriculated to higher education, has neither strong bonds to the past community or strong ties to the new community. It is at this point where a sense of isolation may surface and the danger for departure occurs (Nora 2001-2002:47). Finally, the *incorporation* stage is where the social connectedness of the student is realized, where the student has achieved some degree of integration into the life of the institution, or, in different terms, has been socially and academically integrated (Nora 2001-2002:47-48).

The common theoretical linkage throughout the three stages is the social support and encouragement from family, friends, faculty and staff. This social support or

linkages are, in Nora's research, essential to the student's adjustment to the academic and social environment (Nora 2001-2002:50). Broadly, this would appear to contradict an important proposition in Tinto's original work, that disengagement from the past community is critical to the incorporation to the new community. Nora, taking the liberty to interpret Tinto's statements on this point, suggests that Tinto never implied that total disengagement from the past community should occur. Rather, Tinto's proposition would be appropriately understood as indicating that the student's "rejection of some beliefs, values, and even friendships does not necessarily imply a total disengagement or rejection of some emotional bonds or close relationships with significant others (Nora 2000-2001:43). Consequently, Nora's research, seeking to amplify Tinto's understanding of the importance of family and friends (the past community) strongly suggests that support through all three stages was hypothesized to positively affect the student's decision to persist or depart.

While Nora provides theoretical depth to Tinto's premise on the rites of passage as related to student departure, it is limited temporally to the time the student formally matriculates into higher education and when the student decides to persist or depart. Still, Nora better explains the *nature of the transition* and suggests that the results from support and encouragement produce an adoption of new values, an easier transition, and commitment to an education. Stated in another way, Nora's perspective, like Tinto, considers the role of socializing forces and social support for the student as significant factors for the ease of transition to the new community.

What is not addressed by Nora, but is addressed yet dismissed by Tinto, is whether anticipatory socialization can facilitate the transition for student integration into

the institution before the student actually enters. That is, Tinto suggests that the scope of the transition may "hinge upon the degree to which the student has begun the transition process prior to entry into college," but further suggests that "anticipatory socialization," or the degree to which one begins the transition prior to entry, is not common (Tinto 1993:97-98). While Tinto dismissed anticipatory socialization as a factor for pre-entry socialization, he did so at a time when dual enrollment programs were not ubiquitous.

Anticipatory socialization came to the forefront in Merton's classic study on *The American Soldier* (Merton 1968:316-322). In relation to *The American Soldier*, Merton describes anticipatory socialization toward the military role, where enlisted men were selected at a higher rate for promotion based upon their conformity to "officially approved military mores" than those who did not conform to the same degree (Merton 1968:317). Adoption of military values and objectives were deemed necessary to advance into the military hierarchy. In conceptualizing this pattern, Merton described anticipatory socialization when individuals "take on the values of the non-membership group to which they aspire, find[ing] readier acceptance by that group and make an easier adjustment to it" (Merton 1968:319). It is this process where Merton hypothesized that individuals begin an informal preparation for the roles they are to perform in future statuses (Merton 1968:439). Merton even comments that anticipatory socialization occurs in the nation's schools, where students are unwittingly becoming oriented with a new status he or she has yet to occupy (Merton 1968:439).

Building upon Merton's work, Mortimer and Simmons (1978), expanded the literature of adult socialization by considering, among other perspectives, dimensions of roles that facilitate socialization. In role socialization, Mortimer and Simmons

examined its three phases: (1) anticipatory socialization prior to the assumption of a new role, (2) socialization once the new role is occupied, and the disengagement or exit from the old role (Mortimer and Simmons 1978:432). With anticipatory socialization, the authors suggest that it includes "all activities—mental, behavioral, or social—that are performed in preparation for role acquisition" (Mortimer and Simmons 1978:432). That is, the individual in this first phase attempts to assume the attitudes and values that are perceived as appropriate for the new reference group. In relation to dual enrollment programs, while the authors' work is focused on adult socialization, the process of acquiring new attitudes and values are consistent with Merton's in that role acquisition can facilitate progression into the new role.

Conceptually related to anticipatory socialization is role transitions. Here, the work of Burr (1972) is informative. Burr reformulated theoretical propositions that attempted to explain the ease of making role transitions. He did so in the context of family and parenting. One variable that Burr hypothesized could ease role transitions is anticipatory socialization. Burr's definition of anticipatory socialization mirrored Merton's. He defined it as the "process of learning the norms of a role before being in a social situation where it is appropriate to actually behave in the role" (Burr 1972:408). Burr further postulated that anticipatory socialization influences the "ease of role transition." It is the interplay of anticipatory socialization and role transitions in relation to dual enrollment programs that are hypothesized to influence persistence behavior. Consequently, role transitions are examined further.

Role transitions refers to the adjustment to a wide range of experiences found in life, to include job change, unemployment, divorce, retirement, becoming a parent, and

so on (Allen and Vliert 1984:vii). Allen and Vliert consider role transitions to be an important type of change because of the influence this process has on behavior and social identity of the participant (Allen and Vliert 1986:3). Role transitions are a key theoretical component of role theory. Role theory examines the social expectations attached to particular social positions and how they influence human behavior (Biddle and Thomas:1966). An element of the role position are its expectations. The role has expectations that have content and indicate what the incumbent, or for this study the student, ought to do (Boyanowsky 1984:65).

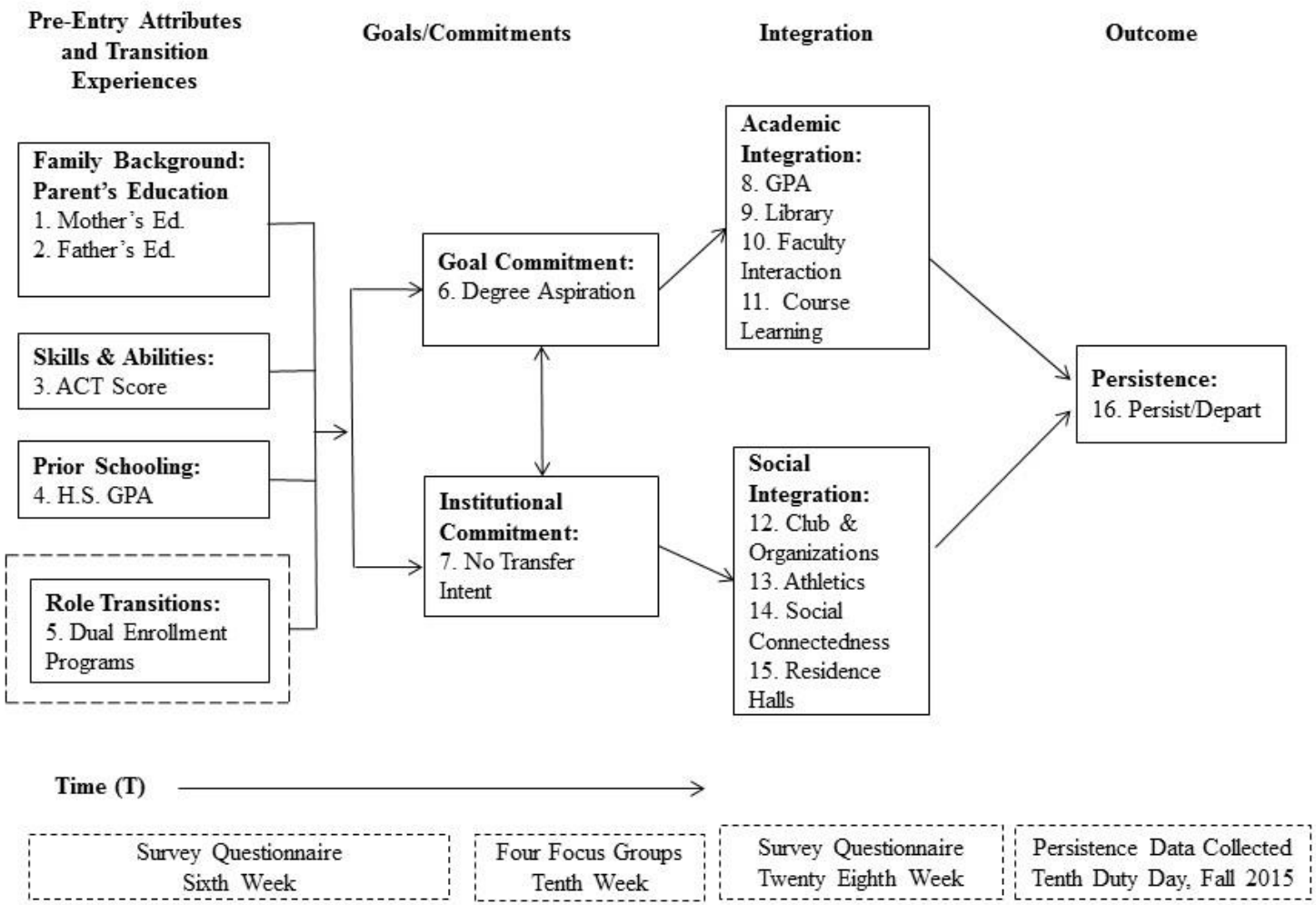
The "role" concept is central to role theory, having its roots in the theater with actors and scripts (Biddle 1986:68). As previously mentioned, an extension of role theory and a focus of this study is role transition, which is defined as a "permanent change-over of a focal person from one set of expected positional behaviors to another" (Allen and Vliert 1986:9). It could be hypothesized that role transitions are structurally embedded in dual enrollment programs since transition experiences abound in one's college life-cycle and play a key role in persistence behavior. This is so because a student who correctly anticipates a new set of role expectations will be better positioned to manage role shock and strain (Allen and Vliert 1984:13). A student's role transition is not sudden, but temporal in nature, dependent upon the nature and level of anticipatory socialization and the amount of normative change a student will encounter (Allen and Vliert 1986:10). Consequently, it is argued in this study that role transitions serve as bridges for high school students entering into college, better preparing them for the rigors of academic and social life.

There is some evidence that anticipatory socialization facilitates role transition. Moerings (1984) summarized a key point as it relates prisoners entering and leaving prison. He hypothesized that role transitions "cause fewer problems when anticipatory socialization has taken place" (Moerings 1984:153). Those who have committed crimes, by varying degree and relative to the nature of the offense, can begin the preparation for prison life, while the unexpected term of imprisonment results in poor transition and adjustment for the role incumbent (Moerings 1984:154). Or, in other related research, one study found that urban-reared doctors who were happy with their rural practice had planned to locate in a rural area before entering medical school (Rubenstein *et al*. 1975: Miller 1984:219-220). In other words, urban-reared doctors who had anticipated the adjustments that they would have to make in a rural setting were better positioned to adjust.

Research Model of Student Departure and Transition

This study looked at students who had formally earned dual enrollment credits while in high school. The Model of Student Departure and Transition (hereafter referred to as the Research Model) took into account many of Tinto's theoretical constructs (Appendix A), but to further elaborate on the impact of dual enrollment on college persistence, this study added student's transition experience as it relates to dual enrollment programs. As mentioned previously, the Research Model (Figure 1) is composed of most of Tinto's theoretical constructs, but omits "subsequent goals and commitments."

Figure 1: Research Model



The Research Model proposes that a student's transition experiences stemming from participation in dual enrollment programs influences degree aspiration and commitment, institutional commitment, academic integration, social integration, and ultimately persistence behavior. The underlying theory to support this sociological pattern is role transitions and the socialization that occurs prior to the student formally entering post-secondary education. This concept is measured by the expectations, norms, and behaviors that the student holds or learned because they were a dual enrollee in a college course or multiple courses while in high school. It is expected that these expectations, norms, and behaviors influence a student's adjustment later on in college life. To assess the entire model, additional constructs from Tinto's original work were incorporated and tested.

Pre-entry attributes, comprised of the student's family background, are measured by the (1) mother and father's highest level of education achieved; (2) skills and abilities are measured by the student's ACT score; and (3) prior schooling, as measured by the student's high school GPA. For this study, and sequenced within the longitudinal model, dual enrollment programs are characterized as transition experiences students receive prior to formal entry into a postsecondary institution. That is, the Research Model locates transition experiences stemming from dual enrollment programs with the student's pre-entry attributes, combined under the Pre-Entry Attributes and Role Transitions. It is hypothesized that dual enrollment programs socialize students to college expectations, providing a means to role transition to a new social life, and thereby improving the student's chances of continuing on to the second year of college.

Research on dual enrollment programs has shown that fully enrolled students who had been previously dual enrolled had higher grade-point averages in the first year of college and were more likely to persist to the second year (Karp *et al*. 2007). This is hypothesized to occur because "dual enrollees are . . . able to earn college credit while in high school, giving participants momentum into the next transition" (An 2012:10). Swanson (2008:361), in a very comprehensive analysis of dual enrollment programs, found that dual enrollment participation positively impacted student persistence through the end of the second year of college. Moreover, other researchers including D 'Amico *et al*. (2013:777) have suggested that Tinto's theory, while not looking specifically at role transitions, may benefit from a closer examination of impact of dual enrollment. Specifically, academic integration, social integration and persistence may, in part, be explained by anticipatory socialization through dual enrollment programs. It could be assumed that students who have been dual enrolled were more likely to have greater levels of academic and social integration. As noted previously, prior research has shown that students who have achieved a high degree of academic and social integration are more likely to persist.

Beyond role transitions as it relates to dual enrollment programs, the Research Model also employs both ***goal commitment***, measured by degree aspiration, and ***institutional commitment***. It is these intentions and commitments that are hypothesized by Tinto and others to reinforce persistence behavior through a "longitudinal series of interactions between the individual and the structures and members of the academic and social systems" (Pascarella and Terenzini 2005:54).

Consistent with Tinto, the Research Model also features academic and social integration. A basic premise with academic and social integration is the extent of *integration* that occurs with the student. The Research Model defines integration consistent with prior research as "the extent to which the individual shares the normative attitudes and values of peers and faculty in the institution and abides by the formal and informal structural requirements for membership in that community or in subgroups of it (Pascarella and Terenzini 2005:54). As a separate category, ***academic integration*** consists of the degree of faculty-student interaction, the extent of library usage by the student, first semester GPA, and the degree that students seriously engaged in learning. ***Social integration*** refers to the degree the student has informally integrated into the social communities of the institution. This construct looked at the degree of interaction or involvement with clubs and organizations, the bonds the student has formed with other students, and their attendance at collegiate events. Broadly understood, as integration increases, the student's commitments to both their personal goals, and institution commitment increases, and as personal goals and institutional commitments increase, persistence behavior is positively influenced.

Finally, the model includes ***persistence***, which is measured by whether the student remained or departed from the institution after the first year of college. In the life-cycle of the college student, research has shown that attrition is the highest at the end of the freshman year (Rootman 1972).

Holistically, the Research Model tests basic features of the Tinto Model, but complements the original model with *dual enrollment* and the degree that these programs facilitate socialization and transition of the student into academic life. The

next chapter covers the sample population, the data collection methods, index development, propositions and hypotheses, and statistical tests used to assess the Research Model.

CHAPTER FOUR

RESEARCH METHODOLOGY

This chapter provides a list of hypotheses that have been developed based upon empirical and theoretical grounds presented in previous chapters. In so doing, this chapter covers the research design employed in this study as well as the types of data collection including a description of the survey instruments and the focus groups. Discussion also considers recruitment of survey and focus group respondents, the reliability of the survey instruments, and measurement and description of the study variables. Next, there is an explanation of how the indices were constructed. Finally, there is a discussion of the statistical techniques and qualitative coding procedures employed to conduct the analyses for this study.

Research Questions and Hypotheses

The framework promoted by Tinto is longitudinal and presumes that student experiences and attributes before entering a higher education institution are predictors of eventual persistence or departure from the institution. It is these first-year pre-entry student attributes that are likely to influence the student's institutional commitment and desire to get a college degree, both of which are instrumental to the student's integration into the institution's academic and social systems (Tinto 1993). Integration into academic and social systems are powerful predictors that the student will persist with the higher education institution and eventually achieve degree completion. The focus of this study is the student's participation and transition experiences in dual enrollment

programs, which may further influence persistence and departure behavior of first-year college students. The research questions and hypotheses of this study test the predictive power of the entire research model, but primary importance and emphasis is student's participation and transition experiences in dual enrollment programs and whether this participation is associated with a student's persistence or departure decision. Additional variables are tested in order to holistically assess the research model and its predictive power related to persistence behavior. Hence, the research questions and related hypotheses are:

1. **To what degree are a mother and father's education levels associated with the student's commitment to achieve a college degree, commitment to the institution, degree of academic integration and degree of social integration?**

Hypotheses:

Mother and father's education level are associated with goals to achieve a college degree and commit to the institution.

H1: The greater the mother and father's level of education, the greater the student's goal to achieve a college degree.

H2: The greater the mother and father's level of education, the greater the student's commitment to the institution.

Mother and father's education level are associated with academic integration and social integration.

H3: The greater the mother and father's level of education, the greater the student's academic integration.

H4: The greater the mother and father's level of education, the greater the student's social integration.

2. **To what degree are ACT scores associated with the student's commitment to achieving a college degree, commitment to the institution, degree of academic integration and degree of social integration?**

Hypotheses:

ACT scores are associated with goals to achieve a college degree and commit to the institution.

H5: The greater the ACT score, the greater the student's goal to achieve a college degree.

H6: The greater the ACT score, the greater the student's commitment to the institution.

ACT scores are associated with academic integration and social integration.

H7 The greater the ACT score, the greater the student's academic integration.

H8: The greater the ACT score, the greater the student's social integration.

3. To what degree is high school GPA associated with a student's commitment to achieving a college degree, commitment to the institution, degree of academic integration and degree of social integration?

Hypotheses:

High school GPA is associated with goal to achieve a college degree and commit to the institution.

H9: The greater the high school GPA, the greater the student's goal to achieve a college degree.

H10: The greater the high school GPA, the greater the student's commitment to the institution.

High school GPA is associated with academic integration and social integration.

H11: The greater the high school GPA, the greater the student's academic integration.

H12: The greater the high school GPA, the greater the student's social integration.

4. To what degree is the student's transition experiences with dual enrollment programs associated with commitment to achieving a degree, commitment to the institution, extent of academic integration and extent of social integration?

Hypotheses:

A student's transition experiences with dual enrollment programs are associated with the goal to achieve a college degree and commitment to the institution.

H13: The greater the degree of transition experiences with dual enrollment programs, the greater the student's goal to achieve a college degree.

H14: The greater degree of transition experiences with dual enrollment programs, the greater the student's commitment to the institution.

A student's transition experiences with dual enrollment programs is associated with academic integration and social integration.

H15: The greater the degree of transition experiences with dual enrollment programs, the greater the student's academic integration.

H16: The greater degree of transition experiences with dual enrollment programs, the greater the student's social integration.

5. To what degree are mother and father's education, high school GPA, ACT score, academic integration, social integration, and participation and transition experiences with dual enrollment courses associated with persistence behavior?

Hypothesis:

Mother and father's education level, high school GPA, and ACT score are associated with persistence.

H17: The greater the mother and father's level of education, high school GPA, and ACT score the more likely the student will persist with the institution beyond the first year.

Participation with dual enrollment programs is associated with persistence.

H18: Students who participate with dual enrollment programs are more likely to persist with the institution beyond the first year.

The greater number of college courses and a student's transition experience with dual enrollment programs is associated with persistence.

H19: The greater the number of college courses and the degree of student's transition experience with dual enrollment programs, the more likely the student will persist with the institution beyond the first year.

Academic integration, social integration and participation and transition experiences with dual enrollment programs are associated with persistence behavior.

H20: Academic integration, social integration, and participation with dual enrollment courses are positively associated with persistence behavior.

H21: Academic integration, social integration, and the degree of transition experiences with dual enrollment programs will more likely result in persistence with the institution beyond the first year.

H22: Higher levels of academic integration will more likely result in persistence with the institution beyond the first year.

H23: Higher levels of social integration will more likely result in persistence with the institution beyond the first year.

Research Design

The study subjects were new, first-year freshman enrolled in the 2014 fall semester at a rural, public liberal arts university in the upper Midwest (Southwest Minnesota State University 2014). The research employed a longitudinal case study, using two survey questionnaires (one administered in a classroom environment and the other provided online), four focus groups, and institutional data on the students gathered by the University's Data Management and Institutional Research Office.

The method employed to investigate dual enrollment persistence behavior at this small, public liberal arts university is the single-case design. Single-case design case studies are analogous to a single experiment and are an appropriate design under a number of circumstances (Yin 2014:51). One rationale for a single-case study design is when the case is *critical* to the theoretical propositions (Yin 2014:51). The research for this case study sought a deeper examination into the impact of dual enrollment programs on student persistence behavior. In order to do that, this investigator required a population of students who had previously completed college courses while in high school, and, likewise, a population of students who had not completed any college courses while in high school.

A second rationale for the single-case design is when the case study is *longitudinal*. A longitudinal case is where the investigator studies "the same single case at two or more different points in time" (Yin 2014:53). This study collected data at four different time intervals: the sixth, eleventh, and twenty-eighth weeks of the 2014-2015 academic year and on the tenth day of the 2015 fall semester. Consequently, the single-

case design offered a structured, longitudinal strategy to examine the depth of dual enrollment's effect on persistence and departure behavior for new first-time freshman enrolled in the 2014-2015 academic year.

Population and Sample

The population for this study consisted of new, first-time freshman matriculating in the fall semester, 2014. Information provided by the Data Management and Institutional Research Office showed that the total matriculating freshman class was 468 freshmen (N=468). A total of 238 students (n=238) completed the survey in the sixth week of Fall, 2014. Thirteen surveys were dropped from the student sample population at this time because either the respondents provided an incomplete survey or a screening process determined that the respondent was second year sophomore. This resulted in a student sample size of 225 students (n=225). In the twenty-sixth week of the academic year, the online survey was administered. This survey collected data on academic and social integration. The student sample was further reduced after students completed this online survey. This occurred because, at this time, 53 students had either quit, transferred to another institution, or no longer wanted to participate in the study. This led to a revised student sample of 172 students (n=172) which was 37% of the student freshman population (Table 4.1).

Table 4.1 provides a summary of the population and sample characteristics for this study. The total freshman population (N=468) had 123 students who matriculated to the university with college credits, which meant that 26% of the entering first-year freshman class had earned college credit while in high school. Of these 123 students, 92

(20% of the total population) matriculated with dual enrollment college credits and 31 (6% of the total population) matriculated with AP College credits. In the student sample (n=172), 48 respondents (28% of the sample) earned dual enrollment credits while 8 respondents (5% of the sample) earned AP college credits.

Table 4.1. Summary of Population and Sample Characteristics

	Freshman Population	**Study Sample**	**Sample as a Percent of Total Freshman Population**
Male	231 (49%)[1]	69 (40%)[2]	30
Female	237 (51%)[1]	103 (60%)[2]	43
Dual Enrollment	92 (20%)[1]	48 (28%)[2]	52
Advanced Placement	31 (6%)[1]	8 (5%)[2]	26
Total	468	172	37

[1]Percentage of the freshman population.
[2]Percentage of the study sample (e.g., 60% (103/172)) of the sample were females and 28% (48/172) of the sample had been in dual enrollment.

The number of first-year freshman that persisted to the second year with the university was 320 students or 68% of all freshman (Table 4.2). This comes from institutional enrollment data obtained in the month of September in Fall, 2015. In terms of gender, 45% of those who persisted with the institution were males and 55% females. Within the sample, 39% of those who persisted were males and 61% were females.

Table 4.2. Summary of Population and Sample Persistence Percentages

	Freshman Population	Study Sample	Sample as a Percent of All Freshman
Persistence	320 (68%)[1]	140 (81%)[2]	44
Male Persistence	143 (45%)[1]	55 (39%)[2]	39
Female Persistence	177 (55%)[1]	85 (61%)[2]	48
Total	468	172	37

[1]Percentage of the total students who persisted in the population overall and by gender.
[2]Percentage of study sample who persisted overall and by gender.

Data Collection

The data collection occurred at four different periods by the investigator and university personnel. The investigator selected the sixth week of class of the fall semester for the first data collection point because research strongly suggests that the first six weeks of the first-year student's fall semester is an influential time of adjustment that is linked with persistence, academic performance, and the likelihood of graduation (Woosley and Shepler 2011:701; Woosley and Miller 2009; Woosley 2003; Tinto 1988:439). The sample study subjects were first-year freshman students enrolled in the First-Year Seminar (FYS). The FYS is a university required course, with limited exceptions, for all first-year students. Of the fifteen FYS sections offered in the Fall 2014 academic year, the investigator gained permission from twelve of the instructors to administer a "First-Year Freshman Persistence Survey Questionnaire" (Appendix B: Persistence Surveys). Participation was voluntary. Students were encouraged to participate in the study and were instructed that their questionnaire responses would be

anonymous. Students were then asked to read the Participant Consent Form, and if the student chose to participate, to sign the document. Some students chose not to sign and not to participate in the study. Students who chose to participate completed a survey questionnaire and were verified to be freshmen (as described above) and then became the initial student sample population for the study (n=225).

The second data collection occurred in the eleventh week of the fall semester (or the first week in November, 2014). Students who had earned dual enrollment credit were selected from the student sample population and asked to participate in the four focus groups. Focus groups were appropriate for this study because they provide for "the explicit use of group interaction to produce data and insights that would be less accessible without the interaction found in a group" (Flick 2011:203). The focus groups looked more closely into how dual enrollment programs assist students in transitioning to college life. That required an in-depth interview with focus group participants to gather their interpretations of dual enrollment programs and how they may or may not have assisted them with their transition, and how they may have helped the student construct a sense of "college academic competence." In addition, the eleventh week was selected because students received their midterm grades, and the perception and the commitment to the institution may have changed from the initial survey. It is this change, and how dual enrollment programs facilitated the student's transition to college life, that the study sought to explore.

To construct the four focus groups, 48 students from the student sample, who had earned college credits through a dual enrollment program and had already consented to participate in the study, were identified. These students were contacted and those that

agreed to participate were scheduled into one of the four focus groups. Each focus group's membership ranged from six to ten students. The desired overall number of students for the focus groups was 30 students. Upon completion of the four focus groups, 28 actually participated. The focus groups were recorded and verbatim transcripts were produced in order to code any themes that assisted with understanding the nature of the student's transition experience from high school to college as it related to participation in dual enrollment programs. Questions included "How did taking college level courses in high school help you transition to college?", or "Did your anxiety of going to college decrease after you completed a college level course in high school?" The full set of questions is included in Appendix C (Focus Group Guide Questions).

The third data collection occurred in the twenty-eighth week of the academic year, or the last week in March, 2015. Because the student sample population at that time (n=225), or those students who responded to the survey questionnaire in week six, were no longer enrolled in the FYS course, an online survey was produced. Qualtircs, an online survey platform, was used to administer the twenty-eighth survey questionnaire. Qualtrics is user friendly and permits the sorting and exporting of data into Excel or an SPSS data file. Each student in the sample was e-mailed through their university student e-mail account a hyperlink that would direct the student to the Qualtrics online survey (Appendix B: Persistence Surveys). The investigator e-mailed this hyperlink four times. The investigator also called students who did not respond to the questionnaire and encouraged them to participate. These efforts led to the completion of 172 online survey questionnaires out of a possible of 225 students in the

sample population. In relation to the online survey questionnaire, the reduction of the student study population occurred because at this time, 53 students had either quit, transferred to another institution, or no longer wanted to participate in the study. This led to a revised, student sample of 172 students (n=172).

The final data collection point occurred on the tenth day of the fall semester, 2015. On the tenth day of the 2015-2016 academic year, enrollment records from the university's Data Management and Institutional Research Office were provided to the investigator. Such data indicated whether respondents from the panel study persisted or departed from the university. Whether the respondent departs or persists with the university is the dependent variable, or the outcome that the investigator required to complete the study. Of the 172 students in the sample at the end of the 2014-2015 school year, 140 (Table 4.2) returned to the institution in fall semester, 2015.

Each student study subject has a student identification number. The information collected from the classroom surveys, online survey, and data provided by the Data Management and Institutional Research Office were matched with each respondent's name and student identification number. Once matched, the investigator entered the data into IBM SPSS statistical software program, creating one complete data set.

Operationalization of Study Variables and Indices Construction

A discussion of the Research Model's independent and dependent variables is defined and operationalized below. The components of the Research Model include: (1) parental education (2) ACT score, (3) high school GPA, (4) Dual Enrollment Index, (5) Degree Aspiration Index, (6) Institutional Commitment Index, (7) Academic Integration

Index, (8) Social Integration Index, and finally, (9) persistence with the university. Persistence with the university is the primary dependent variable, but to fully test the predictive power of the model, Degree Aspiration, Institutional Commitment, Academic Integration, and Social Integration are used as dependent variables for selected hypotheses.

Finally, one variable of interest the study pursued to complement the model was financial support from the student's family. This was considered important because students must attend to the stressful environment of paying for the cost of their education (Davidson, Beck, and Milligan 2009:377). Two scaled items were used to measure the financial support construct. A financial support composite measure was created but proved problematic because the alpha coefficient of .624 was less than .7, and therefore, not a reliable measure for internal consistency for the underlying construct of financial support. Consequently, this composite measure was deleted from the study because the composite measure was not reliable and the variable did not add demonstrably to the focus of the study.

Independent Variables

Parental Education. Respondents were asked "[f]or mother's education, circle the highest year of school completed." The same question was asked for the father's education. Respondents had five response options: (1) high school or less, (2) 2-year college degree (associates), (3) 4-year college degree, (4) Master's Degree, and (5) Doctoral Degree (Ph.D., J.D., M.D.). In terms of values in the analysis, mother and

father's education were combined yielding a value of 10 as the highest score of 10 and 2 as the lowest score.

ACT Score. ACT score was used to measure skills and abilities. Respondents were asked "[p]lease indicate your ACT score." The range of possible responses were 1 through 36.

Grade Point Average (GPA). High school grade point average (GPA) was used to measure prior schooling. Respondents were asked "[p]lease indicate your high school GPA." Respondents would then identify a numerical value that would represent his or her high school GPA. Respondents provided GPA with the decimal point in their responses.

Independent Variables: Indices

Dual Enrollment. The dual enrollment index is the independent variable for this study that is of primary research interest. It is assumed that earning college credits while enrolled at the respondent's high school meets a high degree of challenge, academic rigor, personal discipline, and transition experiences for the student. The index initially contained 14 statements with each statement measured with a 6-point Likert scale ranging from (1) strongly disagree to (6) strongly agree (Appendix D: Dissertation Indices). Three questions were reverse coded. Two of the 14 statements were dropped because the corrected item-total correlation coefficient was less than .3, which resulted in 12 statements remaining to form the index (see Appendix E: Corrected Item-Total Correlation Index). The questions which were dropped are shown with an asterisk (*) in Appendix D although Appendix E includes more details for the questions which were dropped in each index. These 12 scaled items assessed whether a student completing a

college course while in high school assisted in that student's eventual transition to college life (refer to Appendix G: SPSS Codebook for a complete list of questions). For instance, questions included "taking college courses in high school made it easier for me to transition to college," and "my fear of going to college decreased after I took a college course."

Degree Aspiration. The degree aspiration index refers to the level of importance the student attaches to earning a college degree (Davidson, Beck, and Milligan 2009:375). Degree aspiration was measured by the student's response to ten statements. The ten scaled items (Appendix D) ranged in value from 1 (strongly disagree) to 6 (strongly agree). Four items were reverse coded so that a high number of "6" indicated "strongly disagree" and a low number of "1" indicated "strongly agree." One of the 10 statements was dropped because the corrected item-total correlation coefficient was less than .3, which resulted in 9 statements remaining to form the degree aspiration index (Appendix E: Corrected Item-Total Correlation Index). Example statements included: "[a]t this point, I am committed to earning a college level degree here or elsewhere," and "[m]y family is supportive of my pursuit of a college degree in terms of encouragement and expectations."

Institutional Commitment. Institutional commitment measures the student's intention to continue to pursue a degree at his or her institution. An index was created to measure the construct of institutional commitment. There were three scaled items ranging in value from 1 (strongly disagree) to 6 (strongly agree) with one of the three statements was reversed coded. Example statements include "I have no desire to transfer to another school before finishing a degree here" and "I am very loyal to this

university." All three statements were retained with the range of this variable being 3 to 18.

Academic Integration. The conceptual category of academic integration refers to the degree which students become attached to the intellectual life of the college (Tinto 1993). This construct has been operationalized in prior studies by looking at academic and intellectual development, grade point average, and the student's perception that the faculty are concerned for teaching and student development (Braxton, Milem and Sullivan 2000; Pascarella and Terenzini 1983; Pascarella, Duby and Iverson 1983). In line with prior research, this investigator employed a composite measure that included faculty interaction, course learning, attitudes toward the library, and formal and informal contacts with faculty.

In addition to the seventeen scaled items, the cumulative grade point average after the first semester of college was provided by the student as an indicator for academic integration and included in the index. The grade point average was provided by the respondent in the online Qualtrics survey questionnaire provided in the 26th week of the academic year. The students' grade point average was inputted into SPSS, and eight ranks were created for purposes of coding the student's grade point average. Students who received a grade point average between 0.00 to 0.49 were coded as "1," students who received a grade point average between 0.50 to .99 were coded as "2", students who received a grade point average between 1.00 to 1.49 were coded as "3," students who received a grade point average between 1.50 to 1.99 were coded as "4," students who received a grade point average between 2.00 to 2.49 were coded as "5," student who received a grade point average between 2.50 to 2.99 were coded as "6," students who

received a grade point average between 3.00 to 3.49 were coded as "7," and students who received a grade point average between 3.50 to 4.00 were coded as "8."

Faculty interaction, course learning, and library attitudes were measured based upon seventeen scaled statements provided in the Qualtrics online survey. These seventeen scaled statements consisted of values ranging from 1 "strongly disagree" to 5 "strongly agree," with three statements reversed coded so that a high number of "5" indicated "strongly disagree" and a low number of "1" indicated "strongly agree." One of the 17 statements were dropped because the corrected item-total correlation coefficient was less than .3, which resulted in 16 statements remaining to form the index (Appendix E: Corrected Item-Total Correlation Index). Two of these statements were reverse coded. Example statements include "I use the library search tools to find materials that I need for class," and "I am satisfied with the extent of my intellectual growth and interests in ideas since coming here."

Social Integration. The social integration construct has been established as an important influence on persistence decisions (Christie and Dinham 1991; Pascarella, Duby and Iverson 1983). In this study, social integration is defined as the degree to which the student meshes with the university's social and institutional framework (Wetzel, O'Toole, and Peterson 1999). The extent of a student's social integration is affected by the student's membership and experiences in the university's social system. Those experiences may entail joining clubs, attending university athletics events, plays or lectures (Wetzel, O'Toole, and Peterson 1999:47). Social integration was measured for this study by twenty scaled statements that operationalized involvement for four areas: (1) clubs and organizations, (2) athletics, (3) social connectedness, and (4)

residence halls. These twenty scaled statements consisted of values ranging from 1 "strongly disagree" to 5 "strongly agree," with one statement reversed coded so that a high number of "5" indicated "strongly disagree" and a low number of "1" indicated "strongly agree." Example statements include "I am very involved in a student club or organization on the campus," and "[m]y interpersonal relationships with other students had an impact on my personal growth, my attitudes, and my values."

Dependent Variable

The investigator acquired data from the university's Data Management and Institutional Research Office to make the determination whether the student who enrolled in Fall, 2014 persisted to Fall, 2015. Persistence was measured by the student's re-enrollment in the university. The collection point for determining whether a student persisted with the university occurred on the tenth academic day of Fall, 2015. Persistence was coded as "1" persisting, or "0" departing.

Reliability of Composite Measures

The investigator constructed an index from the scaled items. In research, scales and indexes are often used interchangeably. For purposes of this study, an index is "type of composite measure that summarizes and rank-orders several specific observations and represents some more-general dimension" (Babbie 2013:159). Indexes are constructed by accumulating scores from a variety of individual items with a focus on unidimensionality, which means that an underlying condition in index construction is that there is some underlying construct which can be measured through a set of highly correlated variables (Babbie 2013:158). Indeed, the usefulness of an index is that it is a

proxy for constructs (Knoke, Bohrnstedt, and Mee 2002). A standard statistical test to measure the internal consistency of an index is Cronbach's coefficient alpha (Carmines and Zeller 1979). The measurement ranges from zero (no internal consistency) to unity (perfect internal consistency) (Knoke, Bohrnstedt, and Mee 2002:239). It is acceptable in basic research to have an alpha coefficient value at .7; however, it is preferred to have alpha values of .8 or higher (Pallant 2007).

The alpha coefficients for the six indices were obtained through the Reliability Analysis option under Analyze, then Scale in SPSS. This option produces an Inter-Item Correlation Matrix that identifies whether items are measuring the same underlying construct (Pallant 2007:98). Another helpful tool found in SPSS Reliability Analysis is the Corrected Item-Total Correlation, which indicates the degree to which each item correlates with the total alpha score (Pallant 2007:98). Low values can be identified and deleted in order to improve the alpha coefficients reliability in measuring the underlying construct.

The alpha coefficients for the indices in this study are found in Table 4.3. The alphas for the composite measures ranged from .624 to .904. The alpha coefficient of .624 for the financial support index proved problematic because the coefficient was less than .7, and therefore, not a reliable measure for internal consistency for the underlying construct of financial support. The investigator deleted question 36 (a reverse coded item) and question 37, and then removed financial support as an index entirely. For the degree aspiration index, the investigator improved this index's alpha coefficient by deleting Question 29, raising the alpha value to .800.

Table 4.3: Summary of Cronbach Alpha Tests for Indices

Index	# Items[1]	Range	Cronbach Alpha	Any items dropped due to a Corrected Item-Total Correlation less than .3?
Dual Enrollment	12	12-72	.850	**YES** (deleted DE8Challenging and DE10Confidence)
Degree Aspiration	9	9-54	.800	**YES** (deleted DA24)
Institutional Commitment	3	3-18	.872	**NO**
Academic Integration	17	17-88	.809	**YES** (deleted AI10)
Social Integration	20	20-100	.904	**NO**
Financial Support	0[2]	1-6	.624	**YES** (deleted entire index)

[1]Represents total number of items after deletion.
[2]Deleted both questions and removed the Financial Support Index entirely.

Data Analysis

Data were analyzed using different statistical methods. The techniques used to describe the data and test the hypotheses include: Spearman's rho correlation coefficients, the chi-square test independence, and the logistic regression. In addition, data were screened for unusual responses and missing values. Each technique is described below as well as a discussion of missing values.

Spearman Rank-Order Correlation

The Spearman rank-order correlation (or Spearman rho) is the nonparametric version of the Pearson product-moment correlation (Sprent 1989:136). Within the statistical family of bivariate correlations, Spearman rank-order correlation is designed

for use when ordinal level or ranked data does not meet the criteria for Pearson's correlation (Pallant 2007:126). Like Pearson's correlation, the Spearman rho correlation coefficient measures the strength of association between two variables, but in contrast to Pearson's correlation which is suitable for interval data, the variables for the Spearman rho are measured at the ordinal level. The survey instrument administered in the tenth week of the academic year employed ordinal response categories of "Strongly Disagree," "Disagree," "Slightly Disagree," "Slightly Agree," "Agree," and "Strongly Agree." Similarly, the online survey instrument administered in the twenty-eighth week of the academic year employed ordinal response categories of "Strongly Disagree," "Disagree," "Neutral," "Agree," and "Strongly Agree."

Spearman's rank-order correlation is much like Pearson's *r* in that the values lie between +1.00 and -1.00, with a +1.00 interpreted as the ranks of *x* and *y* agree completely, and a value of -1.00 which represents that the ranks are opposite (Sprent 1989:136). If there is no relationship between the ranks, the Spearman rho will calculate the coefficient as zero (Sprent 1989:136).

Spearman's rank correlation was used to test the following hypotheses: (1) **H1**, which seeks to determine whether there is an association between mother and father's highest level of education and the student's goal to achieve a degree; (2) **H2** which seeks to determine whether there is an association between mother and father's highest level of education and the student's commitment to the institution; (3) **H3** which seeks to determine whether there is an association between mother and father's highest level of education and the student's academic integration; (4) **H4** which seeks to determine whether there is an association between mother and father's highest level of education

and the student's social integration; (5) **H5**, which seeks to determine whether there is an association between the student's ACT score and the student's goal to achieve a degree; (6) **H6**, which seeks to determine whether there is an association between the student's ACT score and the student's commitment to the institution; (7) **H7**, which seeks to determine whether there is an association between the student's ACT score and the student's academic integration; (8) **H8**, which seeks to determine whether there is an association between the student's ACT score and the student's social integration; (9) **H9**, which seeks to determine whether there is an association between the student's high school GPA with the student's goal to achieve a degree; (10) **H10**, which seeks to determine whether there is an association between the student's high school GPA with the student's commitment to the institution; (11) **H11**, which seeks to determine whether there is an association between the student's high school GPA with the student's academic integration; (12) **H12**, which seeks to determine whether there is an association between the student's high school GPA with the student's social integration; (13) **H13**, which seeks to determine whether there is an association between a student's transition experience in dual enrollment programs and the student's goal to achieve a degree; (14) **H14**, which seeks to determine whether there is an association between a student's transition experience in dual enrollment programs and the student's commitment to the institution; (15) **H15**, which seeks to determine whether there is an association between a student's transition experience in dual enrollment programs and the student's academic integration, and (16) **H16** which seeks to determine whether there is an association between a student's transition experience in dual enrollment programs and the student's social integration.

Chi-square Test of Independence

The Chi-square Test of Independence is a statistical test used to compare obtained results with those to be expected on the basis of chance (Kerlinger and Lee 2000:230). The value of the test is that it can be used to determine the probability that two nominal variables are unrelated in the population. To do that, a null hypothesis was constructed that states that no covariation exists between the two variables in the population. The alternative hypothesis is that the two variables are related in the population (Knoke, Bohrnstedt, and Mee 2002:472). This statistical test compares observed cell frequencies of a joint contingency table with frequencies that would be expected under the null hypothesis of no relationship (Knoke, Bohrnstedt, and Mee 2002:142). If no relationship exists between two crossed variables, then a conclusion can be drawn that the variables are statistically significant (Knoke, Bohrnstedt, and Mee 2002:142).

In determining the effect size, the phi coefficient will be used. Phi is a symmetric measure of association for 2 x 2 crosstabulations (Knoke, Bohrnstedt, and Mee 2002:150). The phi coefficient is a correlation coefficient that ranges from -1.00 to 1.00, with higher values indicating a stronger association between the two variables (Knoke, Bohrnstedt, and Mee 2002:150). It is used to measure the association between two nominal variables. Typically, a value of .10 has a small effect, .30 a medium effect, and .50 a large effect (Pallant 2007:217).

The chi-square test will be used to test hypothesis **H18**, which seeks to determine whether there is an association between persistence and students who were enrolled in dual enrollment courses while in high school.

Logistic Regression

Regression analysis is a statistical tool that describes the nature of the relationship between two variables (Kachigan 1991:160). In simple linear regression, the researcher is interested in studying the effects, and the magnitude of the effects, on one independent variable with one dependent variable. In multiple regression, the researcher in interested in predicting the effect of multiple independent variables on one dependent variable (Kerlinger and Lee 2000:783). Multiple regression assesses the relative importance of various independent predictor variables in their contribution to the variation in the dependent variable (Kachigan 1991:161). A key regression assumption is that the dependent variable is assumed to be "continuous, unbounded, and measured on an interval or ratio scale (Menard 1995:4).

In cases with a dichotomous dependent variable, logistic regression is preferred, and has effectively replaced ordinary least squares (OLS) regression at the data analytic tool of choice when the dependent variable is dichotomous (Pampel 2000:v). Logistic regression allows the researcher to assess how well a set of predictor (or independent variables) explain the dependent dichotomous variable (Pallant 2007:169). The technique rests with the logistic transformation of the proportion (p), which is a natural logarithmic change in the odds of a probability (Knoke, Bohrnstedt, and Mee 2002:299). In the transformation, the logit, or the logistic probability unit, is computed by transforming probabilities into odds (Pampel 2000:11). Odds express the likelihood of an occurrence relative to the likelihood of a nonoccurrence; this is what is commonly referred to as the odds ratio (Pampel 2000:11).

In ordinary linear regression, parameters are estimated using ordinary least squares (OLS) technique, but this is unsuitable for logistic regression (Knoke, Bohrnstedt, and Mee 2002:307). Instead, maximum likelihood estimation (MLE) is used to find the estimates of model parameters that are most likely to give rise to the pattern of observations in the sample data (Pampel 2000:40). The goal of MLE technique is to use the sample data to estimate the parameters that maximize the likelihood of obtaining those observed sample values (Knoke, Bohrnstedt, and Mee 2002:307). This technique is useful because it permits coefficient interpretations similar to a linear regression parameter even though the technique uses a logarithm of the odds of two probabilities (Knoke, Bohrnstedt, and Mee 2002:308).

Logistic regression will be used to test the following hypotheses: (1) **H17**, which seeks to determine whether mother and father's level of education, high school GPA, and ACT score are more likely to predict persistence with the institution beyond the first year; (2) **H19**, which seeks to identify whether the number of college courses completed in dual enrollment programs and the degree of transition experiences in dual enrollment programs will more likely result in the student persisting with the institution beyond the first year; (3) **H20**, which seeks to determine whether academic integration, social integration, and participation in dual enrollment courses are positively associated with persistence; (4) **H21**, which seeks to determine whether academic integration, social integration, and the degree of transition experiences in dual enrollment programs will more likely result in persistence with the institution beyond the first year; (5) **H22**, which seeks to determine whether academic integration will more likely result in persistence with the institution beyond the first year; and (6) **H23**, which seeks to

determine whether social integration will more likely result in persistence with the institution beyond the first year.

Missing Data

Missing data is a continuing issue with longitudinal studies when data is gathered from multiple administrative records, or when the respondent simply fails to answer the question (Allison 2002:1). This is a problem because nearly all statistical methods presume that every case has information on all of the variables in the study (Allison 2002:1). This study had fifteen cases where missing values existed. That is, either the respondent failed to answer the question or the respondent could not provide a response because the data did not exist. For instance, and rare, one respondent did not have an ACT score or high school GPA, yet the respondent could still matriculate to the university. For instance, some respondents did not know their mother or father's highest level of education. Finally, some respondents failed to answer an item question in the survey.

In situations where missing data existed, the most commonly used method in the social science is *Listwise Deletion*, or sometimes called *Casewise Deletion* (Allison 2002:1). While Listwise Deletion is most common, the investigator also used *Pairwise Deletion* to address the few cases of missing data that existed. *Pairwise Deletion* does not omit an entire case from all of the statistical analyses, but only drops variables from the case that have missing values, which permits using the case for other statistical analyses (Pallant 2007:125). Pairwise Deletion was not a feasible technique to address missing values for logistic regression because Pairwise Deletion does not support logistic regression, a key statistical technique for this study (IBM 2014). Listwise

Deletion is the preferred method to handle missing data when using logistic regression (Allison 2002:7). However, SPSS does support Pairwise Deletion for the Spearman Rank Correlation and the Chi-Square of Independence, and therefore, was used for those statistical tests.

Listwise deletion is accomplished by including cases in the analysis only if full data on all of the variables for each case exist (Pallant 2007:125). The advantages of this technique is that (1) it can be used for any kind of statistical analysis; and (2) no special computations are required (Allison 2002:6). Listwise deletion will yield the least bias if the data are missing completely at random (MCAR) (Allison 2002:6). MCAR is a strict assumption about the mechanisms that cause the data to be missing, and in order for Listwise or Pairwise Deletion to produce reliable results, the missing values must be missing completely at random (IBM 2014a). To test whether the missing values were MCAR, the investigator created a null hypothesis (Ho) stating that the missing values were missing at random. The alternative hypothesis (H1) stated that the missing values are not missing completely at random. The investigator employed Little's MCAR test in SPSS to determine whether the tendency for a data point to be missing was completely at random. Little's MCAR test resulted in a chi-square = 613.406 (df = 651; $p < .852$), which indicates that the data is indeed missing at random (the p value is significant at the 0.05 level) (IBM 2012). As a result, the null hypothesis that the missing values are missing at random could not be rejected, meaning that missing values are missing completely at random.

SPSS procedures perform Listwise Deletion and normally removes cases automatically (IBM 2014a). Variables that had missing data were coded "999." If a

variable is coded as “999” then SPSS does not include these cases in the statistical calculations. In contrast, for specific statistical tests, Pairwise Deletion is the default method. For instance, for the Spearman Rank Order Correlation and the Chi-square Test of Independence, Pairwise Deletion was used for the missing values (IBM 2014a). As mentioned, of the entire data set, there were fifteen instances of missing data, and in such instances, those variables were coded “999” and were excluded from the analyses.

Qualitative Data Analysis

Four focus groups were conducted in the eleventh week of Fall, 2014. Twenty-eight respondents who had earned dual enrollment credits participated in the focus groups. Each focus group was recorded and a verbatim transcript was produced. This section outlines the methodology employed to code the verbatim transcripts. The results of this analysis will complement the Findings chapter.

Coding Methodology

A code is a word or short phrase that “symbolically assigns a summative, salient, essence-capturing, and/or evocative attribute for a portion of language-based or visual data” (Saldana 2009:3). In coding, the investigator categorizes behaviors into a limited number of preordained categories (Monette, Sullivan, Dejong, and Hilton 2014: 236). From categories, the investigator can develop themes and/or concepts, and ultimately, theory (Saldana 2009:12). In this study, the investigator employed a two-cycle process to code the transcripts: First Cycle and Second Cycle coding. To prepare for First Cycle coding, the investigator, as the literature suggests, kept a copy of the research question, theoretical framework, and goals of the study on a one-page sheet of paper in

order to focus the coding process (Saldana 2009:18). In addition, the investigator developed focus group questions that explored the major unit of social organization subject to the study and that is "socialization and role transitions" (Saldana 2009:14). Selecting roles as the appropriate focus is appropriate because the research question examines the nature of a student's role transition from high school to college.

First and Second Cycle coding required the preparation of a reformatted text for manual coding. The text was organized into three columns. **Column 1**, labeled "Raw Data," is the actual text from the focus groups (it is double-spaced and separated into distinct paragraphs, extending in width two-thirds of the page). **Column 2**, labeled "Preliminary Codes," is the preliminary jotting of codes and provides a link between the raw data and the final code produced in Column 3 (Saldana 2009:17). Column 2 coding occurs in the First Cycle. **Column 3**, labeled "Final Code," occurs in the Second Cycle of coding. Column 3 "Final Code" represents identification of words or phrases that are reduced from the original codes that emerged in the First Cycle (Saldana 2009:147).

In the First Cycle, the investigator employed Hypothesis Coding. Hypothesis Coding is "the application of a researcher generated, predetermined list of codes onto qualitative data specifically to assess a researcher-generated hypothesis" (Saldana 2009:123). To employ this method is a strategic choice and is used when the study is focused on defined parameters of the investigation (Saldana 2009:124). In this study, the research question focused on whether student participation and transition experiences in dual enrollment programs is a significant predictor for persistence. It is hypothesized that select codes would emerge from the focus groups that represented the student's transition experience with dual enrollment courses. Codes like rigor,

confidence, excitement, responsibility, transition, effort, college level expectations, adjustment, prepared, intellectually stimulated, self-disciplined, and develop were hypothesized to emerge from the focus groups.

The Second Cycle of coding is an advanced way of reorganizing and reanalyzing data coded in the First Cycle. This step is necessary because it offers an opportunity to develop a coherent synthesis of the data that otherwise could not be produced from the initial coding process (Saldana 2009:147). The primary goal during the second coding process is to "develop a sense of categorical, thematic, conceptual, and/or theoretical organization from the first array of First Cycle codes" (Saldana 2009:147). In other words, the First Cycle codes are reorganized and condensed that make sense in relation to the raw data. In the Second Cycle, the investigator selected Focused Coding. Focused Coding searches for the most "frequent or significant Initial Codes to develop the most salient categories in the data" (Saldana 2009:153). The final codes that emerged from this synthesis were used to support or not support the results of the hypothesis testing in Chapter 8, and to highlight additional results that are discussed in the section of "Other Findings."

CHAPTER FIVE

DESCRIPTIVE STATISTICS

The purpose of this chapter is to present the descriptive statistics for variables dealing with students' perception of dual enrollment programs and the role they served in transitioning the student from secondary to a post-secondary education. This chapter also presents descriptive statistics for variables dealing with students' experiences, attributes, and integration into the social and academic systems of a higher education institution. Descriptive statistics on variables which have been used in hypothesis testing, including the indexes, are presented. Independent variables include these indexes: (1) Dual Enrollment, (2) Degree Aspiration, (3) Institutional Commitment, (4) Academic Integration, and (5) Social Integration. Additional independent variables, which have not been formed into an index, include (1) ACT score, (2) high school GPA, and (3) parental education. Finally, the dependent variable, persistence with university, is discussed.

The first part of this chapter provides the demographic characteristics for the sample population to include dual enrollment characteristics. What follows are the tables and discussion of the variables studied for this study. Each table will indicate the sample population, which is either n=172 or n=48. With the latter (n=48), this represents the total number of students in the student sample population that participated in dual enrollment classes.

Demographic and Dual Enrollment Characteristics

The demographic characteristics of the respondents are presented in Table 5.1. This table includes findings on the questions asking about features of the respondent's pre-entry attributes and whether the respondent lived on-campus in the residence halls.

Females were a majority of the student sample population at 59.9%, with males being 40.1% of the total sample. Eighty-four percent had a high school GPA of 3.00 or above. ACT scores showed a response range between 13 to 30 (the range for the ACT is 0 to 36) with the average being 21.25. The highest concentration of ACT scores fell between 18 to 24, which amounted to 82.5% of the respondent population. For parental education, while 29.1% of the respondents indicated that their mother's highest level of education was a high school degree or less, only 13.4% of the respondents indicated that their mother's highest level of education was a Master's degree or higher. In comparison, 39.0% respondents indicated that their father's highest level of education was a high school degree or less with 12.2% indicating that the father held a Master's degree or above. Almost all of the respondents (91.3%) lived on-campus in residence halls in their first year of college, which is consistent with university policy requiring first-year students to live in the residence halls unless the student demonstrates circumstances why residence on-campus would not serve the student's interest.

Table 5.1: Demographic Characteristics[1] of Entire Sample

Measures	*f*	%
Indicate your high school GPA (Range 0.00 to 4.0; Response Range 2.00 to 4.00)		
2.00 to 2.49	9	5.2
2.50 to 2.99	17	9.9
3.00 to 3.49	80	46.5
3.50 to 4.00	65	37.8
Indicate your ACT Score (Range 1-36; Response Range 13-30)		
13	1	.6
14	1	.6
15	2	1.2
16	2	1.2
17	6	3.5
18	17	9.9
19	15	8.7
20	22	12.8
21	20	11.6
22	30	17.4
23	17	9.9
24	21	12.2
25	8	4.7
26	2	1.2
27	1	.6
28	2	1.2
30	2	1.2
The Student Sex		
Female	103	59.9
Male	69	40.1
Mother's Education, the highest year of school completed		
High School or less	50	29.1
2-year college degree (associates)	42	24.4
4-year college degree	56	32.6
Master's Degree	22	12.8
Doctoral Degree (Ph.D, J.D., M.D.)	1	.6
Father's Education, the highest year of school completed		
High School or less	67	39.0
2-year college degree (associates)	43	25.0
4-year college degree	41	23.8
Master's Degree	19	11.0
Doctoral Degree (Ph.D, J.D., M.D.)	2	1.2
Do you live on-campus		
Yes	157	91.3
No	15	8.7

1. The sample size is 172 students for this table.

The dual enrollment characteristics are presented in Table 5.2. Forty-eight respondents enrolled in college courses while in high school. For these 48, the range of courses which respondents completed was between one and 12 or more courses with the average being 3.88. Roughly 87% of the respondents took one to six courses. SMSU is very active in offering dual enrollment courses and recruiting from this population. Of the 48 students, only four students took courses from an institution other than SMSU.

Table 5.2: Dual Enrollment Student Characteristics[1]

Measures	***f***	%
Have you taken college classes (dual enrollment) while in high school		
No	124	72.1
Yes	48	27.9
If Yes, how many college courses have you taken while in high school		
1	6	12.5
2	12	25.0
3	9	18.8
4	5	10.4
5	6	12.5
6	4	8.3
7	1	2.1
8	2	4.2
9	1	2.1
10	1	2.1
12 or more	1	2.1
How many courses were from SMSU		
0	4	8.3
1	7	14.6
2	15	31.3
3	11	22.9
4	3	4.2
5	3	6.3
6	2	4.2
7	1	2.1
8	1	2.1
9	1	2.1
12 or more	1	2.1

If courses were taken from SMSU, were they on or off the campus		
On-campus	3	6.3
Off-campus	41	85.4
I did not take courses from SMSU	4	8.4

1. The sample size is 48 students for this table.

Descriptive Statistics for Index Variables

Dual Enrollment Index Measures

Table 5.3 is a summary of measures for a student's transition experience associated with dual enrollment courses. This transition experience operationalizes transition characteristics, like rigor of the college course, confidence in taking a college course, excitement, sense of responsibility, transition, effort, college level expectations, adjustment, preparation, intellectual stimulation, and self-discipline.

Overall, 87.6% of the respondents agreed that they found college courses to be challenging. For the next indicator, 95.9% of respondents believed that taking college courses in high school increased their sense of responsibility. Roughly 80% disagreed with the statement, "[t]aking college courses did not increase my confidence that I would do well in college."

In terms of effort committed to college courses, 93.8% agreed that they put a lot of effort toward their college course. Roughly 83% of the respondents felt that they were meeting college expectations while in high school. Close to 92% agree that their college courses were intellectually stimulating. In relation to whether taking dual enrollment courses reduce the fear of going to college, the results were mixed with only 31.3% agreeing or strongly agreeing and close to 40% disagreeing with that statement. With self-discipline, 91.7% of the respondents disagreed with the statement that "college courses did not help me become more self-disciplined." Finally, with the overall

transition to college, 81.2% of respondents felt that taking college courses helped them transition to college, while 83.3% agreed that taking college courses made them feel more prepared for college life. Taken as a whole, respondents were generally in agreement that taking college courses in high school helped them to better transition to college life by providing them college level work that met standards for rigor, self-discipline, and intellectual stimulation.

Table 5.3: Dual Enrollment Index Measures[1]

Measures	***f***	%
I found college courses to be challenging		
Disagree	4	8.3
Slightly Disagree	2	4.2
Slightly Agree	20	41.7
Agree	21	43.8
Strongly Agree	1	2.1
I felt that taking college courses in high school increased my sense of responsibility		
Slightly Disagree	2	4.2
Slightly Agree	14	29.2
Agree	18	37.5
Strongly Agree	14	29.2
Taking college courses did not increase my confidence that I would do well in college		
Strongly Disagree	5	10.4
Disagree	26	54.2
Slightly Disagree	7	14.6
Slightly Agree	9	18.8
Strongly Agree	1	2.1
I put forward a lot of effort in my college courses		
Slightly Disagree	3	6.3
Slightly Agree	16	33.3
Agree	21	43.8
Strongly Agree	8	16.7
I felt like I was reaching college level expectations when I was in high school		
Disagree	3	6.3
Slightly Disagree	5	10.4
Slightly Agree	16	33.3
Agree	19	39.6
Strongly Agree	5	10.4

Measures	*f*	%
Taking college courses in high school made me excited to go to college		
Strongly Disagree	2	4.2
Disagree	5	10.4
Slightly Disagree	10	20.8
Slightly Agree	15	31.3
Agree	11	22.9
Strongly Agree	5	10.4
Taking college courses made me feel more like an adult in college		
Disagree	2	4.2
Slightly Disagree	12	25.0
Slightly Agree	17	35.4
Agree	14	29.2
Strongly Agree	3	6.3
I felt intellectually stimulated taking college level courses in high school		
Slightly Disagree	4	8.3
Slightly Agree	24	50.0
Agree	13	27.1
Strongly Agree	7	14.6
My fear of going to college decreased after I took a college course		
Strongly Disagree	1	2.1
Disagree	3	6.3
Slightly Disagree	15	31.3
Slightly Agree	14	29.2
Agree	13	27.1
Strongly Agree	2	4.2
Taking college courses helped me develop more as a person		
Disagree	3	6.4
Slightly Disagree	7	14.9
Slightly Agree	22	46.8
Agree	12	25.5
Strongly Agree	3	6.4
Taking college courses did not help me become more self-disciplined		
Strongly Disagree	6	12.5
Disagree	24	50.0
Slightly Disagree	14	29.2
Slightly Agree	3	6.3
Taking college courses in high school made it easier for me to transition to college		
Strongly Disagree	1	2.1
Disagree	2	4.2
Slightly Disagree	6	12.5
Slightly Agree	17	35.4
Agree	10	20.8
Strongly Agree	12	25

Taking college coursers made me feel more prepared for college life		
Strongly Disagree	1	2.1
Disagree	1	2.1
Slightly Disagree	6	12.5
Slightly Agree	18	37.5
Agree	12	25
Strongly Agree	10	20.8

1. The sample size is 48 students for this table.

Degree Aspiration Index Measures

Table 5.4 summarizes the respondent's commitment to achieve a college level degree. Overwhelmingly, 94.8% of respondents agreed or strongly agreed that they are committed to earning a college level degree. In an identical percentage, 94.8% of respondents agreed or strongly agreed that their family is supportive in terms of encouragement and expectations. In relation to college satisfaction at this time in the respondent's life, 72.7% agreed or strongly agreed that college is the most satisfying in terms of all they are doing currently in their lives. When asked if they had misgivings about going to college, 72.7% disagreed or strongly disagreed. With finishing college, 89.5% were strongly dedicated no matter the obstacles. Results were mixed when students were asked whether they believe a college education is worth all the time, money and effort with 55.9% showing some agreement to that statement. Respondents did indicate that college was the right decision with 86.6% agreeing or strongly agreeing to that statement. When asked the question whether they would leave college for a well-paying job, 45.3% disagreed or strongly disagreed with that statement. Finally, when asked whether there were other things the respondent would rather do than attend college, 59.3% disagreed or strongly disagreed with that position. With this population,

measures for degree aspiration were strong enough to suggest that respondents were very committed to achieving a college degree.

Table 5.4: Degree Aspiration Index Measures[1]

Measures	*f*	%
At this point in time, I am committed to earning a college level degree here or elsewhere		
Slightly Disagree	1	.6
Slightly Agree	8	4.7
Agree	60	34.9
Strongly Agree	103	59.9
My family is supportive of my pursuit of a college degree in terms of encouragement and expectations		
Slightly Disagree	1	.6
Slightly Agree	8	4.7
Agree	39	22.7
Strongly Agree	103	72.1
Of all the things I do at this point in my life, going to college is definitely the most satisfying		
Strongly Disagree	1	.6
Disagree	2	1.2
Slightly Disagree	16	7.0
Slightly Agree	64	18.6
Agree	90	41.3
Strongly Agree	172	31.4
I have serious misgivings about my decision to come to college		
Strongly Disagree	39	22.7
Disagree	86	50.0
Slightly Disagree	20	11.6
Slightly Agree	16	9.3
Agree	5	2.9
I am strongly dedicated to finishing college no matter what obstacles are before me		
Disagree	2	1.2
Slightly Agree	16	9.3
Agree	64	37.2
Strongly Agree	90	52.3

Measures	*f*	%
I often wonder if a college education is really worth all the time, money, and effort that I'm being asked to commit		
Strongly Disagree	16	9.3
Disagree	19	11.0
Slightly Disagree	40	23.3
Slightly Agree	24	14.0
Agree	43	25.0
Strongly Agree	29	16.9
I am confident that my decision to go to college was the right decision for me		
Slightly Disagree	2	1.2
Slightly Agree	21	12.2
Agree	75	43.6
Strongly Agree	74	43.0
I would leave college if I found a well-paying job		
Strongly Disagree	30	17.4
Disagree	48	27.9
Slightly Disagree	51	29.7
Slightly Agree	27	15.7
Agree	9	5.2
Strongly Agree	7	4.1
I can think of many things I would rather do than go to college		
Strongly Disagree	33	19.2
Disagree	69	40.1
Slightly Disagree	33	19.2
Slightly Agree	27	15.7
Agree	6	3.5
Strongly Agree	4	2.3

1. The sample size is 172 students for this table.

Institutional Commitment Index Measures

Table 5.5 highlights the student's commitment to the institution. Fifty percent of students agreed or strongly agreed that they had no desire to transfer to another school before degree completion. Asked in a slightly different way, 65.7% disagreed or strongly disagreed with the statement that they plan to transfer to another school sometime before degree completion. Finally, when measuring loyalty to the university, 84.4% of respondents agreed that they were loyal to the university.

Table 5.5: Institutional Commitment Index Measures[1]

Measures	*f*	%
I have no desire to transfer to another school sometime before finishing a degree here		
Strongly Disagree	6	3.5
Disagree	15	8.7
Slightly Disagree	30	17.4
Slightly Agree	33	19.2
Agree	49	28.5
Strongly Agree	38	22.1
I plan to transfer to another school sometime before completing a degree		
Strongly Disagree	47	27.3
Disagree	66	38.4
Slightly Disagree	33	19.2
Slightly Agree	20	11.6
Agree	5	2.9
Strongly Agree	1	.6
I am very loyal to the university		
Strongly Disagree	1	.6
Disagree	4	2.3
Slightly Disagree	22	12.8
Slightly Agree	44	25.6
Agree	67	39.0
Strongly Agree	34	19.8

1. The sample size is 172 students for this table.

Academic Integration Index Measures

Table 5.6 summarizes the degree of academic integration, measured by the respondent's satisfaction with their intellectual growth, the preparation for course work in and outside of the classroom, the degree in which library is used, the level and nature of interaction with the instructor, and finally, the respondent's GPA after the first semester of college.

Nearly 70% of respondents agreed or strongly agreed that they were satisfied with the extent of their intellectual growth and interests in ideas since coming to the university. Only 44.1% of respondents indicated that they made outlines from class

notes or readings and only 26.2% of respondents indicated that they did additional readings on topics that were introduced or discussed in class. Fifty-four percent of respondents were interested in the topics introduced in class, in contrast to only 15.1% who were generally not interested. In relation to future career possibilities and what the respondent learned in the classroom, 66.3% agreed or strongly agreed that they saw a connection between the two. When asked about whether they took detailed notes in class, 60.5% agreed or strongly agreed that they did so.

The nature of interaction with the instructor is more mixed. When asked whether the respondent visited informally and briefly with the instructor after class, only 30.8% agreed or strongly agreed with that statement. In addition, when asked if they had discussed personal problems with the instructor, 55.8% indicated that had not done so. In contrast, when asked whether the respondent felt comfortable talking with the instructor about career plans and ambitions, 68.1% agreed or strongly agreed with that sentiment while only 8.7% disagreed or strongly disagreed. Relative to seeking advice on papers and class projects, 52.3% indicated that they had discussed ideas for a paper or class project with their instructor or another instructor.

In measuring utilization of the library and library resources, 66.2% disagreed that the library is not a quiet place to read or study materials. Roughly 73% agreed or strongly agreed that they use library search tools to find materials for class. In relation to library assistance, only 43.6% agreed or strongly agreed that they had asked a librarian for help in finding materials. Only 41% indicated that they frequently visit the library to research topics for class. Finally, the academic integration index, beyond the measures already identified, also consists of the respondent's GPA after the first semester of their

first year of college. Raw numbers were converted to an ordinal scale. After the first semester, 59.3% of the respondents achieved a 3.00 GPA or higher and 35.4% of the respondents had a GPA between 2.00 to 2.99.

Table 5.6: Academic Integration Index Measures[1]

Measures	***f***	%
I am satisfied with the extent of my intellectual growth and interests in ideas since coming here		
Strongly Disagree	1	.6
Disagree	11	6.4
Neutral	40	23.3
Agree	99	57.6
Strongly Agree	21	12.2
I made outlines from class notes or readings		
Strongly Disagree	9	5.2
Disagree	39	22.7
Neutral	48	27.9
Agree	57	33.1
Strongly Agree	19	11.0
I did additional readings on topics that were introduced and discussed in class		
Strongly Disagree	16	9.3
Disagree	48	23.9
Neutral	63	36.6
Agree	37	21.5
Strongly Agree	8	4.7
On average across all of my courses, I am interested in the things that are being said during class discussions		
Strongly Disagree	7	4.1
Disagree	19	11.0
Neutral	48	27.9
Agree	85	49.4
Strongly Agree	13	7.6
I see a connection with what I am learning and my future career possibilities		
Strongly Disagree	6	3.5
Disagree	14	8.1
Neutral	38	22.1
Agree	85	49.4
Strongly Agree	29	16.9

Measures	*f*	%
I take detailed notes in class		
Strongly Disagree	12	7.0
Disagree	15	8.7
Neutral	41	23.8
Agree	76	44.2
Strongly Agree	28	16.3
I visit informally and briefly with my instructor after class		
Strongly Disagree	9	5.2
Disagree	44	25.6
Neutral	62	36.0
Agree	50	29.1
Strongly Agree	7	4.1
I feel comfortable talking with an instructor about career plans and ambitions		
Strongly Disagree	3	1.7
Disagree	12	7.0
Neutral	40	23.3
Agree	88	51.2
Strongly Agree	29	16.9
I have asked my instructor for comments and criticisms about my work		
Strongly Disagree	4	2.3
Disagree	34	19.8
Neutral	47	27.3
Agree	69	40.1
Strongly Agree	29	10.5
I have discussed personal problems or concerns with my instructor		
Strongly Disagree	26	15.1
Disagree	70	40.7
Neutral	41	23.8
Agree	31	18.0
Strongly Agree	4	2.3
I am NOT satisfied with the academic advising that I have received		
Strongly Disagree	33	19.2
Disagree	82	47.7
Neutral	30	17.4
Agree	20	11.6
Strongly Agree	7	4.1
I have discussed ideas for a paper or other class project with my instructor or another instructor		
Strongly Disagree	4	2.3
Disagree	31	18.0
Neutral	47	27.3
Agree	74	43.0
Strongly Agree	16	9.3

I do NOT like to use the library as a quiet place to read or study materials		
Strongly Disagree	52	30.2
Disagree	62	36.0
Neutral	32	18.6
Agree	23	13.4
Strongly Agree	3	1.7
I use the library search tools to find materials that I need for class		
Strongly Disagree	3	1.7
Disagree	17	9.9
Neutral	27	15.7
Agree	97	56.4
Strongly Agree	28	16.3
I have asked a librarian for help in finding materials on some topic		
Strongly Disagree	16	9.3
Disagree	46	26.7
Neutral	35	20.3
Agree	63	36.6
Strongly Agree	12	7.0
I frequent the library regularly to research topics for my class		
Strongly Disagree	13	7.6
Disagree	39	22.7
Neutral	49	28.5
Agree	55	32.0
Strongly Agree	16	9.3
Indicate your high school GPA (Range 0.00 to 4.0)		
0.00 to 0.49	1	.6
1.00 to 1.49	1	.6
1.50 to 2.00	7	4.1
2.00 to 2.49	20	11.6
2.50 to 2.99	41	23.8
3.00 to 3.49	48	27.9
3.50 to 4.00	54	31.4

1. The sample size is 172 students for this table.

Social Integration Index Measures

Table 5.7 summarizes the degree of social integration, measured by the respondent's involvement in clubs and organizations, involvement in informal and formal group sports, attendance at athletic events, connectedness with students, the

nature of friendships and social life of the respondent, and the general positive impression that the respondent has toward the university.

Respondents were generally very involved in the social life at the university. When asked whether the respondent had attended a program or event put on by a student group, a striking 86.6% agreed or strongly agreed with this statement. In contrast, when looking at the degree of involvement with a student club or organization, only 38.3% indicated that they were very involved. On the other hand, when asked whether the respondent had read or asked about a club, organization, or student government activity, 58.8% agreed or strongly agreed. In comparison, when asked whether the respondent did not like being involved in a student club or organization, 57.6% disagreed or strongly disagreed with this position. Respondents were generally positive with using recreational spaces for casual and informal group sports, indicating 49.4% agreement or strong agreement. When asked if they used the facilities in the gym for individual activities, that number increased to 70.4%. But when asked whether they played on an intramural team, only 29.1% agreed or strongly agreed. Social integration was, however, evident in terms of other indicator, i.e., 75.3% attended a college athletic event and 63.4% wore clothing that bears the university mascot or emblem.

Respondents were generally positive toward their relationships with other students and their overall social life. Only 7.5% did not feel that their interpersonal relationships with other students had an impact on their personal growth, attitudes and values. In relation to connectedness, 60.5% agreed or strongly agreed that they had a strong sense of connectedness with other students and 55.8% felt like they had a lot in common with other students. Respondents were generally very satisfied with the overall

social life, indicating 61% in agreement or strong agreement to that sentiment. Respondents also developed strong friendships with and liking of fellow students. Specifically, 62.3% had a very positive impression of other students, 63.3% had made a lot of friends, 67.5% felt that they could talk with other students about personal problems, 54.1% had made a lot of friends in the residence halls, and 51.2% enjoyed the social life of the residence halls. In contrast, when asked if respondents had more friends on the campus than at their work or hometown, only 40.7% agreed or strongly agreed that they had more friends on campus.

Table 5.7: Social Integration Index Measures[1]

Measures	***f***	%
I have attended a program or event put on by a student group		
Strongly Disagree	3	1.7
Disagree	8	4.7
Neutral	12	7.0
Agree	106	61.6
Strongly Agree	43	25.0
I am very involved in a student club or organization on campus		
Strongly Disagree	14	8.1
Disagree	52	30.2
Neutral	41	23.8
Agree	43	25.0
Strongly Agree	22	12.8
I have read or asked about a club, organization, or student government activity		
Strongly Disagree	9	5.2
Disagree	28	16.3
Neutral	35	20.3
Agree	83	48.3
Strongly Agree	17	9.9
I do NOT like being involved in a student club or organization		
Strongly Disagree	29	16.9
Disagree	70	40.7
Neutral	42	24.4
Agree	24	14.0
Strongly Agree	7	4.1

I use outdoor recreational spaces for casual and informal group sports		
Strongly Disagree	8	4.7
Disagree	40	23.3
Neutral	39	22.7
Agree	55	32.0
Strongly Agree	30	17.4
I have played on an intramural team		
Strongly Disagree	33	19.2
Disagree	71	41.3
Neutral	18	10.5
Agree	24	14.0
Strongly Agree	26	15.1
I attend college athletic events		
Strongly Disagree	12	7.0
Disagree	14	8.1
Neutral	20	11.6
Agree	65	37.8
Strongly Agree	61	37.5
I have used facilities in the gym for individual activities (for example, exercise and swimming)		
Strongly Disagree	8	4.7
Disagree	29	16.9
Neutral	14	8.1
Agree	61	35.5
Strongly Agree	60	34.9
My interpersonal relationships with other students had an impact on my personal growth, my attitudes, and my values		
Strongly Disagree	4	2.3
Disagree	9	5.2
Neutral	36	20.9
Agree	80	46.5
Strongly Agree	43	25.0
I have a strong sense of connectedness with other students		
Strongly Disagree	8	4.7
Disagree	18	10.5
Neutral	42	24.4
Agree	71	41.3
Strongly Agree	33	19.2
I like wear clothing that bears the university emblem or mascot		
Strongly Disagree	1	.6
Disagree	11	6.4
Neutral	51	29.7
Agree	75	43.6
Strongly Agree	34	19.8

Measures	*f*	%
I have a lot in common with other students		
Strongly Disagree	5	2.9
Disagree	22	12.8
Neutral	49	28.5
Agree	76	44.2
Strongly Agree	20	11.6
When I think of my overall social life here with friendships, college organizations, co-curricular activities, I feel very satisfied		
Strongly Disagree	6	3.5
Disagree	19	11.0
Neutral	42	24.4
Agree	73	42.4
Strongly Agree	32	18.6
I have a very positive impression with students here at this school		
Strongly Disagree	3	1.7
Disagree	14	8.1
Neutral	48	27.9
Agree	83	48.3
Strongly Agree	24	14.0
I have made a lot of friends while here at this school		
Strongly Disagree	7	4.1
Disagree	25	14.5
Neutral	31	18.0
Agree	79	45.9
Strongly Agree	30	17.4
If I had a problem, I felt very comfortable talking about it with friends that I made here		
Strongly Disagree	6	3.5
Disagree	18	10.5
Neutral	32	18.6
Agree	83	48.3
Strongly Agree	33	19.2
More of my friends are here on the campus than at my work or hometown		
Strongly Disagree	20	11.6
Disagree	42	24.4
Neutral	40	23.3
Agree	45	26.2
Strongly Agree	25	14.5
I have made a lot of friends in the residence halls		
Strongly Disagree	14	8.1
Disagree	17	9.9
Neutral	36	20.9
Agree	56	32.6
Strongly Agree	37	21.5

I enjoy the social life in the residence halls		
Strongly Disagree	20	11.6
Disagree	16	9.3
Neutral	35	20.3
Agree	60	34.9
Strongly Agree	28	16.3

1. Total sample size is 172 students.

Persistence with the Institution

Table 5.8 summarizes the percentage of respondents from the total sample (n=172) who, at the conclusion of the spring semester, persisted into the fall semester of the respondent's second year. With a very high percentage, the persistence percentage for the total sample reached 81.4%.

Table 5.8: Persistence for the Total Sample

Measures	***f***	%
Did the student persist with the university		
No	32	18.6
Yes	140	81.4

The sample size is 172 students.

Table 5.9 summarizes the percentage of respondents from the dual enrollment subsample (n=48) who, at the conclusion of the spring semester, persisted into the Fall, 2015. With a higher persistence percentage than the total sample (81.4%), the subsample reached a percentage of 87.5%.

Table 5.9: Persistence for the Dual Enrollment Subsample

Measures	***f***	%
Did the student persist with the university		
No	6	12.5
Yes	42	87.5

The sample size is 48 students.

Summary

A higher percentage of females than males participated in the study. Respondents as a total (including both dual enrollees and others) sample held strong high school GPAs when entering into the institution. The ACT score for the total sample was more modest, with a mean score of 21.25. More mothers of respondents (57%) than fathers of respondents (48.8%) had 2- or 4-year college degrees. As a result of university policy for first year traditional students, 91.3% of students lived in the residence halls.

Forty-eight respondents from the sample population participated in dual enrollment programs. The number of college courses they took in high school varied, but on average, respondents took nearly four college courses. Only four students did not take college courses from SMSU, and three students took their college courses on the SMSU campus. In contrast, forty-one students took their college courses in their high schools. Generally, the forty-eight students who participated in dual enrollment courses believed that the college courses they took were sufficiently rigorous, met college level expectations, offered intellectual stimulation, developed them more as a person, and assisted with the overall transition to college.

Overall, respondents expressed a significant desire to achieve a college degree. Respondents acknowledged that family and friends were supportive of the efforts toward a college degree, and that they had the commitment and dedication to achieve a degree despite any obstacles which could potentially deter respondents from their ultimate goal. Respondents did question the relative worth of a college degree when compared to the time, money, and effort, but again, students were very confident that working toward a college degree was the right decision for them. In terms of institutional commitment,

respondents were generally loyal to the university and committed to finishing their degree with the institution.

Respondents were generally well integrated into the academic fabric of the institution. Respondents were generally satisfied with their intellectual growth and engaged with their instructor on matters related to the classroom and instruction. A centerpiece for an academic institution is the library. Respondents were generally favorable to studying, reading, and researching at the library, but were less inclined to ask for assistance from library staff. The respondent total sample demonstrated high academic marks after the first semester, achieving a respectable mean GPA score of 3.08.

The degree of respondent's academic integration mirrors the degree of social integration. Respondents were generally very socially integrated into the institution. When the activity involved attending athletic events or attending a program or event, respondents were very engaged. Respondents also shared a strong sense of connectedness with other students, whether that manifested itself in their interpersonal relationships, satisfaction with the social life, or the respondent's general impression of other students. The responses also indicate a high degree of positive feelings toward their social life and other students.

In terms of the key dependent variable for this study, the study looked at the persistence of students in terms of the reenrollment at the start of Fall, 2015, which was the start of the students' second year at the institution. In fact, 81.4% of the sample population returned and enrolled in the fall semester of the respondent's second year. This is above the university average of 68%.

CHAPTER SIX

HYPOTHESIS TESTING

This chapter is organized into two parts. The first part provides an overview of the statistical tests, regression diagnostics to detect multicollinearity, and the analysis and tables used to report the results. The second part discusses the research questions and corresponding hypotheses, and then presents the results of different statistical analyses that were used to test the hypotheses developed in this study. The five research questions and twenty-one hypotheses were derived from the theoretical model and selected ideas from the review of literature. Hypotheses were tested using a Spearman's rho correlation, a Chi-square Test of Independence, and a logistic regression. All of the hypotheses were tested at the $p < .05$ level.

Statistical Tests, Multicollinearity and Analysis

Spearman Rank-Order Correlation

The Spearman rank-order correlation (Spearman rho) is the nonparametric version of the Pearson produce-moment correlation. It measures the strength and direction of the association between two ranked variables (Sprent 1989:135-136). In this study, Spearman rho is used to interpret and determine the strength of the association for selected hypotheses. For this statistic, the following guide was used: .00 to .19 very weak; .20 to .39 weak; .40 to .59 moderate; .60 to .79 strong; and .80 to 1.0 very strong (Cranshaw and Chambers 2001). The tables used to report the results denote the hypothesis, the dependent variable, the sample size (n), the Spearman's rho coefficient

(denoted as r_s), and the p value. Hypotheses one through 16 use the Spearman's rho (r_s) to measure the strength of the bivariate association between variables.

Chi-square Test of Independence

The Chi-square Test of Independence explores the relations between two categorical variables. The test compares the observed frequencies or proportions of cases that occur in each of the categories with the value that would be expected if there was no association (Pallant 2007:214). In measuring the strength of association with the Chi-square Test of Independence, a value of .10 is interpreted as a small effect, .30 a medium effect, and .50 a large effect (Pallant 2007:217). Hypothesis 18 employed the Chi-square Test of Independence. A crosstabulation table was used to report the results.

Logistic Regression

A logistic regression was used for Hypotheses 17, and 19 through 23. These all have a dichotomous dependent variable. In the study, the dichotomous dependent variable is persistence or whether the student persisted with the university beyond the first year of college. To perform the analysis, a direct logistic regression was used. This technique enters all predictors into the regression equation simultaneously (Tabachnick and Fidell 2007:454).

SPSS was employed to calculate the logistic regression equation. Like linear regression, the logistic model relates one or more predictor variables to a dependent variable, and by doing so, the logistic model yields regression coefficients, predicted values, and residuals (Wright 1995:218). These coefficients and values are presented in

Tables 6.10 and 6.12 through 6.14 (hereafter Tables). The Tables consider two types of inferential tests: tests of models and tests of individual predictors (Tabachnick and Fidell 2007:457).

Tests of Models consists of two statistical procedures, the Omnibus Tests of Model Coefficients (labeled Omnibus Tests in the Tables) and the Hosmer and Lemeshow test. With the former, the Omnibus Tests of Model Coefficients is generated by SPSS. This log-likelihood technique compares the constant-only model with the full model with predictors (Tabachnick and Fidell 2007:458). The usefulness of the technique is that it draws a comparison with a constant-only model with a model that has the constant plus all predictors. If no improvement is found when all predictors are added, the predictors are unrelated to the outcome (Tabachnick and Fidell 2007:458). The second inferential procedure to assess the model is the Hosmer and Lemeshow test which is a Goodness-of-fit-test. This test assesses the fit of a logistic model against actual outcomes (Peng, Lee, and Ingersoll 2002:6). With this statistic, a good model produces a nonsignificant chi-square (Tabachnick and Fidell 2007:459).

In addition to the model assessment, SPSS also calculates the effect size using a pseudo-R^2, which is a descriptive measure for logistic regression that indicates roughly the proportion of variation in the dependent variables accounted for by the predictors (Knoke, Bohrnstedt, and Mee 2002:313). The two statistical techniques used to calculate the pseudo-R^2 is the Cox & Snell R-Square and the Nagelkerke R-Square. These statistical tests are variations of the R^2 concept used in OLS regression models and have been devised to yield an explanation of the variation in the dependent variable that can be explained by the predictors in the model (from a minimum value of 0 to a maximum

of approximately 1) (Peng, Lee, and Ingersoll 2002:6). Both statistical tests are included in Tables under Model Summary.

The second type of inferential test is the ***tests of individual predictors***. Referring to the Tables, the β coefficients are referred to commonly as the individual regression coefficients that predict the dependent variable from the independent variables (Peng, Lee, and Ingersoll 2002:6). The β coefficients are the natural logs of the odds ratios (Tabachnick and Fidell 2007:462). The coefficient *SE β* is the standard error around the coefficient. Wald's chi-square (x^2) is a two-tailed test used in testing the null hypothesis that the coefficient (parameter) is 0. Reported with the Wald's chi-square is degrees of freedom (*df)*, and p-values. Coefficients that have p-values less than alpha are statistically significant. SPSS also produces the odds ratio, which is the change of the odds of being in one of the categories of outcome (whether a student persisted or not) when the value of a predictor increases by one unit (Tabachnick and Fidell 2007:461). In the Tables, the odds ratio is denoted as e^{β}. Hypotheses 17 and 19 through 23 used the direct logistic regression.

Multicollinearity

Logistic regression, like multiple regression, is sensitive to extremely high correlations among predictor variables. This condition is referred to as multicollinearity, where there exists a high or near perfect correlation among the independent variables (Knoke, Bohrnstedt, and Mee 2002:267; Menard 1995:65). An indicator of multicollinearity is when there exist extremely large standard errors for parameter estimates and/or failure of tolerance testing in the computer run (Tabachnick and Fidell

2007:443). Regression diagnostics were performed on the predictor variables to determine whether some predictor variables were in perfect or near perfect linear relationship. The regression diagnostics were performed with a scenario of the student sample population (n=172) and a subset of the sample population that participated in dual enrollment programs (n=48). Two regression diagnostics were performed with different sample sizes because the hypotheses developed further in the study performed logistic regression with each.

In Table 6.1, Tolerance and the Variance Inflation Factor (VIF) are reported. Tolerance is an indication of the percent of variance in the predictor that cannot be accounted for by other predictors. Consequently, small values indicate that a predictor is redundant. Values less than .20 are cause of concern and values less than .10 are considered to present a serious collinearity problem (Menard 1995:66). The VIF estimates show how much the variance of a coefficient is inflated because of linear dependence with predictors correlated against a dependent variable (DV). The literature commonly suggests that a value of 10 is the maximum VIF level (O'Brien 2007:674). Tolerance and VIF values, as reported in Table 6.1, are within acceptable levels for regression analysis and do not indicate multicollinearity problems.

Table 6.1: Regression Diagnostics for Multicollinearity among the Predictor Variables.

Predictors	Collinearity Statistics		Predictors	Collinearity Statistics	
	Tolerance	VIF		Tolerance	VIF
College Courses	.921	1.086	H.S. GPA	.639	1.566
ACT Score	.763	1.311	ACT	.680	1.470
H.S. GPA	.756	1.324	AI_TOTAL.18	.860	1.162
AI_TOTAL.18	.930	1.076	SI_TOTAL.20	.831	1.203
SI_TOTAL.20	.710	1.099	DE_TOTAL.14	.760	1.316
			MotherFatherED	.832	1.316
DV: MotherFatherED .			DV: College Courses		
n=172			n=48		

Research Questions and Hypotheses

Research Question 1: To what degree are a mother and father's education levels associated with the student's commitment to achieving a college degree, commitment to the institution, degree of academic integration, and degree of social integration?

Mother and Father's Education and Degree Aspiration and Institutional Commitment

Research Hypothesis 1: The greater the mother and father's level of education, the greater the student's goal to achieve a college degree.

Research Hypothesis 2: The greater the mother and father's level of education, the greater the student's commitment to the institution.

In this study, there is no statistical relationship in this study between mother and father's level of education and degree aspiration and institutional commitment. The relationship between the mother and father's level of education and degree aspiration and institutional commitment was measured using the Spearman's rho (r_s). Table 6.2 shows the Spearman's rho correlation between mother and father's education and degree aspiration. The one-tailed test shows that the associations between mother and father's

education and degree aspiration and institutional commitment were not statistically significant. Thus, Research Hypothesis 1 and Research Hypothesis 2 are rejected.

Table 6.2: Spearman rho Correlation between Mother and Father's Education and Degree Aspiration and Institutional Commitment

Hypotheses	Dependent Variable	n	Spearman's rho
H_1	Degree Aspiration	172	.026
H_2	Institutional Commitment	172	.063
*p< 0.05 **p<0.01			

Mother and Father's Education and Academic and Social Integration

Research Hypothesis 3: The greater the mother and father's level of education, the greater the student's academic integration.

Research Hypothesis 4: The greater the mother and father's level of education, the greater the student's social integration.

There is no significant statistical relationship between mother and father's level of education and academic integration. However, there is a significant relationship between mother and father's education level and social integration. The relationship was measured using the Spearman's rho (r_s). Table 6.3 presents the results. Mother and father's education was significantly related to social integration, with the one-tailed test showing a weak association. Thus, Research Hypothesis 3 is rejected and Research Hypothesis 4 is accepted.

Table 6.3: Spearman rho Correlation between Mother and Father's Education and Academic Integration and Social Integration

Hypotheses	Dependent Variable	n	Spearman's rho
H_3	Academic Integration	172	.055
H_4	Social Integration	172	.212**
*p< 0.05 **p<0.01			

Research Question 2: To what degree are ACT scores associated with the student's commitment to achieving a college degree, commitment to the institution, degree of academic integration, and degree of social integration?

ACT Score and Degree Aspiration and Institutional Commitment

Research Hypothesis 5: The greater the ACT score, the greater the student's goal to achieve a college degree.

Research Hypothesis 6: The greater the ACT score, the greater the student's commitment to the institution.

There is no significant statistical relationship between ACT score and degree aspiration and institutional commitment. Again, the relationship between ACT score and degree aspiration and institutional commitment was measured using the Spearman's rho (r_s). Table 6.4 presents the results. The one-tailed test shows that there is no significant statistical relationship between ACT score and degree aspiration or between ACT score and institutional commitment. Thus, Research Hypothesis 6 and Research Hypothesis 7 are rejected.

Table 6.4: Spearman rho Correlation between ACT score and Degree Aspiration and Institutional Commitment

Hypotheses	Dependent Variable	n	Spearman's rho
H_5	Degree Aspiration	172	.090
H_6	Institutional Commitment	172	-.032
$*p< 0.05$ $**p<0.01$			

ACT Score and Academic and Social Integration

Research Hypothesis 7: The greater the ACT score, the greater the student's academic integration.

Research Hypothesis 8: The greater the ACT score, the greater the student's social integration.

There is no significant statistical relationship between the student's ACT score and academic and social integration. Table 6.5 presents the results. The one-tailed test shows that the associations between ACT score and academic integration was not statistically significant. The same result occurred between ACT score and social integration which was not statistically significant. Thus, Research Hypothesis 8 and Research Hypothesis 9 are rejected.

Table 6.5: Spearman rho Correlation between ACT Score and Academic Integration and Social Integration

Hypotheses	Dependent Variable	n	Spearman's rho
H_7	Academic Integration	172	.043
H_8	Social Integration	172	-.029
$*p< 0.05$ $**p<0.01$			

Research Question 3: To what degree is high school GPA associated with a student's commitment to achieving a college degree, commitment to the institution, degree of academic integration, and degree of social integration?

High School GPA and Degree Aspiration and Institutional Commitment

Research Hypothesis 9: The greater the high school GPA, the greater the student's goal to achieve a college degree.

Research Hypothesis 10: The greater the high school GPA, the greater the student's commitment to the institution.

There is no statistical relationship between GPA and degree aspiration or institutional commitment. The relationship was measured using the Spearman's rho (r_s). Table 6.6 presents the results. The one-tailed test shows that the associations between high school GPA and degree aspiration and institutional commitment were not statistically significant. Thus, Research Hypothesis 11 and Research Hypothesis 12 are rejected.

Table 6.6: Spearman rho Correlation between High School GPA and Degree Aspiration and Institutional Commitment.

Hypotheses	Dependent Variable	n	Spearman's rho
H_9	Degree Aspiration	172	.039
H_{10}	Institutional Commitment	172	-.053
$*p < 0.05$ $**p < 0.01$			

ACT Score and Academic and Social Integration

Research Hypothesis 11: The greater the high school GPA, the greater the student's academic integration.

Research Hypothesis 12: The greater the high school GPA, the greater the student's social integration

There is no statistical relationship between high school GPA and the student's academic or social integration. Table 6.7 shows the Spearman's rho (r_s) correlation between high school GPA and Academic Integration. The one-tailed test shows that the association between high school GPA and academic integration was not statistically significant. The same result occurred between high school GPA and social integration. Thus, Research Hypotheses 13 and 14 are rejected.

Table 6.7: Spearman rho Correlation between High School GPA and Academic Integration and Social Integration

Hypotheses	Dependent Variable	n	Spearman's rho
H_{11}	Academic Integration	172	.027
H_{12}	Social Integration	172	.094
$*p < 0.05$ $**p < 0.01$			

Research Question 4: To what degree is a student's transition experiences with dual enrollment programs associated with commitment to achieving a college degree, commitment to the institution, extent of academic integration and extent of social integration?

Transition Experiences with Dual Enrollment and Degree Aspiration/Institutional Commitment

Research Hypothesis 13: The greater the degree of transition experiences with dual enrollment programs, the greater the student's goal to achieve a college degree.

Research Hypothesis 14: The greater the degree of transition experiences with dual enrollment programs, the greater the student's commitment to the institution.

There are two measures for dual enrollment. One measure is whether the student persisted with the university (yes or no), and this is measured at the nominal level. The second measure for dual enrollment is a composite measure of item-scaled questions provided to respondent in week six of the fall semester, 2014. The latter is measured at the ordinal level and is one of the five indices used as independent variables in the study. An indicator to determine the difference rests with whether the hypotheses refer to *participation* in dual enrollment programs (yes or no) or whether the hypotheses refer to the *greater the experience* or *degree of participation levels* the respondent had with dual enrollment programs, which is measured at the ordinal level.

Dual enrollment, for purposes of Research Hypotheses 13 and 14, were measured at the ordinal level. There was no statistical relationship between a student's participation with dual enrollment programs and degree aspiration and institutional commitment. The statistical relationship was measured using the Spearman's rho (r_s). Table 6.8 shows the Spearman's rho correlation between participation with dual enrollment courses and degree aspiration. The one-tailed test shows that the associations between transition experiences with dual enrollment courses while in high school and degree aspiration and institutional commitment were not statistically significant. Thus, Research Hypothesis 13 and Research Hypothesis 14 are rejected.

Table 6.8: Spearman rho Correlation between Degree of Transition Experiences with Dual Enrollment and Degree Aspiration and Institutional Commitment.

Hypotheses	Dependent Variable	n	Spearman's rho
H_{13}	Degree Aspiration	48	.103
H_{14}	Institutional Commitment	48	-058
*p< 0.05 **p<0.01			

Dual Enrollment and Academic and Social Integration

Research Hypothesis 15: The greater the transition experiences with dual enrollment programs, the greater the student's academic integration.

Research Hypothesis 16: The greater the transition experiences with dual enrollment programs, the greater the student's social integration.

There was a statistically significant relationship between student's degree of transition experiences with dual enrollment programs and academic integration (Table 6.9). Degree of transition experiences with dual enrollment programs was measured at the ordinal level. The one-tailed test shows a significant but weak association (r_s = .297). In contrast, there was no statistically significant relationship between a student's degree of transition experiences with dual enrollment programs and social integration. Thus, Research Hypothesis 15 is accepted and Research Hypothesis 16 is rejected.

Table 6.9: Spearman rho Correlation between Degree of Transition Experiences with Dual Enrollment and Academic and Social Integration.

Hypotheses	Dependent Variable	n	Spearman's rho
H_{15}	Academic Integration	48	.297*
H_{16}	Social Integration	48	.001
*p< 0.05 **p<0.01			

Research Question 5: To what degree are mother and father's education, high school GPA, ACT score, academic integration, social integration, and participation and transition experiences with dual enrollment courses associated with persistence behavior?

Mother and Father's Education Level, High School GPA and ACT Score are Associated with Persistence.

> Research Hypothesis 17: The greater the mother and father's level of education, high school GPA, and ACT score the more likely the student will persist with the institution beyond the first year.

The variable MotherFatherED (which represent mother and father's level of education), high school GPA, and ACT score were not significant predictors for student persistence. A direct logistic regression analysis was performed to assess the impact on the likelihood that a student would persist with the university beyond the first year. A test of the full model with three predictors (mother and father's highest education level, high school GPA, and ACT score) against a constant-only model was not statistically significant [χ^2, (3, N=172) = 4.269, p = .234 (failed to reach $p < .05$)], indicating that the predictors, as a set, did not reliably distinguish between persisters and non-persisters.

Unlike the Omnibus Tests of Model Coefficients, the Hosmer and Lemeshow test indicates a good model fit if the significance value is greater than $p < .05$. While the Hosmer and Lemeshow test had a p-value of .864, which would seem to indicate a good model fit, other individual indicators show that the model has very poor predictive power. For instance, the model as a whole explained between 2.5% (Cox & Snell R^2) and 4.0% (Nagelkerke R^2) of the variance in persistence and correctly classified 81.1% of cases (Predicted Model). While 81.1% prediction of cases by itself is impressive, it is not an improvement of the null model, which also predicted 81.1% of the cases. Furthermore, as shown in Table 6.10, the three predictor variables did not make a unique

statistically significant contribution to the model. This confirms, in relation to testing this part of the model, that MotherFatherED, HSGPA, and ACT score are not significant predictors for student persistence. Research Hypothesis 17 is rejected.

Table 6.10: Logistic Regression Predictor Variables HSGPA, ACT, and MotherFatherEd with Persistence

Predictor	**β**	***SE* β**	**Wald's x^2**	***df***	***p*<.05**	**e^{β} (odds ratio)**
Constant	-2.038	1.781	1.310	1	.252	.130
HSGPA	.425	.472	.814	1	.367	1.530
ACT	.104	.081	1.663	1	.197	1.110
MotherFatherED	-.021	.110	.035	1	.852	.980
Tests		**%**	**x^2**	***df***	***p*<.05**	**R^2**
Tests of Models						
Omnibus Tests			4.269	3	.234	
Hosmer & Lemeshow			3.919	8	.864	
Model Summary						
-2 Log Likelihood			159.755			
Cox & Snell R^2						.025
Nagelkerke R^2						.040
Classification of Cases						
Constant (Null Model)		81.1				
Predicted Model		81.1				
n=172; * *p* <.05; ** *p* <.01						

Legend
1. HSGPA is a respondent's cumulative high school grade point average.
2. ACT is a respondent's ACT score.
3. MotherFatherED is mother and father's highest level of education.

Participation with Dual Enrollment Programs and Persistence

Research Hypothesis 18: Students who participate with dual enrollment programs are more likely to persist with the institution beyond the first year.

Participation with dual enrollment programs was measured at the nominal level (yes or no in relation to participating in a dual enrollment program). The Chi-square Test

of Independence was used to test research Hypothesis 18. The observed chi-square is 1.639 meaning that there was no statistically significant relationship between participation with dual enrollment programs and persistence with the institution. In addition, the phi coefficient is .098, which a very small effect (the range is 0 to 1, with values of .10 or less having a small effect) (Pallant 2007:217). An examination of Table 6.11 shows that the difference between those who were dual enrolled and persisted and those who were not dual enrolled and persisted was only about 8%.

Table 6.11: Results of Chi-square Test of Independence between Participation with Dual Enrollment Programs and Persistence with the University (%)

Persistence	**Dual Enrollment**		**Totals**	
	No	Yes	%	N
No	21.0	12.5	18.6	32
Yes	79.0	87.5	81.4	140
Total % =	100.0	100.0	100.0	
Total N =	124	48		172
Chi-square = 1.639; df = 1; ns				

Degree of Participation with Dual Enrollment, Transition Experiences, and Persistence

> Research Hypothesis 19: The greater the number of college courses and the degree of student's transition experiences with dual enrollment programs, the more likely the student will persist with the institution beyond the first year.

Hypothesis 19 and Hypothesis 21 deal only with those students who took dual enrollment courses. This was necessary because the index measure for degree of transition experiences in dual enrollment programs (DE_TOTAL.14) was only available for students who had experience with dual enrollment courses. Thus, the total sample size for each table for these two hypotheses is 48. With the degree of student's transition experience with dual enrollment programs, this was measured at the ordinal level.

A direct logistic regression was performed, with one dependent variable (persistence) and two predictor variables (DeHowMany and DE_TOTAL.14). DeHowMany is a frequency count of how many college courses a student took in high school. The number of courses taken ranged from one to 12 or more. DE_TOTAL.14 is an index constructed to operationalize the construct of transition experiences stemming from participation in a dual enrollment course(s). The number of college courses a student takes in high school (DEhowMany) and the student's transition experiences with dual enrollment courses (DE_TOTAL.14) were not statistically significant predictors for student persistence. A test of the full model with the two predictor variables against a constant-only model was not statistically significant [χ^2, (2, N=48); .159 p = .923 (Omnibus test)]; indicating that the predictors, as a set, could not reliably distinguish between persisters and non-persisters.

The Hosmer and Lemeshow test indicates a good model fit if the significance value is greater than $p < .05$. While the Hosmer and Lemeshow test had a p-value of .432, which would seem to indicate a good model fit, other individual indicators show that the model has very poor predictive power. The model as a whole explained between .03% (Cox & Snell R^2) and .06% (Nagelkerke R^2) of the variance in persistence and correctly classified 87.5% of cases (Predicted Model). While 87.5% prediction of cases by itself is impressive, it is not an improvement of the null model, which also predicted 87.5% of the cases

As presented in Table 6.12, the two predictor variables did not make a unique statistically significant contribution to the model. This confirms, in relation to testing this part of the model, that the number of college courses a student takes in high school

(DEhowMany) and the student's experience when taking those courses (DE_TOTAL.14) were not significant predictors for student persistence. Research Hypothesis 19 was rejected.

Table 6.12: Logistic Regression Analysis for Number of Dual Enrollment Courses and Transition Experiences and Persistence.

Predictor	**β**	***SE* β**	**Wald's χ^2**	***df***	***p* < .05**	**e^{β} (odds ratio)**
Constant	3.514	4.415	.719	1	.397	33.583
DEHowMany	.011	.172	.004	1	.951	1.011
DE_TOTAL.14 (Index)	-.029	.074	.157	1	.692	.971
Test		**%**	**χ^2**	***df***	***p* < .05**	**R^2**
Overall model evaluation						
Omnibus Tests			.159	2	.923	
Hosmer & Lemeshow			6.969	7	.432	
Model Summary						
-2 Log Likelihood			36.011			
Cox & Snell R^2						.003
Nagelkerke R^2						.006
Classification of Cases						
Constant (Null Model)		87.5				
Predicted Model		87.5				
n=48; * *p* <.05; ** *p* <.01						

Legend
1. DeHowMany is a frequency count of how many college courses a student took in high school.
2. DE_TOTAL.14 is an index constructed to measure the transition experiences students had with their dual enrollment programs.

Academic Integration, Social Integration, and Participation with Dual Enrollment Programs are Associated with Persistence

Research Hypothesis 20: Academic integration, social integration, and participation with dual enrollment courses are positively associated with persistence behavior.

Research Hypothesis 20 predicts that academic integration, social integration, and participation with dual enrollment courses leads to persistence. Only social integration was a reliable predictor of persistence at the p<.05 level.

A direct logistic regression was performed, with one dependent variable (persistence) and three predictor variables, AI_TOTAL.18, SI_TOTAL.20 and DE (1). AI_TOTAL.18 is an academic integration index constructed to operationalize the degree in which a student is academically integrated into the institution. SI_TOTAL.20 is an index constructed to measure the degree in which a student is socially integrated into the institution. DE is a categorical variable and asks whether a student participated in dual enrollment programs (coded Yes (1) and No (0)). A test of the full model with the three predictor variables against a constant-only model was statistically significant, [χ^2, (3, N=172) = 14.230 p = .003] indicating that the predictors, as a set, could reliably distinguish between persisters and non-persisters. The Hosmer and Lemeshow test indicates a good model fit if the significance value is greater than p < .05 (the cutoff value). In this case, the p value (p = .06) was greater than the cutoff, which provides partial support for a good model fit. The model as a whole explained between 7.9% (Cox & Snell R^2) and 12.9% (Nagelkerke R^2) of the variance in persistence and correctly classified 82.6% of cases (Predicted Model). While 82.6% prediction of cases by itself is impressive, it is only a marginal improvement of the null model, which predicted 81.4% of the cases

Table 6.13 shows regression coefficients, Wald statistics and odds ratios for each of the three predictors. According to the Wald criterion, only social integration in the institution predicted persistence [χ^2, (1, N = 172) = 5.459, p < .05]. This confirms the

finding for the sample that social integration is the only statistically significant predictor of persistence among the three predictors. However, the odds ratio (e^{β}) of 1.042 shows minimal likelihood of the student persisting because of a one-unit change in social integration. That is, the odds are increased by 4.2% that the student will likely persist with a one-unit change in social integration. Research Hypothesis 20 is accepted but its capacity to predict persistence is weak.

Table 6.13: Logistic Regression Analysis for Academic Integration, Social Integration, Participation with Dual Enrollment Courses and Persistence

Predictor	**β**	***SE* β**	**Wald's χ^2**	***df***	***p* < .05**	**e^{β} (odds ratio)**
Constant	-3.891	1.638	5.645	1	.018	.020
AI_TOTAL.18 (Index)	.042	.026	2.700	1	1.00	1.043
SI_TOTAL.20 (Index)	.041	.017	5.459	1	.019*	1.042
DE (Yes (1) No (0))	.544	.510	1.138	1	.286	1.723
Test		**%**	**χ^2**	***df***	***p* < .05**	**R^2**
Overall model evaluation						
Omnibus Tests			14.230	3	.003**	
Hosmer & Lemeshow			14.982	8	.060	
Model Summary						
-2 Log Likelihood			36.011			
Cox & Snell R^2						.079
Nagelkerke R^2						.129
Classification of Cases						
Constant (Null Model)		81.4				
Predicted Model		82.6				

n=172; * *p* <.05; ** *p* <.01

Legend

1. AI_TOTAL.18 is an academic integration index constructed to operationalize the degree in which a student is academically integrated into the institution.
2. SI_TOTAL.20 is an index constructed to measure the degree in which a student is socially integrated into the institution.
3. DE is a categorical variable and asks whether a student participated in dual enrollment programs (coded Yes (1) and No (0)).

Academic Integration, Social Integration, and Degree of Transition Experiences with Dual Enrollment Programs are Associated with Persistence

> Research Hypothesis 21: Academic integration, social integration, and the degree of transition experiences with dual enrollment programs will more likely result in persistence with the institution beyond the first year.
>
> Research Hypothesis 22: Higher levels of academic integration will more likely result in persistence with the institution beyond the first year.
>
> Research Hypothesis 23: Higher levels of social integration will more likely result in persistence with the institution beyond the first year.

Research Hypothesis 21 predicts that academic integration, social integration, and the degree of the student's transition experience with dual enrollment programs will more likely result in persistence. Dual enrollment experiences were measured at the ordinal level. For those in the sample who had dual enrollment experiences, only academic integration was a reliable predictor for persistence for those students who completed dual enrollment courses.

A direct logistic regression was performed, with one dependent variable (persistence) and three predictor variables, AI_TOTAL.18, SI_TOTAL.20 and DE_TOTAL.14. This statistical test is a subset of the sample population (n = 48) and is limited to students who participated in dual enrollment programs. AI_TOTAL.18 is an academic integration index constructed to operationalize the degree in which a student is academically integrated into the institution. SI_TOTAL.20 is an index constructed to measure the degree in which a student is socially integrated into the institution. DE_TOTAL.14 is an index constructed to measure the transition experiences students had with their dual enrollment programs. A test of the full model with the three predictor variables against a constant-only model was statistically significant, [χ^2, (3,

N=48); 10.871 p = .012 (Omnibus test)]; indicating that the predictors, as a set, could reliably distinguish between persisters and non-persisters.

In contrast, the Hosmer and Lemeshow test did not indicate a good model fit because the p-value (p = .015) was below the cutoff value (p < .05) which provides partial support that the model is not a good model fit. The model as a whole explained between 20.3% (Cox & Snell R^2) and 38.3% (Nagelkerke R^2) of the variance in persistence and correctly classified 95.8% of cases (Predicted Model). The 95.8% prediction of cases is an improvement of the null model, which predicted 87.5% of the cases.

Table 6.14 shows regression coefficients, Wald statistics and odds ratios for each of the three predictors. According to the Wald criterion, only academic integration in the institution reliably predicted persistence [χ^2, (1, N = 48) = 6.970, p < .05]. This confirms the finding for the sample that academic integration is the only statistically significant predictor of persistence among the three predictors for this subset of the overall sample. However, the odds ratio (e^{β}) of 1.270 shows a modest likelihood of persisting based upon a one-unit change in academic integration. DE_TOTAL.14 and SI_TOTAL.20 were not statistically significant (p = .790 and .272 respectively). As a whole, Research Hypothesis 21 is helpful, but it is weak because only one variable within the predicted model is statistically significant.

Table 6.14: Logistic Regression Analysis for Academic Integration, Social Integration, and Degree of Transition Experiences with Dual Enrollment Courses and Persistence

Predictor	**β**	***SE* β**	**Wald's χ^2**	***df***	***p* < .05**	**e^{β} (odds ratio)**
Constant	-5.556	6.035	.848	1	.357	
AI_TOTAL.18 (Index)	.239	.090	6.970	1	.008**	1.270
SI_TOTAL.20 (Index)	-.013	.049	.071	1	.790	.987
DE_TOTAL.14 (Index)	-.104	.095	1.207	1	.272	.901
Test		**%**	**χ^2**	***df***	***p* < .05**	**R^2**
Overall model evaluation						
Omnibus Tests			10.871	3	.012*	
Hosmer & Lemeshow			19.016	8	.015*	
Model Summary						
-2 Log Likelihood			25.299			
Cox & Snell R^2						.203
Nagelkerke R^2						.383
Classification of Cases						
Constant (Null Model)		87.5				
Predicted Model		85.8				

n=48; * *p* <.05; ** *p* <.01

Legend
1. AI_TOTAL.18 is an academic integration index constructed to operationalize the degree in which a student is academically integrated into the institution.
2. SI_TOTAL.20 is an index constructed to measure the degree in which a student is socially integrated into the institution.
3. DE_TOTAL.14 is an index constructed to measure the transition experiences students had with their dual enrollment programs.

Research Hypotheses 22 and 23 individually test the prediction capacity of academic and social integration with persistence. In so doing, the researcher looked at whether higher levels of academic and social integration predicted persistence. With Research Hypothesis 22, a direct logistic regression was performed with the subsample (n=48) between the dependent variable (persistence) and the predictor variable AI_TOTAL.18, which is an academic integration index constructed to operationalize the degree in which a student is academically integrated into the institution. Table 6.15

reports that higher levels of academic integration is statistically significant at predicting persistence. While statistically significant, the odds ratio (e^{β}) of 1.238 shows a modest likelihood of persisting based upon a one-unit change in academic integration. Research Hypothesis 22 is helpful in predicting persistence, but its prediction capacity is weak.

Table 6.15: Logistic Regression Analysis for Academic Integration and Persistence

	Persistence		
Predictor	**β**	***SE* β**	**(e^{β})** (odds ratio)
AI_TOTAL.18	.214	.081	1.238**
n=48; * *p <.05; ** p<.01*			
Legend AI_TOTAL.18 is an academic integration index constructed to operationalize the degree in which a student is academically integrated into the institution.			

Research hypothesis 23 predicts that higher levels of social integration will more likely result in persistence. A direct logistic regression was performed (n=48) between the dependent variable (persistence) and the predictor variable SI_TOTAL.20, which is an index constructed to measure the degree in which a student is socially integrated into the institution. Table 6.16 reports that social integration is not statistically significant at predicting persistence. Research Hypothesis 23 is not helpful.

Table 6.16: Logistic Regression Analysis for Social Integration and Persistence

	Persistence		
Predictor	**β**	***SE* β**	**(e^{β})** (odds ratio)
SI_TOTAL.20	.026	.036	1.027
n=48; * *p <.05; ** p<.01*			
Legend SI_TOTAL.20 is an index constructed to measure the degree in which a student is socially integrated into the institution.			

The results for the17 hypotheses that used either the Spearman's rho or Chi-square Test of Independence are summarized in Table 6.17.

Table 6.17: Summary of Hypotheses Tests

Hyp.	Relationship	Research Hypothesis Accepted or Rejected	Strength
1	Mother and Father's Education and Degree Aspiration	Rejected	
2	Mother and Father's Education and Institutional Commitment	Rejected	
3	Mother and Father's Education and Academic Integration	Rejected	
4	Mother and Father's Education and Social Integration	Accepted	Weak
5	ACT and Degree Commitment	Rejected	
6	ACT and Institutional Commitment	Rejected	
7	ACT and Academic Integration	Rejected	
8	ACT and Social Integration	Rejected	
9	High School GPA and Degree Aspiration	Rejected	
10	High School GPA and Institutional Commitment	Rejected	
11	High School GPA and Academic Integration	Rejected	
12	High School GPA and Social Integration	Rejected	
13	The Degree of Transition Experiences with Dual Enrollment and Degree Aspiration	Rejected	
14	The Degree of Transition Experiences with Dual Enrollment and Institutional Commitment	Rejected	
15	The Degree of Transition Experiences with Dual Enrollment and Academic Integration	Accepted	Weak
16	The Degree of Transition Experiences with Dual Enrollment and Social Integration	Rejected	
18	Participation with Dual Enrollment and Persistence	Rejected	

Table 6.18 summarizes hypotheses 17 and 19 through 23. These hypotheses used the logistic regression, and therefore, this table is organized to report the prediction capacity of the models for each hypothesis. It is organized first to determine whether the

model was helpful to predicting persistence, and second, if helpful, whether the strength of the prediction is weak or strong.

Table 6.18: Summary of Predicted Models for Decisions to Persist with the University Beyond the First Year of College.

Hyp.	Relationship	Helpful/Not Helpful	Strength
17	Mother and Father's Education, High School GPA, ACT and Persistence	Not Helpful	
19	Number of College Courses, Degree of Transition Experiences in Dual Enrollment and Persistence	Not Helpful	
20	Academic Integration, Social Integration, Participation in Dual Enrollment, and Persistence	Helpful	Weak
21	Academic Integration, Social Integration, and Degree of Transition Experiences in Dual Enrollment and Persistence	Helpful	Weak
22	Academic integration will more likely result in persistence with the institution beyond the first year.	Helpful	Weak
23	Social integration will more likely result in persistence with the institution beyond the first year.	Not Helpful	

Summary

The test of hypotheses showed that mother and father's level of education is correlated with the student's social integration. The results also showed that students' transition experiences in dual enrollment programs is correlated with academic integration. Social integration was also found to be a reliable predictor of persistence. Finally, and limited to students who participated in dual enrollment programs, only academic integration was a reliable predictor for persistence.

CHAPTER SEVEN

FOCUS GROUPS

Introduction

The main purpose of this study was to explore whether dual enrollment programs provide a transition experience for high school students which helps them matriculate into higher education. The purpose of this chapter to examine the results from the focus groups. The nature of these findings is derived from four focus groups held in Fall, 2014.

Methodology: An Overview

The contribution of the focus group is "the explicit use of group interaction to produce data and insights that would be less accessible without the interaction found in a group (Flick 2009:203). The insight that was the subject of exploration was the extent to which dual enrollment programs assist students in transitioning to college life. That insight required an intensive interview with focus group participants to gather their interpretations of dual enrollment programs and how this may or may not have assisted them with their transition, and how they may have constructed a sense of college academic competence. While students were surveyed on their experiences with dual enrollment programs, these same surveys assume that these students know how they feel about dual enrollment programs at that time he or she completed the survey, which may not be accurate. Focus groups address this concern because they offer an opportunity for listening and the sharing of opinions, which deepens the participants' own

understanding of their experiences. Consequently, the goals of employing focus groups were to understand dual enrollment programs as it relates to the student's transition experience at a deeper level than what could be achieved by surveying students.

The four focus groups were held in the eleventh week of Fall, 2014. Students selected to participate in the focus groups were those who had completed dual enrollment courses while in high school. From this population, students were randomly selected, contacted, and asked to participate in the focus groups. A total of 36 students agreed to participate in one of the four focus groups. Membership in each focus group ranged from six to ten students. The group size was purposeful because the groups needed to be large enough to generate rich discussion, but not so large as to leave some participants left out. A total of 28 students ultimately participated in one of the four focus groups.

Focus Groups

Findings were discovered through an examination of the focus group verbatim transcripts. The methodology employed to examine qualitative data of this nature involved first and second cycle coding. Coding generally is an exploratory problem-solving technique designed to link data with ideas, and from those ideas, broader categories, themes, or concepts that assist in the building of theory (Saldana 2009:8). In this study, first cycle coding involved Hypothesis Coding, which assumes that predetermined codes, related to the general theory guiding the study, would be used to categorize specific comments from the focus groups that represented the student's experience with dual enrollment courses. These codes were: rigor, confidence, excitement, responsibility, transition effort, college level expectations, adjustment,

prepared, and self-discipline. The second cycle coding, or Focused Coding, synthesized the ideas that emerged from hypothesis coding into categories and themes. This meant that the investigator, based upon the general ideas that emerged from the first cycle coding, grouped ideas as they relate to a student's transition experience with dual enrollment programs into four broad themes. Those four categories are discussed here. Three of these categories were derived from the hypothesis coding, while the fourth, financial motivation, was an emergent category.

Ease of Institutional Transition

Some focus group participants reported that a sense of anxiety, or fear of the unknown, existed prior to enrolling in a dual enrollment course. While students principally enrolled in college level courses seek to earn college credit and learn, a secondary benefit emerged. Institutional socialization with taken-for-granted administrative and technology tools for college students were widely used by high school students enrolled in a dual enrollment course. For instance, students attending a school with Minnesota State (formerly known as Minnesota State Colleges and Universities (MNSCU)) reported that exposure to Desire2Learn (D2L), a web platform for delivery of online courses, was extremely helpful once matriculating into higher education.

Even more beneficial, focus group participants reported that they had access to their own individual Star ID, which is a username designed to access a number of information technology (IT) systems hosted by Minnesota State. Access of this nature included the process of registration for classes, navigating D2L, establishing the

respective student's university e-mail, and navigating the university website generally. One student reported that "it actually relieve[d] a lot the anxiety because since I was taking College Now classes, I already had the ID to get into the website, access to the database . . . and experience at looking at the website." Another student reported that "you got to know D2L before you came here [and] you got your e-mail already set up and you know how to work all [of it]." Another student, in relation to D2L and the student's first month of the student's freshman year, commented "[D2L] was the most helpful [because] I knew how to check D2L for assignments before I came in and I had friends that would miss their assignments and not see it. So just for like the first month . . . I felt a lot more comfortable. . . ." These comments taken as a whole strongly suggest that access to institutional technology and tools generally used by traditional college students, and provided to high school students who enrolled in dual enrollment courses, assisted the student in transitioning to higher education.

Academic Transition

In the initial coding, words like rigor, confidence, excitement, responsibility, transition effort, college level expectations, adjustment, accomplishment, and self-discipline were expected to emerge from the focus groups in relation to the student's experience with a dual enrollment class. These words in the context of the discussion did appear, but they were tempered against other indications that the class or the teacher did not meet the expectations that a college course should achieve. What follows is a discussion of both aspects of the student's experience in relation to academics, with a discussion of positive remarks about the experience first, followed by negative reactions,

and, then, a final discussion on the student's experience with dual enrollment as it relates to motivation is provided.

Focus group participants had a number of positive comments that indicated that the college course(s) they took in high school was challenging and gave them more self-discipline. One student remarked that taking a college course was a "wakeup call" and another that "the material was harder." Others commented that the college course motivated them to "actually take responsibility for [his or her] education and really try to get the most out of it . . . ." Focus group participants pointed to the impact of taking a college course on self-esteem and confidence. One student reported that "just taking some college level courses in high school gave me . . . higher self-esteem . . . ." Other students reported that it disciplined them to adjust to higher expectations. One student commented that "I had to get up earlier . . . and some of them were ITV [interactive television] classes and those are at 7 o'clock every morning." Another student commented that they had "a sense of pride" in finishing his or her college course, and similarly, a student commented that "[taking a college class] kind of made me feel better about myself, a little bit prouder of myself, that I did it while in high school."

Other participants revealed that in relation to high school study habits, that it made the student "realize . . . how much discipline college takes." In relation to pedagogy, students commented that the courses were taught differently than in high school and that they had to adjust their learning style. Focus group participants commented that the college course(s) showed the student "what to expect in a college course and to . . . prepare in advance to get [assignments] done." Similar comments like "held to a higher standard" and "I understood what was expected of me [with a] college

level class" were made. By subject, focus group participants commented that their writing, chemistry, and math courses were the most challenging. Other focus group participants generally indicated that they improved their skills with time management. Even textbooks entered the discussion in one focus group, where the students discussed the relative difference between a high school textbook and a college level textbook, with the latter being more difficult and challenging.

Finally, students commented on their experiences with their respective teacher in a college level course, with one commenting that his or her teacher "was professional [and she] had a PhD [and] that she expected me to do better than I think I could." Similarly, other students commented that their teachers communicated the expectations of taking a college course and how it would be different than a high school course. Teachers also provided the social support to students, guiding them through assignments in a more "hands-on" approach and encouraging students to do well.

A significant number of comments were generally very positive toward the experience of taking a college course in high school. Yet other negative patterns in relation to the experience of taking a college course emerged. Broadly, those experiences can be categorized into course parity and teacher competency. With the former, focus group participants commented that some high school teachers did not expect more out of the student academically. One student commented that while the material was harder, the "instructor didn't make the expectations higher." Another student, very honest about her experience, said that "my college classes were kind of easy." Finally, one student commented that the college course was challenging, but that was only because some of his or her teachers "didn't know what, like how to teach it."

In fact, in one of the classes, the "professor [had] to come three times to explain it to us because we didn't know how and the teacher didn't even know how." Generally, if negative reactions occurred with a student's experience with a dual enrollment course, it stemmed from a course variation with the college course offered. That is, some college courses were challenging while others were not. Specifically, with some classes, the students perceived no difference in rigor between the high school classes they were taking and the college course. In addition, some students reported that there was a lack of teacher emphasis and expectations toward the college course. In other words, the teacher's competency to teach the material in some cases was questionable.

Motivation of Getting Ahead

A significant motivator to participating in dual enrollment courses was a sense that the student could get ahead with college credits, or as one student commented, to "hit the ground running." That is, focus group participants perceived distinct advantages to accruing as many college credits as possible before matriculating into higher education. The perception was the student has a built-in advantage that positioned him or her to be successful. One student commented that it "was more of like a sense of relief going into college ahead of the game where some people are starting with zero credits and I'm starting with six credits already." Similar comments like "it's nice to get some credits done and generals done," and one student commented that "I came here with 24 credits [and] I feel more accomplished here now." The motivation to get ahead in college credits appeared in other contexts, with students responding that they would have taken more college courses if they could.

Students were motivated, but the motivation stemmed from the desire to take college credits in high school in order to get ahead, or hit the ground running, once the student matriculated into higher education. Patterned responses on this point were consistent throughout the four focus groups.

Financial Motivation

College is expensive, and this is certainly not lost on students. A consistent pattern of responses from the four focus groups is that financial considerations motivated students to enroll in college courses. Students on many occasions referred to college credits as "free credits," and that they "saved so much money." One student commented that he didn't have to "pay for that extra year of generals." In one focus group, a general consensus emerged that "free classes" were great and that they wanted more.

Clearly financial stresses on the student and student's family to manage the high cost of higher education motivated students to enroll in college courses. Students commented that their parents encouraged students to take college courses because the parents were paying for the student's college once they matriculated. The many responses on this point indicate the significant influence of financial considerations in enrolling in college courses while in high school.

Triangulation and Analysis

Methods triangulation is the act of combining several research methods to study one issue (Flick 2009:26). The one issue subject to exploration is whether dual

enrollment programs assist in the transition of students matriculating to higher education. Broadly, and for this study, a combination of qualitative and quantitative methods was employed, with the data from the focus groups used to determine whether select findings from the hypothesis-testing could be complemented or contradicted. This approach served as the basis for the following discussion on the hypothesis testing and how those results relate to the themes and concepts generated from the focus groups. The four themes, ease of institutional transition, academic transition, the motivation of getting ahead, and financial motivation, are relevant to the student's experience with dual enrollment programs, but only academic transition is directly relevant to the hypothesis testing found in Chapter 6.

Research Hypothesis 15 predicted that an association would exist between degree of participation in dual enrollment programs and academic integration. The Spearman rho found a statistically significant association ($r_s = .297$). This finding complements what was revealed in the focus groups. Participants who had experienced dual enrollment programs commented on the challenging nature of taking a college course while in high school. Participants also highlighted the increased expectations that they had in relation to the course and the teacher who was teaching the course. One of the variables considered in the Academic Integration index is "course learning" and students commented that the nature of learning and how they learned was different from a high school to college course. This suggests that students experienced some degree of socialization with college courses in relation to how they learn. In addition, students also commented that dual enrollment courses generally maintained a high level of rigor and challenge that would be expected of a college course. Although some students did

not receive the same level of experience as others, the weight of the qualitative data suggests that student's experience with dual enrollment classes influenced the degree of academic integration when in enrolled in the higher education institution.

Research Hypothesis 16 predicted that an association would exist between degree of participation in dual enrollment programs and social integration. The Spearman rho did not find a statistical relationship between the two variables. This result is not unexpected. The Social Integration index is measured by club and organization involvement, degree of involvement with intramural and college athletics, and the interaction students have in the residence halls. Yet, at the time the students took their dual enrollment course, almost all were not on a university campus which means they would not have had any social integration type of college experiences. What this means is that dual enrollment may influence the academic integration of the student, but its influence on the social integration measure is limited.

Research Hypothesis 21 predicts that academic integration, social integration, and the student's participation experience in dual enrollment programs will more likely result in persistence. A direct logistic regression was performed, and of the indices, academic integration was statistically significant with persistence, while degree of transition experience in dual enrollment programs was not. Confirming this result, **Research Hypothesis 22** only looked at academic integration and whether it would more likely result in persistence. The results of a direct logistic regression revealed that academic integration was statistically significant in predicting persistence. In combination with the results from **Research Hypothesis 15** finding an association between transition experiences in dual enrollment and academic integration, and

Research Hypothesis 21 and **Research Hypothesis 22** finding statistical significance with academic integration and persistence. The results suggest that transition experiences with dual enrollment programs has an indirect effect with persistence. That is, transition experiences with dual enrollment programs directly influence the degree of academic integration that occurs with the student, and then, academic integration may serve as a mediating variable that directly influences persistence.

Summary

The focus groups looked at students' descriptions of their transition experiences with dual enrollment courses. Student indicated that there was the rigor, challenging requirements, and a high level of expectation for college courses while in high school for most but not all of the students. As hypothesized, the bundle of expectations associated with dual enrollment courses suggests that these transition experiences influence the degree of incorporation into academic life of the institution. While dual enrollment experiences may have other beneficial effects, like adjusting to institutional change, gaining a number of college credits before matriculating, or reducing the cost of the student's education, for this study, the principal effect investigated is whether dual enrollment courses directly or indirectly influence persistence. In this case, the focus groups provide qualitative evidence that academic integration is more likely when students have experienced dual enrollment courses that are similar in rigor and challenge to college courses, and this, to a modest degree, ultimately influence persistence behavior.

CHAPTER EIGHT: CONCLUSION

Introduction

The main purpose of this study was to explore whether dual enrollment programs provide a transition experience for high school students which helps them matriculate into higher education. This chapter first provides an overview of the Research Model as it relates to hypothesis-testing based on the student surveys. Second, the focus shifts to a discussion of other findings, that is, data derived from four focus groups held in Fall, 2014. Finally, the chapter concludes with limitations of the study, practical implications from the study, and suggestions for future research.

The Research Model and Hypothesis-Testing

The Research Model used in the study is a modification of the Tinto Model. While most of Tinto's theoretical constructs were used, the focus of this study was the role of the additional component of dual enrollment programs in easing a student's transition matriculating into higher education. Transition experiences stemming from dual enrollment programs would occur prior to entry into higher education. In addition to hypotheses stemming from variables in Tinto's original model, the Research Model added hypotheses relating participation and transition experiences in dual enrollment programs to degree aspiration, institutional commitment, academic integration, social integration, and persistence behavior.

This section is organized around three areas: (1) Pre-entry Attributes, Goals and Commitments, and Persistence; (2) Pre-entry Attributes and Academic and Social Integration; (3) and Dual Enrollment as a Predictor. The first two areas are consistent

with the constructs found in the Tinto Model. The third area covers the additional construct of transition experiences as they relate to dual enrollment programs. The hypotheses that were subject to testing are grouped in these three areas and broadly discussed within the context of the literature that confirms or contradicts the results from this study. In this discussion, some research hypotheses are denoted with n=172 (the total sample population) while those dealing with the subset of dual enrollment students is shown as n=48 (the subset of the total sample population). This is done in order to reduce confusion between which population is used in tests of different hypotheses. Unless otherwise stated, it should be assumed that a hypothesis has a sample of 172.

Pre-entry Attributes, Goals and Commitments, and Persistence

For clarity, it should be noted that pre-entry attributes include parents' education, high school GPA, and ACT. Goals refers specifically to degree aspiration and commitments refer to institutional commitment. Additionally, the sub-sections here are organized by the independent variable.

While many studies have shown a relationship between parental education and higher education outcomes, the test of **Research Hypothesis 1** did not find a relationship between mother and father's education and degree aspiration. Nelson (2009) in her study, also found no statistically significant relationship between mother and father's education and degree aspiration (Nelson 2009:14). In terms of other dependent variables such as persistence and degree attainment, Pascarella and Terenzini (1980) found no statistically significant relationship between parent's education level and whether a student dropped out or persisted. The weight of recent research, however,

strongly suggests that the parent's education level and involvement is a predictor to the student's attainment of a two or four-year degree (Smoke 2013-2014:49; Cope and Hannah 1975; Spady 1970; Tinto 1975).

Likewise, **Research Hypothesis 2** did not find a relationship between mother and father's education and institutional commitment. Prior research has shown that mother's education is significantly related to higher levels of institutional commitment (Stage 1989:391). Nonetheless, this study did not find a statistical relationship between mother and father's education and institutional commitment.

The test of **Research Hypothesis 5** did not find a relationship between ACT score and degree aspiration, and likewise, the test of **Research Hypothesis 6** did not find a relationship between ACT score and institutional commitment. A number of studies have shown the ACT score to be a reliable predictor of persistence (Tracy and Robbins 2006; Pascarella, Duby, and Iversion 1983; Pascarella and Terenzini 1983; Munro 1981). Additionally, the Tinto Model postulates that degree aspiration and institutional commitment influence the academic and social integration of the student, which thereby influences persistence (Tinto 1993). Hence, it seemed reasonable to examine the impact of ACT on degree aspiration and institutional commitment. Still, the results from this study showed no statistically significant relationship between ACT score and degree aspiration and institutional commitment.

The test of **Research Hypothesis 9** did not find a relationship between high school GPA and degree aspiration, and likewise, the test of **Research Hypothesis 10** did not find a direct association between high school GPA and institutional commitment. Tinto hypothesized that pre-entry characteristics and individual attributes, like high

school GPA, would influence institutional commitment and degree aspiration, which would then influence the degree of academic and social integration (Tinto 1993). While research by Bean and Metzer (1985) concluded that high school GPA is among one of the strongest pre-enrollment predictors of persistence for students, **Research Hypothesis 9** did not find an association (Bean and Metzer 1985:497). In relation to institutional commitment and **Research Hypothesis 10**, one study focusing primarily at the indirect effects of organizational attributes did not find a statistical relationship between high school GPA and institutional commitment (Berger and Braxton 1998:112).

The logistic regression analysis for **Research Hypothesis 17** did not find mother and father's education level, high school GPA, and ACT score as reliable predictors of persistence. Taken as a whole, the research supports that the pre-entry individual attributes of mother and father's education level, high school GPA, and ACT score would influence directly or indirectly persistence (Tracy and Robbins 2006; Bean and Metzer 1985; Pascarella, Duby, and Iverson1983; Pascarella and Terenzini 1983; Munro 1981). This study did not find these pre-entry variables as reliable predictors of persistence.

Pre-entry Attributes and Academic and Social Integration

The test of **Research Hypothesis 3** did not find a relationship between mother and father's education and academic integration. Early research suggested that mother and father's education were expected to influence goal and institutional commitment, and this interplay between goal and institutional commitment would then lead to higher grade performance and intellectual development, which would then lead to academic

integration (Bean 1981:11; Stage 1989:393). Recent research by An (2015) has shown a modest association between parental education and first-year GPA, which in his study he used as a measure for academic integration (An 2015:115). This is consistent with Wolniak and Engberg's (2010) research, where they primarily examined the impact of the student's exposure to different high school contexts and academic performance in college, but found among other findings that an association existed between parental education and first-year GPA (Wolniak and Engberg 2010:460). This study tested the relationship between mother and father's education and academic integration, but found that these variables were not significantly related.

In contrast, **Research Hypothesis 4** did find a statistically significant association between mother and father's education and social integration. In part, a plausible explanation for this may be what mother and father's education seeks to measure. Mother and father's education is one measure of the socioeconomic status (SES) of the family unit. Other measures include encouragement and social support from family. One notable study found a direct positive effect between encouragement from friends and family and social integration (Cabrera, Nora and Castaneda 1993:133). Another study found that parent's higher educational levels and incomes are strongly related to involvement in college (Crissman-Ishler and Upcraft 2005:35). In relation to the function of institutional commitment as a mediating variable, one study found that initial institutional commitment did not influence social integration (Pascarella and Terenzini 1983: 221). What can be concluded from all of these studies is that mother and father's education may directly influence the degree of social integration, and institutional commitment only modestly influences academic integration.

The test of **Research Hypothesis 7** did not find a relationship between ACT score and academic integration, and likewise, the test of **Research Hypothesis 8** did not find a relationship between ACT score and social integration. This finding in a very general sense is contrary to other work that looks at the association between ACT scores and persistence. Tracy and Robbins (2006) found that a statistically significant relationship existed between ACT scores and persistence (Tracy and Robbins 2006). In more recent research by Stewart, Lim, and Kim (2015), they found a positive correlation, although weak, between ACT composite score and persistence (Stewart, Lim, and Kim 2015:16). With **Research Hypothesis 7**, and in relation to studying the effects of dual enrollment, one researcher found a positive influence between ACT scores and first-year GPA (An 2015:115). With **Research Hypothesis 8**, however, other research on the correlation between ACT score and social integration as it relates to first-generation college students did not find a statistical relationship (Woosley and Shepler 2009:707) Nevertheless, taken together, the research would strongly suggest a positive correlation would exist between ACT score and academic and social integration though this study did not find that to be the case.

The test of **Research Hypothesis 11** did not find a relationship between high school GPA and academic integration, and likewise, the test of **Research Hypothesis 12** did not find a statistical relationship between high school GPA and social integration. GPA was thought to be important in a general sense for university student outcomes based on a number of studies which have shown that high school GPA has a strong positive effect on persistence (Caison 2007:441). Bean and Metzer (1985) in their review of high school academic performance, noted that “high school grade average and

high school rank are stronger predictors of persistence than scores on tests of academic ability" (Bean and Metzer 1985:496). Porter (1999) in his research found that a change in high school grade point average from 3.0 to 34.0 would reduce stopping out by 8% (Porter 1999:9). For **Research Hypothesis 11**, research suggests that student's high school GPA and standardized test scores were the most reliable predictors of a student's college GPA (Stewart, Lim, and Kim 2015:13). In this study, first-semester GPA is one of a number of measure/indicators in the academic integration index. Still, the results showed no direct association between high school GPA and social integration. In terms of **Research Hypothesis 12** and high school GPA and social integration, one study found a statistically significant association between high school GPA and social integration (Berger and Braxton 1998:114). In a subsequent study, in the context of studying active learning and its relation to student departure, the authors found a statistically significant relationship between high school GPA and social integration (Braxton, Milem, and Sullivan 2000:579).

Dual Enrollment as a Predictor

Participation in dual enrollment for purposes of this study is whether the student had taken a dual enrollment course (yes or no). It has been hypothesized in this study that dual enrollment programs serve as a transition bridge for student's matriculating into higher education. The Research Model anticipates that direct or indirect effects may occur with degree of participation and transition experiences in dual enrollment programs in conjunction with goal and institutional commitment, academic and social integration, and persistence.

Research in this area is growing. One study found that fully enrolled students who had been previously dual enrolled had higher grade-point averages in the first year of college and were more likely to persist to the second year (Karp *et al*. 2007). Swanson (2008) found that dual enrollment participation positively impacted student persistence through the end of the second year of college (Swanson 2008:361). Other researchers have suggested that a closer examination of the impact of dual enrollment programs are needed (D'Amico *et al*. 2013:777). The following research hypotheses tested the relationship between dual enrollment programs and other variables, including persistence.

There are three measures of dual enrollment. Participation in dual enrollment for purposes of this study is whether the student had taken a dual enrollment course (yes or no). There was also a measure of the total number of dual enrollment courses taken. Finally, there is the Dual Enrollment Index (Appendix D). The index was used in Hypotheses 13, 14, 15, 16, 19 and 21. Hypothesis 18 and 20 used enrollment in a dual enrollment course (yes or no). Hypothesis 19 used both the number of dual enrollment courses and the index.

The test of **Research Hypothesis 13** did not find a relationship between the degree of transition experiences (measured by the Dual Enrollment Index) with dual enrollment programs and degree aspiration, and likewise, the test of **Research Hypothesis 14** did not find a relationship between the degree of transition experiences with dual enrollment programs and institutional commitment. While studies on dual enrollment are quickly emerging, the researcher could not locate studies that looked at

the precise question of whether dual enrollment is associated, directly or indirectly, with degree aspiration and institutional commitment.

The test of **Research Hypothesis 15** did find a relationship between the degree of transition experiences with dual enrollment programs and academic integration (n=48). Research supports this finding. An (2012) suggests that students who participated in dual enrollment are more successful academically in college than those who did not participate in these programs (An 2012:411). Additional researchers studying the influence of dual enrollment programs on matriculating students found that participation in dual enrollment is positively related to college GPA, persistence, and degree attainment (Karp *et al*. 2007; Swanson 2008). An (2012) found that dual enrollees earned a first-year GPA .11 points higher than non-dual enrollees (An 2012:417). More broadly, one study concluded that completing dual enrollment courses enhanced persistence once entering college (D'Amico *et al*. 2013:777).

The test of **Research Hypothesis 16** did not find a relationship between the degree of transition experiences with dual enrollment programs and social integration (n=48). Similarly, **Research Hypothesis 18**, did not find statistical evidence to suggest that students who had participated in a dual enrollment course would be more likely to persist with the institution beyond the first year (n=172). Participation in dual enrollment for this research hypothesis is whether the student had taken a dual enrollment course (yes or no). Likewise, the test of **Research Hypothesis 19** did not find a relationship between the number of dual enrollment courses the student completed and the Dual Enrollment Index (degree of transition experiences in dual enrollment programs) with persistence (n=48). Research by Karp *et al*. (2007) suggests that dual enrolled students

who later matriculated had higher grade-point averages in the first year of college and were more likely to persist to the second year (Karp *et al*. 2007). Likewise, Swanson (2008) found that dual enrollment participation positively impacted student persistence through the end of the second year of college (Swanson 2008:361). Other research is mixed. In one study, Cowan and Goldhaber (2015) concluded that "there is relatively little evidence on the effects of dual enrollment programs on college attendance or completion" (Cowan and Goldhaber 2015:429). This study did not find evidence that, in relation to the overall sample and subsample, that participation in dual enrollment programs, the degree of transition experiences in dual enrollment courses, or the number of dual enrollment courses completed, would influence social integration or the likelihood of persistence.

The test of **Research Hypothesis 20** did not find participation (yes or no) with dual enrollment programs and academic integration to be a predictor of persistence, but did find social integration to be a predictor of persistence (n=172). With dual enrollment, previous research has shown that participation in dual enrollment programs will more likely result in increased persistence (Karp *et al*. 2007). Davidson *et al.* (2009) found that academic integration made a statistically significant contribution to persistence (Davidson *et al.* 2009:382). With dual enrollment and academic integration from this sample (n=172), this study did not find them as a strong predictors of persistence behavior. However, this study did find social integration to offer a modest contribution to persistence. The research generally supports that social integration is a predictor of persistence, but one study, Munro (1981), found that while academic

integration was a significant predictor for persistence, social integration was not (Munro 1981).

The test of **Research Hypothesis 21** did not find degree of transition experiences (measured by the Dual Enrollment Index) with dual enrollment programs and social integration to be predictors of persistence, but did find academic integration to be a predictor of persistence (n=48). Studies show consistently that students living on campus, a measure for social integration, are more likely to persist (Pascarella & Terenzini 2005:421; Tinto 2012:65).

In another study, Thomas assessed the effect of structural integration on commitments, intentions, and persistence (Thomas 2000:592-593). Thomas' work is exploratory, and looked at social integration from a social network perspective (Thomas 2000:592). Among other findings, he found that student acquaintances and their structural location, a measure of social integration, produced important vital outcomes, such as satisfaction, grade performance, and persistence (Thomas 2000:609). What this means is that social integration, as studied by Thomas (2000) from a social network perspective, influences persistence.

Irrespective of degree of transition experiences with dual enrollment programs and social integration, the logistic regression test did find that academic integration was the only statistically significant predictor of persistence among the three predictors for this subset (n = 48) of the overall sample. Even though statistically significant, the odds ratio (e^{β}) of 1.270 shows little likelihood of change in persistence based upon a one-unit change in academic integration. This result was confirmed with **Research Hypothesis 22,** which found statistical significance with higher levels of academic integration and

persistence. Additionally, **Research Hypothesis 15**, which used the subset of the overall sample (n=48) did find a relationship between the degree of transition experiences (measured by the Dual Enrollment Index) with dual enrollment programs and academic integration (n=48). The inference to be drawn from the results of these two hypotheses is that the degree of transition experience with dual enrollment programs influences academic integration, and, academic integration does, in relation to this subset of the overall sample, contribute to a modest degree the likelihood that a student will persist. That is, academic integration may serve as a mediating variable that directly effects persistence, and experiences with dual enrollment programs directly influence the degree of academic integration that occurs with the student. The findings in the focus groups appear to confirm this result.

Other Findings

This study found other major findings in the course of conducting the four focus groups in Fall, 2014. Students reported that they had an easier time transitioning to the institution as a result of participating in dual enrollment courses because they had access and were expected to use various technologies used by the college or university. For instance, students reported that exposure and use of Desire2Learn (D2L), a web platform for delivery of online courses, was extremely helpful once matriculating into higher education. In addition, acquiring the university e-mail account, access codes, and the experience of registering for college courses were all extremely helpful in transitioning to the institution.

Students reported that one motivation to participate in dual enrollment programs stemmed from a financial savings that would accrue to them and their family. That is, students characterized dual enrollment courses as “free credits” or “free classes” and participation in them would ultimately reduce the cost of their education. Students further reported that their parents encouraged participation in dual enrollment courses as a way to reduce college costs.

Another rationale for dual enrollment was simply the desire to get a head start on college. Students reported that acquiring college credits while in high school gave them a sense of moving their education along before they matriculated. Students commented that they could “hit the ground running” once they matriculated. This gave them a sense of comfort that they were already ahead in relation to how many college credits they had earned.

One of the important findings from the focus groups is the range of experiences in dual enrollment courses. Students reported varying experiences with dual enrollment. While most students in the focus groups reported that the dual enrollment course(s) they took had met their expectations for a college level course in relation to rigor, self-discipline, and overall challenge, other students reported that their particular dual enrollment course was too easy or that the teacher was not competent in the subject matter.

This finding reinforces calls for more detailed research on the structure and nature of dual enrollment courses. Instructor quality and the extent to which the student achieves an authentic college experience in terms of the rigor of the course and degree of challenge above what is found in high school courses have been continuing concerns

raised by researchers and policymakers. All of these issues raise questions about what these courses represent as transfer credits (Higher Learning Commission 2013:viii; Andrews 2010:10). Taken together, this suggests that one's experience in dual enrollment courses depends on the extent to whether the course meets the expectations for a college level course. In the context of this study, it is obvious that a student would anticipate academic life in post-secondary education if the dual enrollment course experience does not meet the expectations of a college course. This variation in the nature of dual enrollment courses are likely to have impacted the results in the hypothesis testing as it relates to dual enrollment as a predictor for academic integration, social integration, and persistence.

Theoretical Implications

The research on dual enrollment programs is quickly emerging. The growth in the literature stems from the expansion and popularity of dual enrollment programs nationwide. This study was one of the first to modify the Tinto Model and take into account the transition experiences that may result from participating in dual enrollment programs. While recent studies have theorized that dual enrollment programs may create the type of "anticipatory socialization" that will assist students in matriculation and eventual persistence with the institution of choice (Karp *et al*. 2007; Swanson 2008; An 2012; D'Amico *et al*. 2013), no previous study has sought to operationalize dual enrollment programs as it relates to anticipatory socialization and the function it may serve to transition high school students into post-secondary education. This means that one theoretical contribution of this study is the addition of the role of anticipatory

socialization to the Tinto model in a more explicit way. In other words, this would expand the understanding of one causal mechanism, that is, anticipatory socialization, underlying the link between pre-entry characteristics and academic integration and persistence. This also allows theorists to distinguish among the various pre-entry characteristics, since a few of them, such as parental education, are not directly related to anticipatory socialization but are more connected to social and cultural capital or to economic resources.

According to this study, dual enrollment does influence academic integration, but the degree of influence is modest. Likewise, academic integration influences persistence, but this study showed no direct effect between dual enrollment and persistence. With that said, and as mentioned earlier, the statistical significance may have been influenced by the disparate nature of the dual enrollment course(s) completed. That is, dual enrollment courses that did not meet the expectations of a college level course and are treated as a high school course could hardly influence academic and social integration and persistence behavior within the context of the Tinto Model. As dual enrollment standards are enforced by accrediting governing bodies to ensure parity with college courses offered in the high school, the theoretical importance of dual enrollment programs as it relates to the Tinto Model may become clearer as research expands in this area. If dual enrollment programs do result in positive results, it would be important to know what aspects of dual enrollment programs produce these results and why these aspects have this outcome.

Limitations of the Study

There are a number of limitations to this study which limits its generalizability. The design used for this study is a single-case design, which is used to probe deeper into some phenomenon of interest (Yin 2014:51). Even though this case study secured 37% of the matriculating freshman population, the results may not be generalizable to other institutions. For instance, the locus of the case study is a small Midwestern public liberal arts university. In terms of university size, scale, mission, and the selectivity of a particular university, the findings from this research may not be generalizable to other institutions. In addition, the sample population was not selected randomly, but out of convenience. That is, the investigator gained access to all but three of the First-Year Seminars in the fall semester, 2014, and those students who were willing to participate in the study completed the survey. Not all freshmen were in attendance on any particular day, not all freshmen consented to be part of the study, and not all freshmen enrolled in a First-Year Seminar class in the Fall, 2014. In addition, of the initial population (n=225), 53 students either transferred at the conclusion of the fall semester or declined to participate in the study further. This resulted in a new study population (n=172) that provided the basis for hypothesis testing.

A second limitation is related to the length of the surveys and perhaps a lack of motivation in particular for students to fill out the second online survey. This means that in some cases students may not have taken care in recording their assessment about dual enrollment programs and their academic and social life. Lack of attentiveness and caring about completing the survey accurately may have diminished the degree of introspection needed to obtain accurate measures. With some, it was apparent that they

had hastily completed the survey, which is evidenced by the fact that 11 surveys were spoiled because they were incomplete or the responses non-legible, which made any data unusable for purposes of the study. In the second survey, a substantial degree of effort was employed by the investigator to encourage students to complete the survey. A solution to mitigate these data collection issues would be to work with the SMSU Office of Student Success in order to secure a time when all incoming freshman students could take the survey during the first week of orientation. Second, to reduce the number of questions in the survey, the researcher could further rely on university's Data Management and Institutional Research Office to retrieve hard data relevant to the study. In combination, this would permit more time to cover the scope of the study, create buy-in, decrease fatigue and inattentiveness with the survey, and attain results that are free from the compressed time environment of the First-Year Seminar course where the data was originally collected.

A third limitation is the size of the dual enrollment population derived from the overall sample. While this population (n=48) yielded significant information as it relates to dual enrollment, the power of any prediction would have been increased if this sample were increased. Larger dual enrollment populations may yield increased information on the difference between those students *who did* and those students who *did not* complete dual enrollment courses in high school as it relates to persistence. A comparison of the groups may yield greater insight into the influence of dual enrollment programs in persistence.

Future Research

This study employed a modification of the Tinto Model, complementing it with dual enrollment and its role in influencing the transition of students into post-secondary education. Future research is predicated on the Tinto Model and its continued refinement. Future studies should identify methods to creatively sample the student population in order to increase the size of the population, and sample a diverse range of universities in relation to size, mission, and scale. By doing so, research may reveal the total influence that dual enrollment programs may contribute in relation to institutional and goal commitment, academic and social integration, and persistence. In addition, further research can explore how the ease of institutional transition, the motivation of gaining college credits while in high school, and the financial savings realized from completing dual enrollment courses may contribute or influence degree aspiration and institutional commitment, academic and social integration, and persistence.

In addition, while studies on dual enrollment are quickly emerging, the researcher could not locate studies that looked at the precise question of whether dual enrollment is associated, directly or indirectly, with degree aspiration and institutional commitment. This research area could be further explored to add to the body of knowledge in this research area. In addition, further research could be directed at the differences between men and women in relation to persistence. This study revealed that more women persisted then men by frequency and by percentage. Additional research is suggested to assess whether gender influences persistence.

Another area that deserves research attention is the refinement of measures for a student's transition experience. In relation to the Tinto Model, many of the measures

and constructs in the Model have been tested, reformulated, and retested to ensure their reliability and validity (Davidson *et al*. 2009). On the other hand, dual enrollment and how it may assist in the transition of matriculating students has been minimally examined relative to the Tinto Model. Consequently, qualitative methods should be employed to identify more precise measures that are indicators of transitions experiences. More precise measures will enhance the overall quality of future research in this area.

This study looked at students who enrolled in college courses while in high school. This study did not look at whether the student took courses in the high school or on the residential campus. In terms of the latter, only three students took a class on the campus, which deterred any form of investigation as to whether a dual enrollment experience on the campus versus in the high school better transitioned students to academic life. Future research, with an appropriate sample size, should examine whether the two groups (those who took courses in the high school or on the college campus) are more likely to aspire to a degree, commit to the institution, maintain increased levels of academic and social integration, and persist with the university. In addition, future research could also look at the scale, size and mission of the university, or the institutional context, to further understand the influence of the institution on persistence.

Another theoretical perspective that may further explain persistence behavior is the nature of social capital between roommates and how that influences persistence. Coleman (1988) investigated the concept of social capital in its usefulness in understanding high school dropout rates (Coleman 1988). A study that examines social

capital in this way may look at the creation of social capital between roommates and how it influences academic and social integration and persistence.

A final recommendation is to encourage policy-makers at the post-secondary system level to incorporate data collection methods that capture the transition experiences from students as it relates to dual enrollment, including perhaps in-depth interviews with students, both during and after the dual enrollment experience. While some descriptive data is available, qualitative data is not readily available. Collection of data of this kind will assist in informing policymakers on the efficacy of such programs and their utility in advancing the K-16 education agenda.

Practical Implications

Dual enrollment is a popular area of educational policy that continues to gain momentum. Future research should continue to examine the efficacy of such programs as they relate to academic performance and persistence. The emergence of dual enrollment programs in the 1970s and 1980s were designed primarily to keep talented students challenged, but also to provide a smooth transition from high school to college, provide vocational preparedness, and provide a stronger pathway toward a college degree (Klopfenstein and Lively 2012; Kleiner and Lewis 2005; Bailey and Karp 2003, Adelman 2006). While the original goals of dual enrollment are relevant today, what has changed is its dramatic expansion.

A significant body of research has demonstrated that dual enrolled students who later matriculated to post-secondary education are more likely to persist to the second year (Karp *et al*. 2007; Swanson 2008; An 2012; D'Amico *et al*. 2013). Nevertheless, as

the momentum for these programs grow, concerns increase as to the rigor and efficacy of such programs as they relate to instructor quality, the prospect of achieving an authentic college experience, and the transfer of credits (Higher Learning Commission 2013:viii; Andrews 2010:10).

In addition, the revenue loss to postsecondary institutions because of the reduced tuition structure charged to the high schools for college courses is also a matter of concern that requires the attention of university leaders and policymakers (Kinnick 2012:40). To address these concerns, accrediting bodies like HLC and NACEP should ensure that high school teachers meet the same standards that are required by all instructors teaching college level courses. Recently, HLC published new guidelines that instructors of college courses must, at a minimum, hold a master's degree or higher in a discipline in which they are teaching, or if a faculty member holds a master's degree or higher in a discipline or subfield *other* than in which he or she teaching, that the faculty members should have completed a minimum of 18 graduate credit hours in the discipline or subfield in which they teach (HLC 2016:3). In relation to the 18-credit hour standard, the compliance of concurrent enrollment teachers has been lacking, with Minnesota State (formerly MNSCU) reporting that 76% of concurrent enrollment instructors do not meet the minimum HLC standards for faculty qualifications (Minnesota State 2016).

An examination of the tuition structure charged to high school district also requires further examination. In a time of constrained resources, higher education institutions require reliable funding streams to ensure that the quality of education on the residential campus is not diminished or impaired because of resource allocations to

programs like dual enrollment. While dual enrollment programs serve to reduce college costs for some families whose children participate, the impact is that the residential campus may realize reduced overall funding which is needed to provide quality programs for its traditional and nontraditional student populations.

Conclusion

This study examined dual enrollment programs and the transition experience they provide using components of the Tinto Model (1993) of Student Departure. The Research Model proposed in this study served two purposes. One purpose was to investigate the extent to which dual enrollment programs influence degree aspiration, institutional commitment, academic and social integration, and persistence. The findings of this study suggest that the degree of transition experiences in dual enrollment programs influence academic integration, and studies show that academic integration influences persistence. The second purpose was to explore the underlying processes that may contribute to dual enrollment programs' role in serving as a transition bridge for matriculating students. Data from the focus groups suggest that dual enrollment may assist in that transition, but the direct or indirect effects on persistence requires additional research and study.

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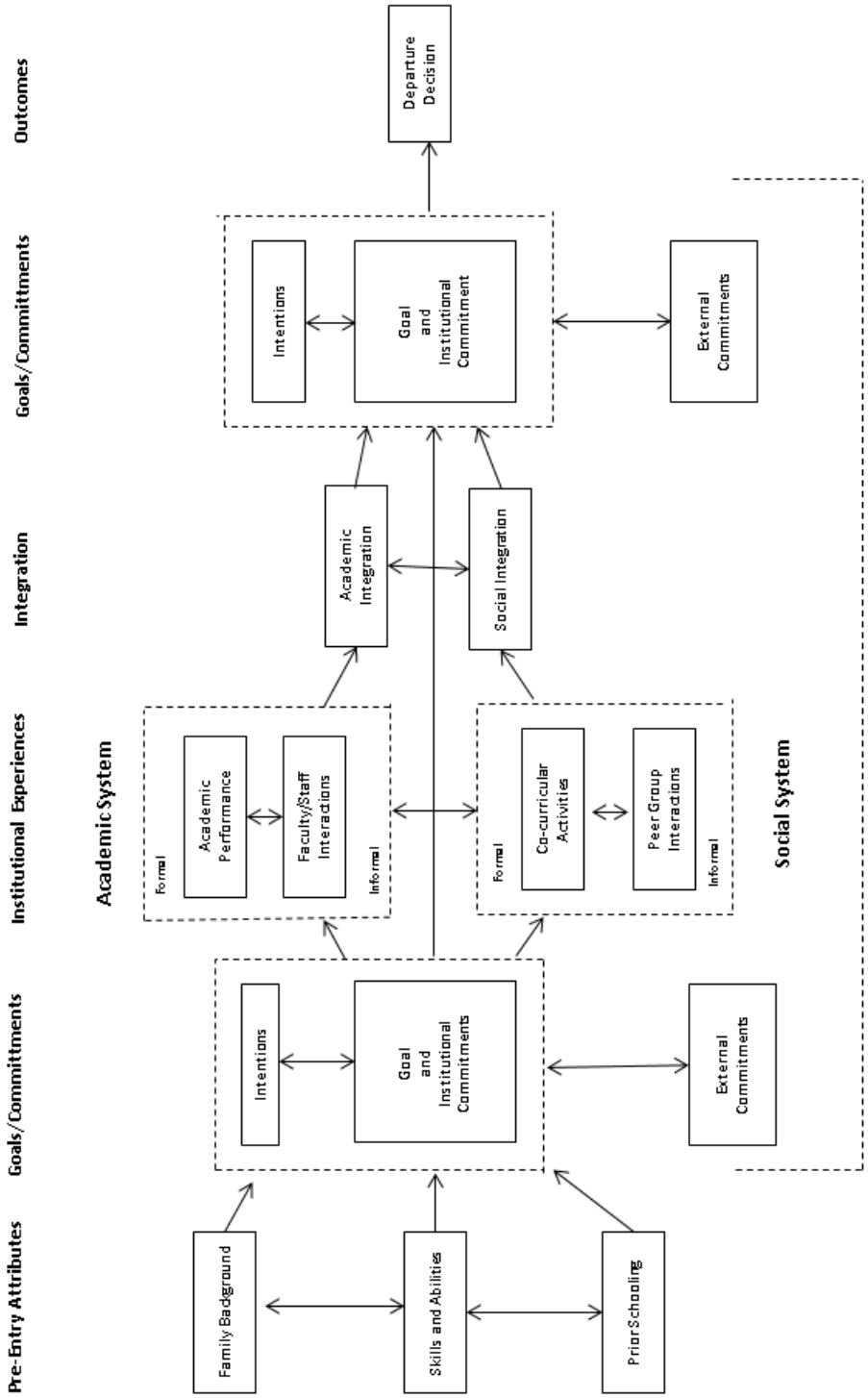
Appendix A

The Tinto Model



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Appendix B: Persistence Surveys

Survey Instrument (First Year Seminar)

FIRST-YEAR FRESHMAN PERSISTENCE SURVEY QUESTIONAIRE

The purpose of this survey is to determine the extent to which dual enrollment programs impact first-year freshman persistence beyond the first year of college. All responses to this survey will be considered anonymous; survey responses will not be linked to a particular respondent. This is a voluntary survey and you do not have to participate. There is no penalty if you choose not to participate.

In four weeks, you may be asked to participate in a focus group. Please consider this opportunity if it arises. Finally, in the spring semester, you will be asked to take another online survey, of approximate length, to this questionnaire. This is also voluntary. Thank you in advance for completing that survey, and your thoughtful participation in this survey today.

Name_____ SMSU Tech ID No._____

Address _____

City, State, Zip _____

Residence Hall or Apartment _____ Phone No. _____

Sex (circle) Female Male Date of Birth_____

Part I: Background

For Parent's Education, please circle the **highest** year of school completed:

#	Question	High School or less	2-year college degree (associates)	4-year college degree	Master's Degree	Doctoral Degree (Ph.D, J.D. M.D.)
1	The highest degree that my mother achieved is	1	2	3	4	5
2	The highest degree that my father achieved is	1	2	3	4	5

3. Please indicate your high school grade point average (GPA) _____

4. Have you have taken college classes (dual enrollment) while in high school (circle) Yes No

If No, skip Part II and begin with Part III.

5. If Yes, how many college courses have you taken while in high school (circle the appropriate number):

1 2 3 4 5 6 7 8 9 10 11 12+

6. How many of these courses were from SMSU, if any (circle the appropriate number)

0 1 2 3 4 5 6 7 8 9 10 11+

7. If you took courses from SMSU, were they offered on the campus or off the campus (circle the appropriate response):

on-campus off-campus I did not take classes from SMSU

Part II: Dual Enrollment

This section involves your impressions with taking college courses while in high school. Please rate your level of agreement with the following statement by circling the appropriate number. If you did not take college courses in high school, skip this part and continue to Part III.

#	Question	Strongly Disagree	Dis-agree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree
8	I found college courses to be challenging.	1	2	3	4	5	6
9	I felt that taking college courses in high school increased my sense of responsibility.	1	2	3	4	5	6
10	Taking college courses did not increase my confidence that I would do well in college.	1	2	3	4	5	6
11	Taking college courses in high school made it easier for me to transition to college.	1	2	3	4	5	6
12	I put forward a lot of effort in my college courses.	1	2	3	4	5	6
13	I felt like I was reaching college level expectations when I was in high school.	1	2	3	4	5	6

14	Taking college courses in high school made me excited to go to college.	1	2	3	4	5	6
15	Taking college course in high school did not help me adjust to college level work.	1	2	3	4	5	6
16	Taking college courses made me feel more like an adult in college.	1	2	3	4	5	6
17	Taking college courses made me feel more prepared for college life.	1	2	3	4	5	6
18	I felt intellectually stimulated taking college level courses in high school.	1	2	3	4	5	6
19	My fear of going to college decreased after I took a college course.	1	2	3	4	5	6
20	Taking college courses helped me develop more as a person.	1	2	3	4	5	6
21	Taking college courses did not help me become more self-disciplined.	1	2	3	4	5	6

Part III: Goals/Commitments

A. This section deals with your academic goals toward achieving a degree and your commitment to achieving that degree at SMSU. Please indicate the highest degree you seek to achieve.

#	Question (Degree Aspiration)	None	2-year college degree (associates)	4-year college degree	Master's Degree	Doctoral Degree (Ph.D, J.D. M.D.)
22	The highest degree that I plan to pursue is	1	2	3	4	5

B. Please rate your level agreement with the following statement:

#	Question (Degree & Institutional Commitment)	Strongly Disagree	Dis-agree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree
23	At this point in time, I am committed to earning a college degree here or elsewhere.	1	2	3	4	5	6
24	My friends and family would be disappointed if I quit school.	1	2	3	4	5	6
25	My family is supportive of my pursuit of a college degree, in terms of encouragement and expectations.	1	2	3	4	5	6
26	Of all the things I could do at this point in my life, going to college is definitely the most satisfying.	1	2	3	4	5	6

27	I have serious misgivings about my decision to come to college.	1	2	3	4	5	6
28	I am strongly dedicated to finishing college no matter what obstacles are before me.	1	2	3	4	5	6
29	I often wonder if a college education is really worth all the time, money, and effort that I'm being asked to commit.	1	2	3	4	5	6
30	I am confident that my decision to go to college was the right decision for me.	1	2	3	4	5	6
31	I would leave college if I found a well-paying job.	1	2	3	4	5	6
32	I can think of many things I would rather do than go to college.	1	2	3	4	5	6
33	I have no desire to transfer to another school sometime before finishing a degree here.	1	2	3	4	5	6
34	I plan to transfer to another school sometime before completing a degree here.	1	2	3	4	5	6
35	I am very loyal to this university.	1	2	3	4	5	6
36	Helping me complete college is a financial hardship for my parents.	1	2	3	4	5	6

37	My family no issues helping me pay for college.	1	2	3	4	5	6

Part IV: Comments

If you completed Part II on dual enrollment, please share any comments about college courses that you took in high school and how they may or may not have helped you transition to college life.

_____
_____
_____
_____
_____
_____
_____
_____
_____

Thank you very much for completing this survey! By completing the survey, you are entitled to a copy of the results.

☐ Check here if you wish to have a copy of the summarized survey results sent to you.

Address inquiries about the survey to:

Prof. Douglas L. Simon
Department of Political Science, CH 107A
Southwest Minnesota State University
Marshall, MN 56258
Phone: 507-537-6421
E-mail: douglas.simon@smsu.edu

FIRST-YEAR FRESHMAN PERSISTENCE SURVEY QUESTIONAIRE
SECOND SURVEY (ONLINE)

The purpose of this survey is to determine the extent to which you have become academically and socially integrated into the university environment. All responses to this survey will be considered anonymous; survey responses will not be linked to a particular respondent.

Name_____ SMSU Tech ID No._____

Address _____

City, State, Zip _____

Resident Hall or Apartment_____ Phone No. _____

Sex (circle) Female Male Date of Birth _____

Part I: Academic Integration

This section involves your impressions about how well you have integrated with the academic environment. There are two sections: one which asks for your fall semester GPA, and the second, a questionnaire designed to assess your impressions about the extent you are connected with the academic environment.

1. Indicate your college grade point average (GPA) after the fall semester_____.

Please rate your level of agreement with the following statement:

#	**Question (Course Learning, Faculty Interaction, Library Use)**	**Strongly Disagree**	**Dis-agree**	**Neutral**	**Agree**	**Strongly Agree**
2	I am satisfied with the extent of my intellectual growth and interest in ideas since coming here.	1	2	3	4	5
6	I made outlines from class notes or readings	1	2	3	4	5

7	I did additional readings on topics that were introduced and discussed in class.	1	2	3	4	5
8	On average across all of my courses, I am interested in the things that are being said during class discussions.	1	2	3	4	5
9	I see a connection with what I am learning and my future career possibilities.	1	2	3	4	5
10	I take detailed notes in class.	1	2	3	4	5
11	I participate in class discussions.	1	2	3	4	5
12	I worked on a paper or project where I had to integrate ideas from various sources.	1	2	3	4	5
13	I routinely talk with my instructors.	1	2	3	4	5
14	I will ask my instructor for information related to a course (grades, make-up work, and assignments).	1	2	3	4	5
15	My instructor is concerned about my intellectual growth.	1	2	3	4	5
16	I am very satisfied with the quality of instruction.	1	2	3	4	5
17	I visit informally and briefly with my instructor after class.	1	2	3	4	5
18	I feel comfortable talking with an instructor about career plans and ambitions.	1	2	3	4	5

19	I have asked my instructor for comments and criticisms about my work.	1	2	3	4	5
20	I have discussed personal problems or concerns with my instructor.	1	2	3	4	5
21	I am satisfied with the academic advising that I have received.	1	2	3	4	5
22	I have discussed ideas for a paper or other class with project with my instructor or another instructor.	1	2	3	4	5
23	I like to use the library as a quiet place to read or study materials.	1	2	3	4	5
24	I use the library search tools to find materials that I need for class.	1	2	3	4	5
25	I have asked a librarian for help in finding material on some topic.	1	2	3	4	5
26	I frequent the library regularly to research topics for my classes.	1	2	3	4	5

Part II: Social Integration

A. This section involves the extent to which you have become socially integrated into the university community. Please rate your level agreement with the following statement:

#	Question (Clubs, Athletics, Arts, Acquaintances)	Strongly Disagree	Dis-agree	Neutral	Agree	Strongly Agree
27	I have attended a program or event put on by a student group.	1	2	3	4	5
28	I am very involved in a student club or organization on the campus.	1	2	3	4	5
29	I have read or asked about a club, organization, or student government activity.	1	2	3	4	5
30	I like being involved in a student club or organization.	1	2	3	4	5
31	I use outdoor recreational spaces for casual and informal group sports.	1	2	3	4	5
32	I have played on an intramural team.	1	2	3	4	5
33	I like to attend college athletic events.	1	2	3	4	5
34	I have used facilities in the gym for individual activities (for example, exercise and swimming).	1	2	3	4	5
35	I have used the recreational facilities in the gym for playing sports that require more than one person.	1	2	3	4	5

36	My interpersonal relationships with other students had an impact of my personal growth, my attitudes, and my values.	1	2	3	4	5
37	I have a strong sense of connectedness with other students.	1	2	3	4	5
38	I like to wear clothing that bears the university emblem or mascot.	1	2	3	4	5
39	I have a lot in common with other students.	1	2	3	4	5
40	When I think of my overall social life here with friendships, college organizations, co-curricular activities, I feel very satisfied.	1	2	3	4	5
41	I have a very positive impression with students here.	1	2	3	4	5
42	I have made a lot of friends while here at this school.	1	2	3	4	5
43	If I had a problem, I felt very comfortable talking about it with friends that I made here.	1	2	3	4	5
44	More of my friends are here on the campus than at my work or hometown.	1	2	3	4	5

If you live in the residence halls, proceed and answer questions 45 and 46. If you do not live in the residence halls, proceed to Part III: Comments.

#	**Question (Clubs, Athletics, Arts, Acquaintances)**	**Strongly Disagree**	**Dis-agree**	**Neutral**	**Agree**	**Strongly Agree**
45	I have made a lot of friends in the residence halls	1	2	3	4	5

46	I enjoy the social life in the residence halls	1	2	3	4	5

Part III: Comments

Please share any comments about your connectedness with faculty, students, staff, and the overall university community.

Thank you very much for completing this survey! By completing the survey, you are entitled to a copy of the results.

☐ Check here if you wish to have a copy of the summarized survey results sent to you.

Address inquiries about the survey to:

Prof. Douglas L. Simon
Department of Political Science, CH 107A
Southwest Minnesota State University
Marshall, MN 56258
Phone: 507-537-6421
E-mail: douglas.simon@smsu.edu

Appendix C

Focus Group Guide Questions

The focus group is designed to explore the extent to which dual enrollment programs assisted high school students transition to college academic life. The following are questions that were explored with the focus groups:

1. How did taking college level courses in high school help you transition to college?

2. While in high school, did you think that college courses were harder than high school courses? If so, why?

3. Did you feel that your high school teacher expected more out of you academically when you took a college course?

4. Now that you are in college, do you feel like the college course that you took in high school is comparable in rigor to the courses you are taking today?

5. Describe if you can whether you think taking classes in high school motivated you to continue on to college and see your degree?

6. Tell me whether taking college courses in high school made you feel more self-disciplined?

7. Did your anxiety of going to college decrease after you took a college level course in high school?

8. Did you have a sense of accomplishment once you completed a college level course while in high school?

9. What was the greatest benefit of taking a college level course in high school?

10. Are there any final comments that one would like to add about their experiences with dual enrollment programs and your transition experience?

Appendix D

Dissertation Indices

Table: Index Values for Dual Enrollment (DE)--Cronbach Alpha: .850

Variable Code	Specific Question	Reverse Code?	Range X	Weight =	Values
*DE8Challenging	I found college courses to be challenging		1-6		1-6
DE9Responsbility	I felt that taking college courses in high school increased my sense of responsibility		1-6		1-6
*DE10Confidence	Taking college courses did not increase my confidence that I would do well in college	YES	1-6		1-6
DE11Transition	Taking college courses in high school made it easier for me to transition to college		1-6		1-6
DE12Effort	I put forward a lot of effort in my college courses		1-6		1-6
DE13Expect	I felt like I was reaching college level expectations when I was in high school		1-6		1-6
DE14Excited	Taking college courses in high school made me excited to go to college		1-6		1-6

Variable Code	Specific Question	Reverse Code?	Range X	Weight =	Values
DE15Adjust	Taking college courses did not help me adjust to college level work	YES	1-6		1-6
DE16Adult	Taking college courses made me feel more like an adult in college		1-6		1-6
DE17Prepared	Taking college courses made me feel more prepared for college life		1-6		1-6
DE18Intell	I felt intellectually stimulated taking college level courses in high school		1-6		1-6
DE19Fear	My fear of going to college decreased after I took a college course		1-6		1-6
DE20Develop	Taking college courses helped me develop more as a person		1-6		1-6
DE21SelfDiscp	Taking college courses did not help me become more self-disciplined	YES	1-6		1-6
Possible Values			1-6		12-72

* Represents deletion of the item for purposes of improving the Cronbach Alpha coefficient for purposes of statistical analysis.

Table: Index Values for Degree Aspiration (DA)--Cronbach Alpha: .800
(deleted #24)

Variable Code	Specific Question	Reverse Code?	Range X	Weight =	Values
DA23Earning	At this point in time, I am committed to earning a college level degree here elsewhere		1-6		1-6
*DA24Disapoint	My friends and family would be disappointed if I quit school		1-6		1-6
DA25Support	My family is supportive of my pursuit of a college degree in terms of encouragement and expectations		1-6		1-6
DA26Satisfying	Of all the things I could do at this point in my life, going to college is definitely the most satisfying		1-6		1-6
DA27Misgivings	I have serious misgivings about my decision to come to college	YES	1-6		1-6
DA28Dedicated	I am strongly dedicated to finishing college no matter what obstacles are before me		1-6		1-6
DA29Wonder	I often wonder if a college education is really worth all the time, money, and effort that I'm being asked to commit	YES	1-6		1-6

Variable Code	Specific Question	Reverse Code?	Range X	Weight =	Values
DA30Confident	I am confident that my decision to go to college was the right decision for me		1-6		1-6
DA31WellPay	I would leave college if I found a well-paying job	YES	1-6		1-6
DA32RatherDo	I can think of many things I would rather do than go to college	YES	1-6		1-6
Possible Values			1-6		9-54

* Represents deletion of the item for purposes of improving the Cronbach Alpha coefficient for purposes of statistical analysis.

Table: Index Values for Institutional Commitment (IC)--Cronbach Alpha: .872

Variable Code	Specific Question	Reverse Code?	Range X	Weight =	Values
IC33Desire	I have no desire to transfer to another school sometime before finishing a degree here.		1-6		1-6
IC34Transfer	I plan to transfer to another school sometime before completing a degree	YES	1-6		1-6
IC35Loyal	I am very loyal to this university		1-6		1-6
Possible Values			1-6		3-18

Table: Index Values for Financial Support (FIN)—Cronbach Alpha: .624 (deleted index from study)

Variable Code	Specific Question	Reverse Code?	Range X	Weight =	Values
*FIN36Financial	Helping me complete college is a financial hardship for my parents		1-6		1-6
FIN37Issues	My family has no issues helping me pay for college	YES	1-6		1-6
Possible Values			1-6		1-6

* Represents deletion of the item for purposes of improving the Cronbach Alpha coefficient for purposes of statistical analysis.

Table: Index Values for Academic Integration (AI)--Cronbach Alpha: .810 (deleted #10)

Variable Code	Specific Question	Reverse Code?	Range X	Weight =	Values
AI1Satisfied	I am satisfied with the extent of my intellectual growth and interests in ideas since coming here.		1-5		1-5
AI2Outlines	I made outlines from class notes or readings		1-5		1-5
AI3Readings	I did additional readings on topics that were introduced and discussed in class.		1-5		1-5
AI4Interest	On average across all of my courses, I am interested in the things that are being said during class discussions		1-5		1-5

Variable Code	Specific Question	Reverse Code?	Range X	Weight =	Values
AI5Connection	I see a connection with what I am learning and my future career possibilities		1-5		1-5
AI6Notes	I take detailed notes in class		1-5		1-5
AI7Visit	I visit informally and briefly with my instructor after class		1-5		1-5
AI8Comfort	I feel comfortable talking with an instructor about career plans and ambitions		1-5		1-5
AI9Comments	I have asked my instructor for comments and criticisms about my work		1-5		1-5
*AI10Growth	My instructor is not concerned about my intellectual growth	YES	1-5		1-5
AI11Personal	I have discussed personal problems or concerns with my instructor		1-5		1-5
AI12Advising	I am NOT satisfied with the academic advising that I have received	YES	1-5		1-5
AI13Ideas	I have discussed ideas for a paper or other class project with my instructor or another instructor		1-5		1-5
AI14Library	I do NOT like to use the library as a quiet place to read or study materials	YES	1-5		1-5

Variable Code	Specific Question	Reverse Code?	Range X	Weight =	Values
AI15Search	I use the library search tools to find materials that I need for class		1-5		1-5
AI16Librarian	I have asked a librarian for help in finding materials on some topic		1-5		1-5
AI17Research	I frequent the library regularly to research topics for my classes		1-5		1-5
GPACollege	A student's GPA ranges from 0 to 4.0		1-8		1-8
Possible Values			1-8		17-88

* Represents deletion of the item for purposes of improving the Cronbach Alpha coefficient for purposes of statistical analysis.

Table: Index Values for Social Integration (SI)--Cronbach Alpha: .904

Variable Code	Specific Question	Reverse Code?	Range X	Weight =	Values
SI18Program	I have attended a program or event put on by a student group		1-5		1-5
SI19Club	I am very involved in a student club or organization on the campus		1-5		1-5
SI20Activity	I have read or asked about a club, organization, or student government activity		1-5		1-5
SI21NoClub	I do NOT like being involved in a student club or organization	YES	1-5		1-5

Variable Code	Specific Question	Reverse Code?	Range X	Weight =	Values
SI22Outdoor	I use outdoor recreational spaces for casual and informal group sports		1-5		1-5
I23Intramural	I have played on an intramural team		1-5		1-5
SI24Athletic	I attend college athletic events		1-5		1-5
SI25Facilities	I have used facilities in the gym for individual for individual activities (for example, exercise and swimming		1-5		1-5
SI26Play	I have used the recreational facilities in the gym for playing sports that require more than one person		1-5		1-5
SI27 Inter	My interpersonal relationships with other students had an impact on my personal growth, my attitudes, and my values		1-5		1-5
SI28Connect	I have a strong sense of connectedness with other students		1-5		1-5
SI29Clothing	I like to wear clothing that bears the university emblem or mascot		1-5		1-5
SI30Common	I have a lot in common with other students		1-5		1-5

Variable Code	Specific Question	Reverse Code?	Range X	Weight =	Values
SI31SocialLife	When I think of my overall social life here with friendships, college organizations, co-curricular activities, I feel very satisfied		1-5		1-5
SI32Impression	I have a very positive impression with students here at this school		1-5		1-5
SI33Friends	I have made a lot of friends while here at this school		1-5		1-5
SI34Problem	If I had a problem, I felt very comfortable talking about it with friends that I made here		1-5		1-5
SI35Home	More of my friends are here on the campus than at my work or hometown		1-5		1-5
SI36ResHalls	I have made a lot of friends in residence halls		1-5		1-5
SI37Social	I enjoy the social life in the residence halls		1-5		1-5
Possible Values			1-5		20-100

APPENDIX E

Corrected Item-Total Correlations

Corrected Item-Total Correlations for Dual Enrollment Index

Item	Corrected Item-Total Correlation	Questions Dropped
Q8	.014	Question 8
Q9	.698	
Q10 Recoded	.222	Question 10
Q11	.346	
Q12	.463	
Q13	.627	
Q14	.425	
Q15 Recoded	.442	
Q16	.420	
Q17	.704	
Q18	.529	
Q19	.498	
Q20	.415	
Q21 Recoded	.683	

Corrected Item-Total Correlations for Degree Aspiration Index

Item	Corrected Item-Total Correlation	Questions Dropped
Q23	.418	
Q24	.163	Question 24
Q25	.330	
Q26	.586	
Q27 Recoded	.426	
Q28	.473	
Q29 Recoded	.592	
Q30	.735	
Q31 Recoded	.504	
Q32 Recoded	.546	

Corrected Item-Total Correlations for Institutional Commitment Index

Item	Corrected Item-Total Correlation
Q33	.772
Q34 Recoded	.660
Q35	.710

Corrected Item-Total Correlations for Financial Support Index

Item	Corrected Item-Total Correlation	Questions Dropped
Q36	.453	Question 36
Q37 Recoded	.453	

Corrected Item-Total Correlations for Academic Integration Index

Item	Corrected Item-Total Correlation	Questions Dropped
Q1	.489	
Q2	.471	
Q3	.422	
Q4	.474	
Q5	.517	
Q6	.325	
Q7	.472	
Q8	.438	
Q9	.549	
Q10 Recoded	.069	Question 10
Q11	.471	
Q12 Recoded	.240	
Q13	.471	
Q14 Recoded	.174	
Q15	.377	
Q16	.390	
Q17	.470	

Corrected Item-Total Correlations for Social Integration Index

Item	Corrected Item-Total Correlation
Q18	.405
Q19	.362
Q20	.236
Q21 Reverse Coded	.498
Q22	.501
Q23	.353
Q24	.437
Q25	.473
Q26	.579
Q27	.615
Q28	.799
Q29	.385
Q31	.770
Q32	.698
Q33	.775
Q34	.632
Q35	.496
Q36	.663
Q37	.580

APPENDIX F

Distribution of Index Scores

Distribution of Dual Enrollment Index Scores (%)

Index Scores	Percent
41-47	12.6
48-52	23.1
53-56	21.0
57-60	27.1
61-70	16.8
Total %=	100.6
Range 41 to 70; mean = 54.77; SD = 3.711	

Distribution of Degree Aspiration Index Scores (%)

Index Scores	Percent
33-38	10.0
39-40	18.1
41-43	28.1
44-46	27.5
47-56	16.5
Total %=	100.2
Range 33 to 56; mean = 42.88; SD = 6.022	

Distribution of Institutional Commitment Index Scores (%)

Index Scores	Percent
5-6	1.8
7-8	5.2
9-10	25.5
11-12	46.5
13-14	20.9
Total %=	99.9
Range 5 to 14; mean = 11.10; SD = 1.686	

Distribution of Academic Integration Index Scores (%)

Index Scores	Percent
34-49	9.3
50-55	15.8
56-62	32.7
63-70	32.1
71-86	10.5
Total %=	100.4
Range 34 to 86; mean = 60.56; SD = 8.605	

Distribution of Social Integration Index Scores (%)

Index Scores	Percent
29-50	8.7
51-64	26.7
65-75	29.7
76-84	26.2
85-100	8.7
Total %=	100.0
Range 29 to 100; mean = 68.88; SD = 12.504	

Appendix G

SPSS CODEBOOK

2014-2015

Conducted for

A Dissertation on: Dual Enrollment and Its Impact on College Freshman Persistence: A Modification of Tinto's Model of Student Departure

By

Douglas L. Simon

Partial Fulfillment of a Doctor of Philosophy

Major in Sociology

South Dakota State University

2015

TABLE OF CONTENTS

INTRODUCTION

The data collected for this study occurred in the sixth and twenty-eighth week of the 2014-2015 Academic Year and the tenth day of the 2015-2016 Academic Year at Southwest Minnesota State University (SMSU). This codebook includes the acronyms to identify the variable, variable meanings in order to understand the question that is sourced to the variable item, and the item questions that appeared on the surveys. The item questions also indicate the weight and how the responses were coded in SPSS.

The items appearing on the surveys are one of three types: Attribute data about the respondent and the respondent's background, Likert questions measuring attitudes and opinions, and dichotomous variables looking at whether the respondent persisted with the institution. In addition, variables that have a number indicate that it is operationalizing a construct, like social integration (SI24). That is, if a number appears after the variable acronym, it indicates that this item operationalizes a construct, with all such grouped items forming an index for that construct.

ACRONYMS

ACT	ACT SCORE
AI	ACADEMIC INTEGRATION
DA	DEGREE ASPIRATION
DE	DUAL ENROLLMENT
HSGPA	HIGH SCHOOL GRADE POINT AVERAGE
FIN	FINANCIAL SUPPORT
IC	INSTITUTIONAL COMMITMENT
SI	SOCIAL INTEGRATION

VARIABLE ITEM NAMES AND MEANINGS

FIRSThalfSURVEY	Indicates the paper survey instrument given to respondents in the sixth week of the FY2014-2015 Academic Year (October 2014).
HSGPA	A respondent's high school grade point average.
ACT	A respondent's ACT score.
GENDER	A respondent's gender.
MOTHER	A respondent's mother and her highest academic degree achieved.
FATHER	A respondent's father and his highest academic degree achieved.
DE	Whether the respondent took a college course in high school (dual enrollment).
DEhowMany	How many college courses the respondent took in high school.
DESMSU	How many college courses that respondent took in high school from SMSU.
DEOffered	Whether the college course was offered on the campus of SMSU.
DE8Challenging	DE represents dual enrollment and the number 8 refers to the question number on the survey questionnaire. This item question operationalizes the degree of challenge college coursework entails.
DE9Responsibility	DE represents dual enrollment and the number 9 refers to the question number on the survey questionnaire. This item question operationalizes the sense of responsibility a high school respondent has toward college level course work.

DE10Confidence	DE represents dual enrollment and the number 10 refers to the question number on the survey questionnaire. This item question operationalizes the extent that respondent's gain confidence in taking college level courses.
DE11Transition	DE represents dual enrollment and the number 11 refers to the question number on the survey questionnaire. This item question operationalizes the transition experience.
DE12Effort	DE represents dual enrollment and the number 9 refers to the question number on the survey questionnaire. This item question operationalizes the effort a respondent commits to his or her studies.
DE13Expect	DE represents dual enrollment and the number 13 refers to the question number on the survey questionnaire. This item question operationalizes whether college level expectations are being met.
DE14Excited	DE represents dual enrollment and the number 14 refers to the question number on the survey questionnaire. This item question operationalizes the degree of excitement respondents have when taking college courses in high school.
DE15Adjust	DE represents dual enrollment and the number 15 refers to the question number on the survey questionnaire. This item question operationalizes the extent that college level courses assisted the high school respondent in adjusting to college academic work (reverse coded).
DE16Adult	DE represents dual enrollment and the number 16 refers to the question number on the survey questionnaire. This item question considers whether a high school respondent enrolled in a college course felt more like an adult.
DE17Prepared	DE represents dual enrollment and the number 17 refers to the question number on the survey questionnaire. This item question operationalizes the extent that dual enrollment impacts the respondent's ability to transition from high school to college.
DE18Intell	DE represents dual enrollment and the number 18 refers to the question number on the survey questionnaire. This item question refers to whether the respondent felt intellectually stimulated taking a college level course.

DE19Fear	DE represents dual enrollment and the number 19 refers to the question number on the survey questionnaire. The item question refers to whether the respondent's fear of transitioning to college decreased.
DE20Develop	DE represents dual enrollment and the number 20 refers to the question number on the survey questionnaire. This item question refers to the development of the respondent.
DE21SelfDIscp	DE represents dual enrollment and the number 21 refers to the question number on the survey questionnaire. This item question refers to whether a college course promoted more self-discipline (reverse coded).
DA22HighDeg	DA represents academic goals and the number 22 refers to the question number on the survey questionnaire. The question response captures the highest degree the respondent desires to achieve.
DA23Earning	DA represents academic goals and the number 23 refers to the question number on the survey questionnaire. This item question refers to the commitment to earning a college degree.
DA24Disappoint	DA represents academic goals and the number 24 refers to the question number on the survey questionnaire. This item question refers to the disappointment friends and family may have if the respondent quit school.
DA25Support	DA represents academic goals and the number 25 refers to the question number on the survey questionnaire. This item question refers to family s support toward achieving a degree.
DA26Satisfying	DA represents academic goals and the number 26 refers to the question number on the survey questionnaire. This item question refers to the degree of satisfaction of going to college.
DA27Misgivings	DA represents academic goals and the number 27 refers to the question number on the survey questionnaire. This item question refers to whether the respondent has any misgivings of going to college (reverse coded).
DA28Dedicated	DA represents academic goals and the number 28 refers to the question number on the survey questionnaire. This item question refers to the degree of dedication to completing college.

DA 29Wonder	DA represents academic goals and the number 29 refers to the question number on the survey questionnaire. This item question refers whether the respondent wonders about going to college (reverse coded).
DA30Confident	DA represents academic goals and the number 30 refers to the question number on the survey questionnaire. This item question refers to the confidence the respondent had that going to college was the right decision.
DA31WellPay	DA represents academic goals and the number 31 refers to the question number on the survey questionnaire. This item question refers whether the respondent would leave college if he or she found a well-paying job (reverse coded).
DA32RatherDo	DA represents academic goals and the number 32 refers to the question number on the survey questionnaire. This item question looks at whether the respondent would rather do other things than go to college (reverse coded).
IC33Desire	IC represents institutional commitment and the number 33 refers to the question number on the survey questionnaire. This item question looks at whether the respondent desires to transfer to another institution.
IC34Transfer	IC represents institutional commitment and the number 34 refers to the question number on the survey questionnaire. This item question looks at whether the respondent plans to transfer to another institution before completing his or her degree (reverse coded).
IC35Loyal	IC represents institutional commitment and the number 35 refers to the question number on the survey questionnaire. This item question measures the degree of loyalty the respondent has toward the institution.
FIN36Financial	FIN represents financial and the number 36 refers to the question number on the survey questionnaire. This item question looks at the financial hardship that parents have toward funding the respondent's college education.
FIN37Issues	FIN represents financial and the number 37 refers to the question number on the survey questionnaire. This item question refers to whether the parents have financial issues paying for the respondent's college education (reverse coded).

SECONDhalfSURVEY	This refers to the online and paper survey that respondents took in the twenty-eighth week of the FY2014-2015 academic year (March and April 2015).
OnCampus	This question asked whether respondent lived in campus housing.
SEX2d	This question is a check to make sure the gender is correct from the first survey.
DE2ND	This question checked the reliability of the first respondent responses regarding whether he or she took dual enrollment classes (rather than AP courses), and if so, how many dual enrollment courses he or she took.
GPACollege	This refers to the respondent's GPA after the first semester of college.
AI1Satisfied	AI represents academic integration and the number 1 refers to the question number on the survey questionnaire. This item question looks at the degree the respondent is intellectually satisfied.
AI2Outlines	AI represents academic integration and the number 2 refers to the question number on the survey questionnaire. This item question looks at whether the respondent made outlines for class.
AI3Readings	AI represents academic integration and the number 3 refers to the question number on the survey questionnaire. This item question refers to whether the respondent did additional readings on topics introduced in class.
AI4Interest	AI represents academic integration and the number 4 refers to the question number on the survey questionnaire. This item question measures the extent of interest in the course work.
AI5Connection	AI represents academic integration and the number 5 refers to the question number on the survey questionnaire. This item question looks at whether the respondent sees the connection between course work and a future career.
AI6Notes	AI represents academic integration and the number 6 refers to the question number on the survey questionnaire. This looks at whether the respondent takes detailed notes in class.
AI7Visit	AI represents academic integration and the number 7 refers to the question number on the survey questionnaire. This looks at whether the respondent visits with the instructor.

AI8Comfort	AI represents academic integration and the number 8 refers to the question number on the survey questionnaire. This item question looks at whether the respondent is comfortable talking with an instructor about career plans and ambitions.
AI9Comments	AI represents academic integration and the number 9 refers to the question number on the survey questionnaire. This item question refers to whether the respondent asks the instructor for comments or criticism about his or her work.
A10Growth	AI represents academic integration and the number 10 refers to the question number on the survey questionnaire. This item question refers to whether the instructor is concerned about the respondent's intellectual growth.
A11Personal	AI represents academic integration and the number 11 refers to the question number on the survey questionnaire. This item question looks at whether the respondent has discussed personal problems with the instructor.
A12Advising	AI represents academic integration and the number 1 2refers to the question number on the survey questionnaire. This item question looks at the dissatisfaction with academic advising (reverse coded).
A13Ideas	AI represents academic integration and the number 13 refers to the question number on the survey questionnaire. This item question looks at whether the respondent has discussed ideas for a paper or project with the instructor.
A14Library	AI represents academic integration and the number 14 refers to the question number on the survey questionnaire. This question looks at whether the respondent uses the library (reverse coded).
A15Search	AI represents academic integration and the number 15 refers to the question number on the survey questionnaire. This item question refers to whether the respondent uses library search tools.
A16Librarian	AI represents academic integration and the number 16 refers to the question number on the survey questionnaire. This item question refers whether the respondent has asked a librarian for assistance in researching.
A17Research	AI represents academic integration and the number 17 refers to the question number on the survey questionnaire. This item question looks at how regularly the respondent uses the library to research.

SI18Program	SI represents social integration and the number 18 refers to the question number on the survey questionnaire. This item question looks at whether the respondent has attended a program or event put on by a respondent group.
SI19Club	SI represents social integration and the number 19 refers to the question number on the survey questionnaire. This item question looks at the degree of involvement the respondent has with a respondent club organization.
SI20Activity	SI represents social integration and the number 20 refers to the question number on the survey questionnaire. This item question looks at whether the respondent has read or about a respondent club, organization, or respondent government activity.
SI21NoClub	SI represents social integration and the number 21 refers to the question number on the survey questionnaire. This is a reverse coded question that asks the respondent whether they like being involved in a respondent club or organization (reverse coded).
SI22Outdoor	SI represents social integration and the number 22 refers to the question number on the survey questionnaire. This item question refers to whether the respondent uses outdoor recreational spaces.
SI23Intramural	SI represents social integration and the number 23 refers to the question number on the survey questionnaire. This item question refers to whether the respondent has played intramural sports.
SI24Athletic	SI represents social integration and the number 24 refers to the question number on the survey questionnaire. This item questions asks whether the respondent attends athletic events.
SI25Facilities	SI represents social integration and the number 25 refers to the question number on the survey questionnaire. This item question asks the respondent whether he or she uses the exercise facilities.
SI26Play	SI represents social integration and the number 26 refers to the question number on the survey questionnaire. This item question asks whether the respondent uses the exercise facilities to play sports that involve more than one person.
SI27Inter	SI represents social integration and the number 27 refers to the question number on the survey questionnaire. This item question looks at how interpersonal relationship impacted the respondent's personal growth.

SI28Connect	SI represents social integration and the number 28 refers to the question number on the survey questionnaire. This item question looks at the degree of connectedness the respondent has with others.
SI29Clothing	SI represents social integration and the number 29 refers to the question number on the survey questionnaire. This item question asks whether the respondent wears clothing that bears the university emblem or mascot.
SI30Common	SI represents social integration and the number 30 refers to the question number on the survey questionnaire. This item question looks at the degree the respondent he or she has things in common with other respondents.
SI31Social Life	SI represents social integration and the number 31 refers to the question number on the survey questionnaire. This item question measures the extent that the respondent's social life is satisfying.
SI32Impression	SI represents social integration and the number 32 refers to the question number on the survey questionnaire. This item question looks at the positive impression the respondent may have toward other respondents.
SI33Friends	SI represents social integration and the number 33 refers to the question number on the survey questionnaire. This item question refers to the number of friends the respondent has.
SI34Problem	SI represents social integration and the number 20 refers to the question number on the survey questionnaire. This item question looks at whether the respondent is comfortable talking about problems with friends.
SI35Home	SI represents social integration and the number 35 refers to the question number on the survey questionnaire. This item question looks at how many of respondent's friends are on the campus rather at his or her hometown.
SI36ResHalls	SI represents social integration and the number 36 refers to the question number on the survey questionnaire. This item question looks at whether the respondent has made friends in the residence halls.

SI37Social	SI represents social integration and the number 37 refers to the question number on the survey questionnaire. This item question refers to whether the respondent enjoys the social life in the residence halls.
FIN83Financial	This is the total financial aid package the student was offered. The financial aid package is determined by financial need, which is the difference between the cost of attendance and the expected family contribution.
PERSIST	This is the dependent variable, and asks whether the student persisted with the institution or departed. This is a "yes" or "no" response.

SURVEY CODES AND QUESTIONS

1. The number of the survey instrument:

[LABEL:FirsthalfSURVEY]

RESPONSE

The number of survey instruments range from 1 to 225.

Remarks:

A "DE" value of "0" means that the respondent did not take a college level course in high school. A "DE" value of "1" means that the respondent did take a college level course in high school. There were 225 students who took the first survey, and 172 students from this panel completed the second half of the survey.

2. Please indicate your high school GPA:

[VAR: HSGPA]

RESPONSE

A student's GPA ranges from 0 to 4.0.

RESPONSE	CODED
0.00 to 0.49	1
0.50 to 0.99	2

1.00 to 1.49	3
1.50 to 1.99	4
2.00 to 2.49	5
2.50 to 2.99	6
3.00 to 3.49	7
3.50 to 4.00	8

3. Please indicate your ACT Score.

[VAR: ACT]

RESPONSE

A student's ACT score ranges from 1 to 36.

4. The student sex:

[VAR: SEX]

RESPONSE	CODED
FEMALE	1
MALE	2

5. For Mother's Education, circle the highest year of school completed:

[VAR: MOTHER]

RESPONSE	CODED
High School or less	1
2-year college degree (associates)	2
4-year college degree	3
Master's Degree	4
Doctoral Degree (Ph.D, J.D., M.D.)	5

6. For Father's Education, circle the highest year of school completed:

[VAR: FATHER]

RESPONSE	CODED
High School or less	1
2-year college degree (associates)	2
4-year college degree	3
Master's Degree	4
Doctoral Degree (Ph.D, J.D., M.D.)	5

7. Have you taken college classes (dual enrollment) while in high school (circle):

[VAR: DE]

RESPONSE	CODED
YES	1
NO	0

8. If Yes, how many college courses have you taken while in high school (circle the appropriate number).

[VAR: DEhowMany]

RESPONSE	CODED
Number taken	1
	2
	3
	4
	5
	6
	7
	8
	9
	10
	11
	12+

9. How many of these courses were from SMSU (circle the appropriate number).

[VAR: DESMSU]

RESPONSE	CODED
Number taken	1
	2
	3
	4
	5
	6
	7
	8
	9
	10
	11
	12+

10. If you took courses from SMSU, were they offered on the campus or of the campus (circle the appropriate response).

[VAR: DEOffered]

RESPONSE	CODED
On-campus	1
Off-campus	2
I did not take classes from SMSU	3

11. I found college courses to be challenging.

[VAR: DE8Challenging]

RESPONSE	CODED
Strongly Disagree	1
Disagree	2
Slightly Disagree	3
Slightly Agree	4
Agree	5
Strongly Agree	6

12. I felt that taking college courses in high school increased my sense of responsibility

[VAR: DE9Responsbility]

RESPONSE	CODED
Strongly Disagree	1
Disagree	2
Slightly Disagree	3
Slightly Agree	4
Agree	5
Strongly Agree	6

13. Taking college courses did not increase my confidence that I would do well in college (reverse coded).

[VAR: DE10Confidence → DE10ConfidenceRecode]

RESPONSE	CODED
Strongly Disagree	1
Disagree	2
Slightly Disagree	3
Slightly Agree	4
Agree	5
Strongly Agree	6

14. Taking college courses in high school made it easier for me to transition to college.

[VAR: DE11Transition]

RESPONSE	CODED
Strongly Disagree	1
Disagree	2
Slightly Disagree	3
Slightly Agree	4
Agree	5
Strongly Agree	6

15. I put forward a lot of effort in my college courses.

[VAR: DE12Effort]

RESPONSE	CODED
Strongly Disagree	1
Disagree	2
Slightly Disagree	3
Slightly Agree	4
Agree	5
Strongly Agree	6

16. I felt like I was reaching college level expectations when I was in high school.

[VAR: DE13Expect]

RESPONSE	CODED
Strongly Disagree	1
Disagree	2
Slightly Disagree	3
Slightly Agree	4
Agree	5
Strongly Agree	6

17. Taking college courses in high school made me excited to go to college.

[VAR: DE14Excited]

RESPONSE	CODED
Strongly Disagree	1
Disagree	2
Slightly Disagree	3
Slightly Agree	4
Agree	5
Strongly Agree	6

18. Taking college courses did not help me adjust to college level work (reverse coded).

[VAR: DE15Adjust → DE15AdjustRecoded]

RESPONSE	CODED
Strongly Disagree	1
Disagree	2
Slightly Disagree	3
Slightly Agree	4
Agree	5
Strongly Agree	6

19. Taking college courses made me feel more like an adult in college.

[VAR: DE16Adult]

RESPONSE	CODED
Strongly Disagree	1
Disagree	2
Slightly Disagree	3
Slightly Agree	4
Agree	5
Strongly Agree	6

20. Taking college courses made me feel more prepared for college life.

[VAR: DE17Prepared]

RESPONSE	CODED
Strongly Disagree	1
Disagree	2
Slightly Disagree	3
Slightly Agree	4
Agree	5
Strongly Agree	6

21. I felt intellectually stimulated taking college level courses in high school.

[VAR: DE18Intell]

RESPONSE	CODED
Strongly Disagree	1
Disagree	2
Slightly Disagree	3
Slightly Agree	4
Agree	5
Strongly Agree	6

22. My fear of going to college decreased after I took a college course.

[VAR: DE19Fear]

RESPONSE	CODED
Strongly Disagree	1
Disagree	2
Slightly Disagree	3
Slightly Agree	4
Agree	5
Strongly Agree	6

23. Taking college courses helped me develop more as a person.

[VAR: DE20Develop]

RESPONSE	CODED
Strongly Disagree	1
Disagree	2
Slightly Disagree	3
Slightly Agree	4
Agree	5
Strongly Agree	6

24. Taking college courses did not help me become more self-disciplined (reverse coded).

[VAR: DE21SelfDiscp → DE21SelfDiscpRecoded]

RESPONSE	CODED
Strongly Disagree	1
Disagree	2
Slightly Disagree	3
Slightly Agree	4
Agree	5
Strongly Agree	6

25. The highest degree that I plan to pursue is

[VAR: DA22HighDeg]

RESPONSE	CODED
None	1
2-year college degree (associates)	2
4-year college degree	3
Master's Degree	4
Doctoral Degree (Ph.D, J.D., M.D.)	5

26. At this point in time, I am committed to earning a college level degree here elsewhere.

[VAR: DA23Earning]

RESPONSE	CODED
Strongly Disagree	1
Disagree	2
Slightly Disagree	3
Slightly Agree	4
Agree	5
Strongly Agree	6

27. My friends and family would be disappointed if I quite school.

[VAR: DA24Disapoint]

RESPONSE	CODED
Strongly Disagree	1
Disagree	2
Slightly Disagree	3
Slightly Agree	4
Agree	5
Strongly Agree	6

28. My family is supportive of my pursuit of a college degree in terms of encouragement and expectations.

[VAR: DA25Support]

RESPONSE	CODED
Strongly Disagree	1
Disagree	2
Slightly Disagree	3
Slightly Agree	4
Agree	5
Strongly Agree	6

29. Of all the things I could do at this point in my life, going to college is definitely the most satisfying.

[VAR: DA26Satisfying]

RESPONSE	CODED
Strongly Disagree	1
Disagree	2
Slightly Disagree	3
Slightly Agree	4
Agree	5
Strongly Agree	6

30. I have serious misgivings about my decision to come to college (reverse coded).

[VAR: DA27Misgivings → DA27MisgivingsRecoded]

RESPONSE	CODED
Strongly Disagree	1
Disagree	2
Slightly Disagree	3
Slightly Agree	4
Agree	5
Strongly Agree	6

31. I am strongly dedicated to finishing college no matter what obstacles are before me.

[VAR: DA28Dedicated]

RESPONSE	CODED
Strongly Disagree	1
Disagree	2
Slightly Disagree	3
Slightly Agree	4
Agree	5
Strongly Agree	6

32. I often wonder if a college education is really worth all the time, money, and effort that I'm being asked to commit.

[VAR: DA29Wonder → DA29WonderRecoded]

RESPONSE	CODED
Strongly Disagree	1
Disagree	2
Slightly Disagree	3
Slightly Agree	4
Agree	5
Strongly Agree	6

33. I am confident that my decision to go to college was the right decision for me.

[VAR: DA30Confident]

RESPONSE	CODED
Strongly Disagree	1
Disagree	2
Slightly Disagree	3
Slightly Agree	4
Agree	5
Strongly Agree	6

34. I would leave college if I found a well-paying job (reverse coded).

[VAR: DA31WellPay → DA31WellPayRecoded]

RESPONSE	CODED
Strongly Disagree	1
Disagree	2
Slightly Disagree	3
Slightly Agree	4
Agree	5
Strongly Agree	6

35. I can think of many things I would rather do than go to college (reverse coded).

[VAR: DA32RatherDo → DA32RatherDoRecoded]

RESPONSE	CODED
Strongly Disagree	1
Disagree	2
Slightly Disagree	3
Slightly Agree	4
Agree	5
Strongly Agree	6

36. I have no desire to transfer to another school sometime before finishing a degree here.

[VAR: IC33Desire]

RESPONSE	CODED
Strongly Disagree	1
Disagree	2
Slightly Disagree	3
Slightly Agree	4
Agree	5
Strongly Agree	6

37. I plan to transfer to another school sometime before completing a degree here (reverse coded).

[VAR: IC34Transfer → IC34TransferRecoded]

RESPONSE	CODED
Strongly Disagree	1
Disagree	2
Slightly Disagree	3
Slightly Agree	4
Agree	5
Strongly Agree	6

38. I am very loyal to this university.

[VAR: IC35Loyal]

RESPONSE	CODED
Strongly Disagree	1
Disagree	2
Slightly Disagree	3
Slightly Agree	4
Agree	5
Strongly Agree	6

39. Helping me complete college is a financial hardship for my parents.

[VAR: FIN36Financial]

RESPONSE	CODED
Strongly Disagree	1
Disagree	2
Slightly Disagree	3
Slightly Agree	4
Agree	5
Strongly Agree	6

40. My family has no issues helping me pay for college (reverse coded)

[VAR: FIN37Issues → FIN37IssuesRecode]

RESPONSE	CODED
Strongly Disagree	1
Disagree	2
Slightly Disagree	3
Slightly Agree	4
Agree	5
Strongly Agree	6

41. The number of the survey instrument:

[LABEL:SECONDhalfSURVEY]

RESPONSE

The number of survey instruments range from 1 to 172.

Remarks:

A "DE" value of "0" means that the respondent did not take a college level course in high school. A "DE" value of "1" means that the respondent did take a college level course in high school. There were 225 students who took the first survey, and 172 students from this panel completed the second half of the survey.

42. Do you currently live in Campus Housing?

[VAR: OnCampus]

RESPONSE	CODED
YES	1
NO	0

43. The student sex:

[VAR: SEX2nd]

RESPONSE	CODED
FEMALE	1
MALE	2

44. During high school, what type of college level courses did you take?

[VAR: DE2nd]

RESPONSE	CODED
I took ONLY Advanced Placement (AP) courses	1
I took ONLY college level courses in high school, like College Now courses (or dual enrollment)	2
I took BOTH AP and college courses offered in high school like College Now courses (or dual enrollment)	3
I took NEITHER AP or college courses offered in high school like College Now courses (or dual enrollment)	4

45. Please indicate your college grader point average (GPA) after the fall semester.

[VAR: GPACollege]

RESPONSE

A student's GPA ranges from 0 to 4.0.

RESPONSE	CODED
0.00 to 0.49	1
0.50 to 0.99	2
1.00 to 1.49	3
1.50 to 1.99	4
2.00 to 2.49	5
2.50 to 2.99	6
3.00 to 3.49	7
3.50 to 4.00	8

46. I am satisfied with the extent of my intellectual growth and interest in ideas since coming here.

[VAR: AI1Satisfied]

RESPONSE	CODED
Strongly Disagree	1
Disagree	2
Neutral	3
Agree	4
Strongly Agree	5

47. I made outlines from class notes or readings.

[VAR: AI2Outlines]

RESPONSE	CODED
Strongly Disagree	1
Disagree	2
Neutral	3
Agree	4
Strongly Agree	5

48. I did additional readings on topics that were introduced and discussed in class.

[VAR: AI3Readings]

RESPONSE	CODED
Strongly Disagree	1
Disagree	2
Neutral	3
Agree	4
Strongly Agree	5

49. On average across all of my courses, I am interested in the things that are being said during class discussions.

[VAR: AI4Interest]

RESPONSE	CODED
Strongly Disagree	1
Disagree	2
Neutral	3
Agree	4
Strongly Agree	5

50. I see a connection with what I am learning and my future career possibilities.

[VAR: AI5Connection]

RESPONSE	CODED
Strongly Disagree	1
Disagree	2
Neutral	3
Agree	4
Strongly Agree	5

51. I take detailed notes in class.

[VAR: AI6Notes]

RESPONSE	CODED
Strongly Disagree	1
Disagree	2
Neutral	3
Agree	4
Strongly Agree	5

52. I visit informally and briefly with my instructor after class.

[VAR: AI7Visit]

RESPONSE	CODED
Strongly Disagree	1
Disagree	2
Neutral	3
Agree	4
Strongly Agree	5

53. I feel comfortable talking with an instructor about career plans and ambitions.

[VAR: AI8Comfort]

RESPONSE	CODED
Strongly Disagree	1
Disagree	2
Neutral	3
Agree	4
Strongly Agree	5

54. I have asked my instructor for comments and criticisms about my work.

[VAR: AI9Comments]

RESPONSE	CODED
Strongly Disagree	1
Disagree	2
Neutral	3
Agree	4
Strongly Agree	5

55. My instructor is not concerned about my intellectual growth (reverse coded).

[VAR: AI10Growth → AI10GrowthRecoded]

RESPONSE	CODED
Strongly Disagree	1
Disagree	2
Neutral	3
Agree	4
Strongly Agree	5

56. I have discussed personal problems or concerns with my instructor.

[VAR: AI11Personal]

RESPONSE	CODED
Strongly Disagree	1
Disagree	2
Neutral	3
Agree	4
Strongly Agree	5

57. I am NOT satisfied with the academic advising that I have received (reverse coded).

[VAR: AI12Advising → AI12AdvisingRecoded]

RESPONSE	CODED
Strongly Disagree	1
Disagree	2
Neutral	3
Agree	4
Strongly Agree	5

58. I have discussed ideas for a paper or other class project with my instructor or another instructor.

[VAR: AI13Ideas]

RESPONSE	CODED
Strongly Disagree	1
Disagree	2
Neutral	3
Agree	4
Strongly Agree	5

59. I do NOT like to use the library as a quiet place to read or study materials (reverse coded).

[VAR: AI14Library → AI14LibraryRecoded]

RESPONSE	CODED
Strongly Disagree	1
Disagree	2
Neutral	3
Agree	4
Strongly Agree	5

60. I use the library search tools to find materials that I need for class.

[VAR: AI15Search]

RESPONSE	CODED
Strongly Disagree	1
Disagree	2
Neutral	3
Agree	4
Strongly Agree	5

61. I have asked a librarian for help in finding materials on some topic.

[VAR: AI16Librarian]

RESPONSE	CODED
Strongly Disagree	1
Disagree	2
Neutral	3
Agree	4
Strongly Agree	5

62. I frequent the library regularly to research topics for my classes.

[VAR: AI17Research]

RESPONSE	CODED
Strongly Disagree	1
Disagree	2
Neutral	3
Agree	4
Strongly Agree	5

63. I have attended a program or event put on by a student group.

[VAR: SI18Program]

RESPONSE	CODED
Strongly Disagree	1
Disagree	2
Neutral	3
Agree	4
Strongly Agree	5

64. I am very involved in a student club or organization on the campus.

[VAR: SI19Club]

RESPONSE	CODED
Strongly Disagree	1
Disagree	2
Neutral	3
Agree	4
Strongly Agree	5

65. I have read or asked about a club, organization, or student government activity.

[VAR: SI20Activity]

RESPONSE	CODED
Strongly Disagree	1
Disagree	2
Neutral	3
Agree	4
Strongly Agree	5

66. I do NOT like being involved in a student club or organization (reverse coded).

[VAR: SI21NoClub → SI21NoClubRecoded]

RESPONSE	CODED
Strongly Disagree	1
Disagree	2
Neutral	3
Agree	4
Strongly Agree	5

67. I use outdoor recreational spaces for casual and informal group sports.

[VAR: SI22Outdoor]

RESPONSE	CODED
Strongly Disagree	1
Disagree	2
Neutral	3
Agree	4
Strongly Agree	5

68. I have played on an intramural team.

[VAR: SI23Intramural]

RESPONSE	CODED
Strongly Disagree	1
Disagree	2
Neutral	3
Agree	4
Strongly Agree	5

69. I attend college athletic events.

[VAR: SI24Athletic]

RESPONSE	CODED
Strongly Disagree	1
Disagree	2
Neutral	3
Agree	4
Strongly Agree	5

70. I have used facilities in the gym for individual for individual activities (for example, exercise and swimming.

[VAR: SI25Facilities]

RESPONSE	CODED
Strongly Disagree	1
Disagree	2
Neutral	3
Agree	4
Strongly Agree	5

71. I have used the recreational facilities in the gym for playing sports that require more than one person.

[VAR: SI26Play]

RESPONSE	CODED
Strongly Disagree	1
Disagree	2
Neutral	3
Agree	4
Strongly Agree	5

72. My interpersonal relationships with other students had an impact on my personal growth, my attitudes, and my values.

[VAR: SI27 Inter]

RESPONSE	CODED
Strongly Disagree	1
Disagree	2
Neutral	3
Agree	4
Strongly Agree	5

73. I have a strong sense of connectedness with other students.

[VAR: SI28Connect]

RESPONSE	CODED
Strongly Disagree	1
Disagree	2
Neutral	3
Agree	4
Strongly Agree	5

74. I like to wear clothing that bears the university emblem or mascot.

[VAR: SI29Clothing]

RESPONSE	CODED
Strongly Disagree	1
Disagree	2
Neutral	3
Agree	4
Strongly Agree	5

75. I have a lot in common with other students.

[VAR: SI30Common]

RESPONSE	CODED
Strongly Disagree	1
Disagree	2
Neutral	3
Agree	4
Strongly Agree	5

76. When I think of my overall social life here with friendships, college organizations, co-curricular activities, I feel very satisfied.

[VAR: SI31SocialLife]

RESPONSE	CODED
Strongly Disagree	1
Disagree	2
Neutral	3
Agree	4
Strongly Agree	5

77. I have a very positive impression with students here.

[VAR: SI32Impression]

RESPONSE	CODED
Strongly Disagree	1
Disagree	2
Neutral	3
Agree	4
Strongly Agree	5

78. I have made a lot of friends while here at this school.

[VAR: SI33Friends]

RESPONSE	CODED
Strongly Disagree	1
Disagree	2
Neutral	3
Agree	4
Strongly Agree	5

79. If I had a problem, I felt very comfortable talking about it with friends that I made here.

[VAR: SI34Problem]

RESPONSE	CODED
Strongly Disagree	1
Disagree	2
Neutral	3
Agree	4
Strongly Agree	5

80. More of my friends are here on the campus than at my work or hometown

[VAR: SI35Home]

RESPONSE	CODED
Strongly Disagree	1
Disagree	2
Neutral	3
Agree	4
Strongly Agree	5

81. I have made a lot of friends in residence halls.

[VAR: SI36ResHalls]

RESPONSE	CODED
Strongly Disagree	1
Disagree	2
Neutral	3
Agree	4
Strongly Agree	5

82. I enjoy the social life in the residence halls.

[VAR: SI37Social]

RESPONSE	CODED
Strongly Disagree	1
Disagree	2
Neutral	3
Agree	4
Strongly Agree	5

84. Did the student persist with the university?

[VAR: PERSIST]

RESPONSE	CODED
YES	1
NO	0

CONCLUSION

The study that reported the results for this data was completed in the fall, 2016. The study that originated this data focused on dual enrollment programs, but also captured additional data for purposes of constructing a Research Model. The SPSS data collected to perform this study is available upon request.