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The Effectiveness of Articulation and Transfer Agreements Between Missouri Community Colleges and Universities in Promoting the Successful Completion of a Four-Year Degree

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THE EFFECTIVENESS OF ARTICULATION AND TRANSFER AGREEMENTS
BETWEEN MISSOURI COMMUNITY COLLEGES AND UNIVERSITIES IN
PROMOTING THE SUCCESSFUL COMPLETION OF A FOUR-YEAR DEGREE

BY

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DISSERTATION

Submitted in partial fulfillment of the requirements
for the degree of Doctor of Philosophy in Education
in the Graduate School of the
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St. Louis, Missouri

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ABSTRACT

American community colleges have become important in the pursuit of a four-year degree. The state of Missouri established an Associates of Arts degree and the 42-hour general education block option to assist students with transfer and degree completion in the shortest time possible (Coordinating Board for Higher Education, 2000). If articulation agreements in Missouri are promoting ease of movement through higher education systems as desired, the total number of terms and hours accumulated to the completion of a four-year degree should not vary among transfer students and native university students. Using Tinto's Student Integration Model as a theoretical framework, this study compares the number of semesters and hours required to complete a four-year degree between native, A.A. degree transfer, and 42-hour block transfer students to determine if transfer options are aiding or impeding four-year degree completion.

The study utilized data from two Missouri universities; the University of Missouri St. Louis and Missouri State University, chosen because they accept transfer students from a large number of Missouri community colleges. The independent variable was university degree completers, the two dependent variables were total number of terms and hours accumulated to a four-year degree, and the covariates were gender, ethnicity, university attended, and community college attended. The statistical test used for this study was the one-way Multivariate Analysis of Covariance (MANCOVA).

Findings indicated that for full-time students, there is a significant difference in terms and hours accumulated, with native students requiring fewer of both to complete a four-year degree than 42-hour block students, but not fewer than A.A. degree students. Results also indicated there is a significant difference in hours accumulated for part-time

students to the completion of a four-year degree, with native students accumulating fewer hours than both part-time 42-hour block students and A.A. degree students. The study suggests that there are institutionally controlled factors that influence time to completion for these groups, supporting Tinto's theoretical observations. The study found, however, that there was no significant difference in terms accumulated for the three subgroups of part-time students, and no significant difference between full-time or part-time A.A. degree students or 42-hour block students.

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TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

CHAPTER 1

Introduction to the Study

Our nation was founded on an underlying set of principles of equality. These

principles imply that citizens should be provided with the opportunity to rise to their

highest potential. Higher education is a means by which this opportunity can be provided.

Throughout the history of the American higher education system, there has been a

movement to provide this opportunity not only for the privileged but also for the general

public. During the Reform Era of the 1800s, higher education institutions were

established specifically to open opportunities for previously excluded individuals through

the establishment of the Morrill Acts in 1862 and 1890. Through these Acts, "Land

Grant" colleges opened educational opportunities for the industrial class, and the first

models were developed for two-year institutions in 1892 (Rudolph, 1990). The formal

establishment of two-year institutions began in the early 20th century.

The oldest continuously existing public two-year institution is Joliet Junior

College, established in 1901 in Illinois (Vaughan, 2006). However, the establishment of

this college did not lead other states to provide the necessary support required to

encourage two-year institution development. Even though the North Central Association

of Colleges and Schools established standards for two-year institutions in 1917 and the

American Association of Junior Colleges was established in 1921, only a few states had

developed legislation permitting the organization of two-year institutions by the middle

of the century. The California Junior College Act of 1921 served to create a fund to

support junior college districts that operated independently of the public high schools

(Vaughan, 2006). In 1928, Mississippi established a state governing board for the

purpose of overseeing the establishment of a network of public junior colleges, and in

North Carolina, the Asheville Decision of 1930 gave the community the right to meet

their educational needs through locally created colleges and helped to secure the benefit

of state legislation (Vaughan, 2006). The changing social and economic issues of the

1950s and 1960s provided further impetus for the successful establishment of the

community college. These issues included an increase in the number of individuals

eligible for college, the civil rights movement, and the Higher Education Act of 1965.

Growing state support and necessary funding provided a rapid increase in the number of

public two-year institutions in the 1970s (Vaughan, 2006).

     The downturn of the economy in the current decade has generated a renewed

emphasis on the importance of the community college. President Obama has been a

strong advocate for community colleges and the role they play in strengthening our

economy. In defining his *American Graduation Initiative* (2009), President Obama

stated:

> Now is the time to build a firmer, stronger foundation for growth that will not
>
> only withstand future economic storms, but one that helps us thrive and compete
>
> in a global economy. It's time to reform our community colleges so that they
>
> provide Americans of all ages a chance to learn the skills and knowledge
>
> necessary to compete for the jobs of the future. (p. 1)

One goal of this initiative is to promote an additional five million community college

degrees and certificates by 2020. For some, these degrees will lead directly to

employment in the workforce. For others, the results will be a two-year transfer degree

leading to a baccalaureate.

Over the years, the community college has become an important component of the higher education system in the United States, established expressly to provide broader access to higher education and the opportunities it affords (Cohen & Brawer, 2003). Approximately 1,200 community colleges in the United States now serve over 6.5 million students (Kolesnikova & Shimek, 2008). In Missouri, the legislature passed a bill in 1961 establishing the formation of local community college districts, and by fall 2005, over 85,000 students were enrolled in community colleges (Swan, 2006). These colleges offer access to higher education for many individuals who would otherwise be excluded. Cohen and Brawer wrote, "The community colleges reached out to attract those who were not being served by traditional higher education" (p. 28). Students attend community colleges for a variety of reasons, among them affordability, academic access, and convenience. In some cases, students can attend only part-time due to family or job commitments. In other cases, they are not prepared academically for four-year college admission because of their prior education or because they have been out of school for an extended period of time. Some students are unsure of their academic goal and find that community colleges give them an opportunity to determine their direction in higher education.

Because of the diversity of students entering these colleges, the community college mission has expanded over time to encompass much broader roles (Cohen & Brawer, 2003, p. 2; Farnsworth, 1997). One important role has been to promote the attainment of an Associate of Arts (A.A.) degree for the purpose of transferring to a four-year institution. As early as 1922, the American Association of Junior Colleges defined transfer criteria for the community college. These criteria were designed to ensure that

the first two years of coursework at the community college would be consistent with the first two years at the four-year institutions (Cohen & Brawer, 2003).

The success of the transfer function is not just a concern for community colleges but also for four-year institutions. It is advantageous for four-year institutions to admit transfer students who are adequately prepared for junior-level work and who will graduate on time. There is an advantage, therefore, for collaborative efforts to be undertaken between two-year and four-year institutions to promote a higher level of success for the transferring student.

A key to adequate preparation for transfer to a four-year institution is the existence of an appropriate curriculum at the community college. Transfer curricula at the community college are often established through articulation agreements between four-year institutions and their community college partners to help ensure students have been adequately prepared in their general education courses.

Many states have promoted community college and four-year institution cooperation. For example, in Missouri, the state's Coordinating Board for Higher Education (CBHE) has established guidelines to address problems students may experience when transferring from community colleges to four-year institutions (Missouri Coordinating Board of Higher Education, 2000). Among other factors, these guidelines address curriculum among other factors.

Both two-year and four-year institutions have a vested interest in transfer students' persistence to complete a baccalaureate degree. Adequate course preparation at a community college may not be enough to promote the success of transfer students at a four-year institution (Laanan, 2003). Students who are academically prepared to transfer

from a two-year institution often face other adjustments once they enter a four-year

college. The transfer student will need to adjust to a new campus environment that will be

different, both academically and socially, from what he or she has been accustomed to.

This process has been termed transfer shock (Cohen & Brawer, 2003).

   The phenomenon of transfer shock has generated extensive research over the

years. Keeley and House (1993) stated, "There is widespread, long-standing evidence of

transfer shock, a decrease in the first semester's grade point average (GPA), when

community college students transfer to a four-year school" (as cited by Townsend, 2001,

para. 3, p. 5). This effect could result from the inability to integrate into the academic and

social environment (Laanan, 2003) or simply be a result of institutional differences as

well as insufficient preparation for upper-division courses (Townsend, 2001, para. 4).

Laanan (2003) suggested students who begin their college career at the community

college level also begin with lower educational aspiration, influencing persistence. The

social aspects of college life often are not as pronounced at the community colleges.

Accordingly, students need to adjust not only to the academic differences between the

two institutions but also to the social differences (Laanan, 2003). Research suggests,

however, that persistence for students who transfer after completing their associates

degree is higher than for students who transfer as freshmen and sophomores, and the

effect of transfer shock is less pronounced (Thurmond, 2007).

   Two-year and four-year institutions serve students with different levels of

academic preparation. Because students entering four-year institutions are typically better

prepared, faculty members at these colleges and universities do not focus efforts toward

developmental education needs (Cohen & Brawer, 2003). Students entering the

institution are expected to have the academic skills necessary for college-level work. Due to open access at the community college, a much higher percentage of entering students do not have the same level of academic preparedness. Many enter underprepared for college-level work in subjects such as math and writing. It is not unusual for over half of the students entering a community college to require some type of developmental course work (Cohen & Brawer, 2003). As a result, faculty at community colleges must focus on helping students develop the academic skills necessary to succeed in higher education. Townsend's research indicates, however, that once these skills are acquired, these students are as likely to succeed in college-level courses as are students who do not require remediation (2001). Transfer shock may be a phenomenon that occurs not because the transfer students are academically underprepared but because they have not been exposed to the faculty expectations found at four-year institutions.

Given these challenges, the promotion of success in higher education needs to be a collaborative effort among all levels of the educational system. No single institutional type can or should be responsible for this endeavor (Missouri Department of Higher Education, 2007). Community colleges need to focus on adequately preparing students for transfer to four-year institutions. Four-year institutions should be prepared to assist transfer students in the acclimation process once transfer has taken place. The students' ability to obtain their desired level of education should not be hindered due to the inability or unwillingness of institutions to work together (Missouri Department of Higher Education, 2007).

Statement of the Research Problem

Since the open-door policy of community colleges results in a higher number of at-risk students entering higher education, for this group of students, the role of the community college is to prepare them for college-level work academically while at the same time promoting persistence. While degree attainment is the ultimate goal, high expectations for student performance must not be sacrificed in the process. A focus on academic quality at the community college better serves to prepare transfer students for the educational expectations at four-year institutions.

Consumers, constituents, and policymakers recognize the important role education plays in producing a strong economy within states as well as across the nation. The completion of a degree results in higher salaries, which continue to increase as the level of the degree increases resulting in a positive impact on the economy (Swan, 2006). Educational attainment fuels the economy and drives advancements in areas such as technology and teacher education. According to the Lumina Foundation (2008), a large number of our educated population is nearing retirement, yet the rate at which we are educating our younger population has fallen below that of other nations. Among nations, the United States is now ranked tenth in the percent of young adults with college degrees. It is imperative that as a nation, we ensure a means by which more individuals succeed in higher education, and each state plays an important role in promoting this endeavor (Lumina Foundation, 2008).

Currently, Missouri is ranked 47th in the nation in per capita funding for higher education (National Center for Education Statistics, 2008). The state has established the Higher Education Funding (HEF) Taskforce for the purpose of developing funding

policies and requests to the state legislature. According to the HEF case statement, an investment in Missouri's higher education system will serve to strengthen the state's economic growth through education, research, job training, and service (Missouri Department of Higher Education, 2006). In addition to accessible education, a collaborative effort between institutions must exist to ensure education is not only accessible and affordable but also effective in promoting the attainment of students' educational goals. The *Imperatives for Change: Building a Higher Education System for the 21st Century* (2008, July 30) has been developed by Missouri's higher education institutions and the CBHE for this purpose. As stated in its mission:

> The Coordination Board for Higher Education, the Missouri Department of Higher Education, and the state's institutions of higher education will work collaboratively to support a diverse system of affordable, accessible, high-quality educational institutions that demonstrate student learning and development, encourage and support innovation, foster civic engagement, enhance the cultural life of Missourians, and contribute to economic growth, (p. 2).

As evidenced by this mission, Missouri is dedicated to promoting coordination among higher education institutions to improve its higher education system (Coordinating Board of Higher Education, 2008, July 30). Because many students begin their educational career at the community college level, it is important to promote a process that allows them to move from the community college to a four-year institution efficiently and quickly. According to Robert Stein, former Commissioner of Missouri Higher Education in Missouri, "Access without success is an empty promise, so first and foremost the focus on the system remains on students, learning, and the realization of reaching full

educational potential" (Coordinating Board of Higher Education, 2008, February, para. 3).

The state of Missouri has established two options for students transferring from a two-year institution that allow the student to gain full credit for a prescribed block of courses. One is the transfer of the A.A. degree, and the other is the transfer of a designated 42-hour block of coursework, established in 2000. The A.A. degree has been the traditional path for many community college transfer students. In Missouri, the beginning of the A.A. transfer agreement between community colleges and four-year institutions dates back to 1975 but was not established as an administrative rule by the CBHE until 1987 (Farnsworth, 1997). According to Farnsworth (1997), "Any student with an Associates of Arts degree from an accredited community college in the state must be viewed by transferring four-year colleges as having satisfied the general education requirements for a baccalaureate degree" (para. 14).

In the years that followed the establishment of the A.A. degree transfer agreement, the state formulated the guidelines for the 42-hour block transfer. In 2000, the CBHE published the *Guidelines for Student Transfer and Articulation among Missouri Colleges and Universities*. The guidelines were established to further facilitate the ease of transfer from two-year institutions to four-year institutions. According to the CBHE:

> These credit transfer guidelines are intended to ensure that high school graduates with clear educational objectives may complete a degree program offered by colleges and universities *in the shortest possible time*, whether the student remains in one institution or transfers to another" (p. 1, italics added).

The objective of the guidelines is to promote an effort to address problems students experience when moving from one institution to another, in the state of Missouri, such as course acceptance at the four-year institution. These guidelines review the ability of a student to transfer to a four-year institution with a designated 42-hour block of general education core courses. The guidelines have now been in place for a decade, allowing time for a number of 42-hour block transfer students to move through the four-year institutions to complete a four-year degree. Yet no research has been done that substantiates that the 42-hour transfer option facilitates ease of transfer or that it decreases time-to-degree completion. This study examined both of these critical questions.

The current Coordinating Board of Higher Education policies on transfer and articulation are found in Appendix A. This includes a description of the guiding principles, rational for the general education curriculum, transferability of general education credit, general education goals and competencies. Also included is a description of the statewide transfer degrees as well as the 42-hour block of general education credit (2009).

Purpose of the Study

If the 42-hour transfer and articulation agreement is accomplishing its purpose, there should be no significant difference in the time required for the successful completion of a degree program at the four-year institution among students transferring with the 42-hour block, those transferring with an A.A. degree, and native students beginning as a freshman at the four-year institution. In addition, if the articulation agreement is accomplishing its purpose, there should be no significant difference in the

total number of hours taken by students to obtain a bachelor's degree among 42-hour block transfer students, A.A. degree transfer students, and native students.

As noted earlier, past research has shown that transferring students experience a period of adjustment when moving from a community college to a four-year institution that results in transfer shock (Townsend, 2001; Laanan, 2004). The number of hours transferred to the four-year institution may have an effect on the degree of adjustment that occurs and the timely successful completion of a four-year degree (Fincher, 2002). If articulation agreements are promoting ease of movement through the higher education system, the total number of hours accumulated in the pursuit of a four-year degree should not vary significantly, whether the student transfers with the 42-hour block, transfers with an A.A. degree, or begins as a native student at the four-year institution. Yet studies indicate that more than 70% of students moving from the community college to a four-year institution repeat coursework (Fincher, 2002). It is important to know whether the number of hours transferred affects the successful completion of a four-year degree for students, and to determine whether the articulation agreements established in Missouri are working in terms of number of college courses taken to complete a four-year degree and the time required to complete the degree. This information could provide insight into how effective the higher education system is in Missouri in terms of transfer student success and how wise it was to enact the 42-hour transfer option, if "time-to-completion" is a state concern. It may also provide necessary information for both two-year and four-year institutions that could be utilized in collaborative efforts to promote successful transfer graduates.

The purpose of this study was to compare the number of hours accumulated and the time required to successfully complete a degree at a Missouri university, defined by the number of semesters accumulated for native students who began at the university, for those who transferred with an A.A. degree, and for those who transferred with the 42-hour block. Successful completion was evaluated based upon the number of semesters required to obtain a four-year degree and the number of credit hours required to complete a four-year degree. In addition, gender, ethnicity, the university attended, and the community college attended were utilized as covariates to determine if any had a contributing an effect on successful completion of a four-year degree.

Research Questions

The central research question for this study is, "Are there significant differences in time-to-completion and in hours-to-completion of a four-year degree based on transfer status for Missouri transfer students in comparison to native students after adjusting for ethnicity, gender, university attended, and community attended?" More specifically, this research attempted to answer the following questions:

1. Are there significant differences in time-to-degree completion based on transfer status for Missouri transfer students in comparison to native students after adjusting for ethnicity, gender, university attended, and community college attended?

2. Are there significant differences in the number of college credits earned based on transfer status for Missouri transfer students in comparison to native students after adjusting for ethnicity, gender, university attended, and community college attended?

3. Do native students complete a degree program in fewer semesters than both A.A. degree transfer students and 42-hour block transfer students?

4. Do A.A. degree transfer students complete a degree program in fewer semesters than the 42-hour block transfer students?

5. Do native students complete a degree program with fewer college credit hours than A.A. degree transfer students and 42-hour block transfer students?

6. Do A.A. degree transfer students complete a degree program with fewer college credit hours than 42-hour block transfer students?

In order to generate the data necessary to answer these research questions, existing databases were used from two Missouri four-year institutions. The independent variable for this study was four-year degree completers from both universities. The four-year degree completers were divided into three subgroups: 42-hour block transfer students, A.A. degree transfer students, and native students. Full-time and part-time students were separated and tested independently. Once the three groups were selected for full-time students and three groups selected for part-time students, the research was conducted according to the design and methodology outlined in Chapter Three of this study.

Hypotheses

To guide this research, the following directional hypotheses were established. Each of the six hypotheses was tested independently for both the full-time students and the part-time students.

1. There are significant differences in time-to-degree completion based on transfer status for Missouri transfer students in comparison to native students

after adjusting for ethnicity, gender, university attended, and community college attended.

2. There are significant differences in the number of college credits earned based on transfer status for Missouri transfer students in comparison to native students after adjusting for ethnicity, gender, university attended, and community college attended.

3. Native students will complete a four-year degree program in fewer semesters than both A.A. degree transfer students and 42-hour block transfer students.

4. A.A. degree transfer students will complete a four-year degree program in fewer semesters than the 42-hour block transfer students.

5. Native students will complete a four-year degree program with fewer college credit hours than A.A. degree transfer students and 42-hour block transfer students.

6. A.A. degree transfer students will complete a four-year degree program with fewer college credit hours than 42-hour block transfer students.

Delimitations

This study was delimited in that it compared the successful completion of a degree program only at two Missouri universities. It was further delimited in that it compared only A.A. degree transfer students and 42-hour block transfer students with the native students since these are the two established articulation transfer agreements between Missouri community colleges and universities established by the state's Department of Higher Education (DHE). This study used data obtained from the University of Missouri St.-Louis (UMSL) and Missouri State University (MSU). These

two universities were selected because both accept a large number of transfer students from a variety of Missouri community colleges. Although these universities receive transfers from other states, four-year institutions, and other community college systems, this study looked only at transfers from Missouri community colleges. This study was, therefore, limited in that it reviewed only completion information for students transferring from Missouri community colleges to the two selected universities. The data obtained from existing records included the total number of college-level course hours and the total number of semesters required to complete a degree program from the universities for the native students, the A.A. degree transfer students, and the 42-hour block transfer students for both full-time students and part-time students. In addition, data were obtained to determine the gender, the ethnicity, the university from which the four-year degree was obtained, and the community college the students transferred from for each full-time and part-time group.

Limitations

The following limitations applied to this study:

1. This study did not take into account certain factors that might influence the rate at which a student progresses through postsecondary level institutions, such as job and family commitments and economic barriers. For example, students who work may carry lighter loads but still be classified as full-time. In addition, these factors may affect the status of students, resulting in some being classified as part-time.

2. This study was limited to data obtained from only two universities in Missouri: UMSL and MSU. It is conceivable that factors unique to these

universities affect time-to-completion and hours taken, therefore influencing completion in unique ways.

3. This study did not include transfer students from every community college in Missouri. It included only the community colleges that had students transfer to either UMSL or MSU.

4. This study did not include transfers from four-year institutions to four-year institutions. It included only transfers from community colleges to universities.

5. This study did not include a determination of the quality of instruction offered at the various community colleges in Missouri that could impact future success of the students. It assumed that this would balance out across all the combined community colleges.

6. This study did not take into account the quality of lower-division instruction at either university, which may affect persistence, performance, and time-to-completion of native students.

Assumptions

This study was conducted based on the following assumptions:

1. It was assumed that the students selected for the study would be representative of the larger undergraduate student body at the institutions where the research data were gathered.

2. It was assumed that the data generated from both institutions were comprehensive for the timeframe selected and included all undergraduate students enrolled.

3. It was assumed that the three groups of students would be represented in the data generated from both universities.

Operational Definitions

For the purposes of this study, the following operational definitions apply:

1. *Community college* is defined as a regionally accredited postsecondary institution that offers principally one- or two-year degree or certificate programs leading to an A.A. or A.A.S. degree.

2. *Effectiveness* is defined as the proper implementation of articulation agreements.

3. *Number of hours* is defined as college-level credit hours from both the community college and the university. This definition excludes pre-college level developmental course hours obtained at either institution. The number of hours obtained includes dual-enrollment credits and advanced placement credits. This definition also excludes any non-credit courses taken at the community college such as continuing education.

4. *Number of semesters* to successfully complete a degree program at the university for native students, A.A. degree transfer students, and 42-hour transfer students is established based on the following:

    a. The 42-hour block transfer agreement was established in 2000 and initiated at the community colleges by 2001. This study examined only completion data for students who began their college studies with the fall term of 2001 or later.

b. Students attending full-time and part-time are separated and evaluated independently because, when evaluating time-to-completion, part-time status could artificially affect this factor.

c.   The number of semesters used to measure time-to-completion begins with a minimum of eight and extends to a maximum of 14 to successful completion of a degree.

5. *Successful completion* of a degree program is defined as the completion of a B.S. or B.A. degree at the university.

6. *University* is defined as a regionally accredited postsecondary institution that offers four-year degree programs leading to a B.S. or B.A. degree.

Definition of Terms

For the purposes of this study, the following definitions are used for commonly expresses terms:

1. *Academic preparedness*: the degree of preparation individual's posses for college level course work upon entering a community college or university.

2. *Advanced Placement Testing*: College credits acquired through the process of testing in specific subjects and achieving an acceptable predetermined score without enrolling in the course.

3. *Articulation Agreement*: document which specifies in advance the terms, conditions, and expectations which shall be applied to transfer students. When courses and/or degree programs are completed successfully at the sending institution, they will, for admitted students, be accepted in transfer and apply

to graduation requirements for a specified degree program at the receiving

institution.

4. *College credit hours*: hours counting as college credit that are applicable to

   degree requirements from either a community college or a university,

   excluding developmental and all non-credit courses.

5. *Dual credit*: courses offered to secondary students in which the student

   receives both secondary and college credit.

6. *Full-time status*: students enrolled in 12 or more hours in a regular semester or

   six or more hours in a summer semester.

7. *Native students*: students whose initial college enrollment was at a four-year

   higher education institution and who have not transferred to another institution

   since that initial enrollment and who have taken no more than 11 hours at

   another institution of higher education (Coordinating Board for Higher

   Education Public Policies, 2009, p. 131).

8. *Persistence*: Continued enrollment in college courses while pursuing a degree.

9. *Receiving institution*: The institution of higher education at which a transfer

   student currently desires to enroll and have previously earned credit applied

   toward a degree program.

10. *Sending institution*: The institution of higher education of the most recent

    previous enrollment by a transfer student at which transferable academic

    credit was earned.

11. *Time-to-completion*: number of semesters required to complete a four-year

    degree.

12. *Transfer shock*: the adjustment to a new academic environment that occurs as
a student transfers from the community college to a university, typically
displayed as a decreased grade point average the first semester after transfer.

13. *Transfer students*: students entering an institution for the first time with
academic credit earned at another institution, which is applicable for credit at
the institution the student is entering (Coordinating Board for Higher
Education Public Policies, 2009, p. 132). For this study, transfer students were
those moving from a Missouri community college.

14. *42-hour block*: transfer core of courses consisting of lower-level general
education credit at community colleges that will be considered equivalent to
the general education credits required by the four-year institutions.

Significance of the Study

Missouri public universities and many private universities in the state now accept
the package of general education coursework that has met the requirements for either the
A.A. degree or the 42-hour block option. In both cases, the courses transfer as a
complete unit. The purpose of the 42-hour block is to facilitate the obtainment of a
degree program at the university *in the shortest possible time* (Missouri Department of
Higher Education, 2000, italics added).

This study contributed to the determination of the effectiveness of the established
42-hour block articulation agreement and the A.A. degree transfer between community
colleges and universities. In addition, this research provided insight into whether the 42-
hour transfer block facilitates a faster and more efficient completion of a degree program
at Missouri universities for community college transferring students than the A.A. degree

transfer. This study also compared the time-to-completion of a four-year degree in terms of total semesters and total hours accumulated for the 42-hour transfer students and the A.A. degree transfer students to native students. This information will provide insight into whether students transferring with the 42-hour block or the A.A. degree complete a four-degree as efficiently as native students at the four-year institutions.

This study provides evidence that can be used by both the two-year and four-year institutions to justify the strengthening of collaborative efforts in order to facilitate the ease of transfer. Missouri students completing the A.A. degree or the 42-hour block who desire to transfer for the purpose of completing a university degree should not be penalized for having pursued this educational path by taking additional courses or accumulating additional hours. This study contributes to the body of research that supports the need to facilitate the ease of transfer between the two-year institutions and the four-year institutions. For community colleges, a high level of expectation for students should be established to prepare them for success at the university level. Simply passing through the system will not promote success after transfer. This study also provides evidence that effort is needed to strengthen the advisement process at community colleges to ensure that students who desire to transfer to a four-year institution are being properly advised in course choices. In addition to successful completion of the A.A. degree or the 42-hour block at the community college, the transfer student must persist to the completion of a degree at the four-year institution. Further, this study supports the need for four-year institutions to provide transfer students with a means to properly acclimate to their new environment both academically and socially. The results of the study will be useful to students, advisors, college

administrators, and the general public in making more informed decisions about desired paths to baccalaureate degree completion.

To support economic growth and stability within the state of Missouri, it is vital for students to complete a degree, allowing them the opportunity to earn higher salaries and have a positive impact on the economy. The results of this study imply that the two transfer articulation agreements are not being followed as prescribed by the CBHE at the community colleges and/or universities. A stronger effort is needed to ensure the proper guidelines are being followed. The evidence provided by this research indicates the need to reexamine the 42-hour transfer block and determine if it should be continued as an optional transfer choice for community college students. This study makes a significant contribution to evidence needed by state policymakers and education leaders in order to make informed decisions concerning transfer and articulation.

The mission of community colleges is to offer access to higher education for many individuals who would otherwise be excluded. Many students attend community colleges who would otherwise not be served by the more traditional education offered at universities. This reality is a reflection of many different factors such as job and family commitments, affordability, or lack of preparedness for college-level coursework. The success of the transfer function is a concern for community colleges, universities, the CBHE, and state policymakers.

Theoretical Framework

The persistence of students in the pursuit of degree attainment is influenced by both external and internal factors. Tinto's Student Integration Model is a theoretical framework that describes student attributes and institutional conditions that contribute to

persistence in the academic setting. Student attributes are external factors that students

bring to an institution and cannot be controlled by the institution. Institutional factors are

conditions within the institution that can have a profound effect on student persistence.

This model was chosen for this study because the conditions within institutions that

promote retention can play an important role in student persistence to degree attainment

in both the two-year and the four-year institution and affects both transfer students and

native students. A detailed discussion of the application of Tinto's theory is discussed

further in Chapter Two.

Overview of Methods

This study was designed to determine the effectiveness of two articulation and

transfer agreements established by the state of Missouri: the 42-hour block transfer and

the A.A. degree transfer. The data for this study were generated from existing databases

from the University of Missouri-St. Louis and Missouri State University. The sample was

composed of undergraduate students attending the two universities that had transferred

with the 42-hour block, transferred with the A.A. degree, or who began as a native

student. The independent variable in this study was four-year degree completers from the

two universities with three subgroups that included 42-hour block transfer students, A.A.

degree transfer students, and native students. The two dependent variables were total

number of terms accumulated and total number of hours accumulated to degree

completion of a four-year degree. Four covariates were included in this study to control

for the possible influence they might have on total hours and total terms. The covariates

utilized were gender, ethnicity, the university attended, and the community college

attended. Full-time students were analyzed independently from part-time students. Once

the full-time and part-time participants were selected, demographic and descriptive

analyses were conducted followed by a Multivariate Analysis of Covariance

(MANCOVA). This analysis strategy was chosen because it was determined to be the

most appropriate, given the type of data and design strategy employed. The MANCOVA

analysis provided a means for determining if the three subgroups differed in regard to

total terms and total hours accumulated to a four-year degree. The Bonferroni post hoc

test was used for the multiple comparisons of means. This statistical method provided a

means for determining which subgroups of students differed in terms accumulated and

hours accumulated to a four-year degree. More details describing the methods used are

given in Chapter Three.

Summary and Overview of Remaining Chapters

This dissertation is composed of five chapters. Each chapter begins with an

introduction that highlights the chapter's primary function and purpose. The following

provides a brief description of each chapter.

Chapter One has provided introductory background information for this study, the

statement of the problem, the purpose of the study, the research questions, and the

hypotheses. In addition, delimitations, operational definitions, and definition of terms are

provided. Chapter One also describes the significance of the study, the theoretical

framework, and provides an overview of the methodology.

The following chapter, Chapter Two, provides a comprehensive review of the

literature applicable to this study. This review provides a brief overview of the

community college and specifically reviews factors influencing transfer such as transfer

shock and academic preparedness. Further, a review is provided describing current

research on retention, effects of early transfer, and success of two-year transfer students

attending four-year institutions. In addition, an overview of current articulation

agreements between two and four-year institutions in Missouri is given and the

theoretical model for this study and the research model employed are described.

Chapter Three provides an overview of the research questions and hypotheses for

this study. Also, a comprehensive description of the participants, instruments, procedures,

and research design utilized for this study is described. This chapter also describes the

data analysis techniques employed.

Chapter Four reviews the research questions and hypotheses. It also provides an

overview of the selection of participants for this study as well as demographic

descriptions of the four covariates for both full-time and part-time participants, the 42-

hour block transfer students, the A.A. degree transfer students, and the native students.

Furthermore, descriptive statistical results are provided for the two dependent variables.

The results of the statistical analyses are presented independently for both the full-time

students and the part-time students. In addition, a summary of the hypotheses retained

and rejected is given.

Chapter Five includes a summary and a thorough discussion of the results of this

research. This chapter also examines the implication for the research results that were

obtained and discusses its importance for state policy makers that influence higher

education. Recommendation for further research and concluding thoughts are provided.

CHAPTER 2

Review of Related Literature

This chapter reviews the critical literature that provides weight to and support for the research analyzed in this study. It includes the historical development of the community college and an examination of research related to transfer shock, the transfer function, retention and student success, effect of early transfer, and success rates of transfer students. The chapter also includes a review of the literature that describes how collaboration between two-year and four-year institutions affects the persistence and success of transfer students. Finally, a brief summary of theoretical models is provided, as is a detailed description of how Tinto's Student Integration Model (SIM) best serves this study.

Higher education provides an opportunity for individuals within our society to rise to their highest potential, encouraging them to become more productive contributors. One institution that has been established to provide an opportunity for this purpose is the community college. The community college today provides open access to individuals who otherwise would not have the opportunity to pursue an education beyond the high school level; however, this has not always been the case. Vaughan (2006) described three events that promoted open access to community colleges. The first was the increase in the number of students eligible for college in the 1960s. These individuals were children of the "baby boomers" who had been given access to a higher education through the GI Bill. The GI Bill created a generation that recognized the importance of accessible education. The second event was the Civil Rights Movement that expanded opportunities for women and minorities. The third event to promote open access to community colleges was the

Higher Education Act of 1965, which provided financial assistance to individuals who

previously could not afford to go to college (Vaughan, 2006). These events also had a

profound effect on the establishment of community colleges in Missouri. A bill passed by

the Missouri legislature in 1961 allowed public schools to form local community college

districts, and by the fall 0f 2005, over 85,000 were enrolled in these institutions (Swan,

2006). Nationwide, there are now approximately 1,200 community colleges, serving over

6.5 million students (Kolesnikova & Shimek, 2008).

Another factor associated with the community college that attracts a large number

of students is its affordability. Students attending community colleges in the 2006-07

academic year paid on average less than half what students paid in public four-year

institutions (Kolesnikova & Shimek, 2008). As a primary mission element, community

colleges strive to remain as affordable as possible, providing access to the economically

disadvantaged. Community colleges also offer flexible course schedules that allow

students the opportunity to attend part-time due to family or job commitments. They also

serve those through developmental education who are not academically prepared due to

their prior education or because they have not attended school for an extended number of

years. Because Missouri community colleges are open-enrollment institutions by statute,

they must provide appropriate instructional remedial coursework (Coordinating Board of

Higher Educations, 2008, July). Still other students attend community colleges because

they are unsure of their academic goal and find that avenue gives them an opportunity to

determine their direction in higher education.

These factors have created a diverse student population, resulting in the expansion

of the community college mission over time to encompass numerous roles (Cohen &

Brawer, 2003; Farnsworth, 1997). The attainment of an A.A. degree for the purpose of

transfer to a four-year institution has been a role of the community college since its

earliest years. As early as 1922, the American Association of Junior Colleges (now the

American Association of Community Colleges) defined the community college using its

transfer function, and the first two years of courses at the community college were

expected to be identical to the corresponding courses at the four-year institutions (Cohen

& Brawer, 2003, pp. 3-4). As a result, the success of the transfer function should be a

primary concern for both community colleges and four-year institutions. Four-year

institutions need to be assured that transfer students are adequately prepared to enter as a

third year student; and, the community college needs to develop the appropriate

curriculum for this purpose. Both institutions need to play a role in preparing students for

the adjustments that will occur in a new environment. In order to promote this success, a

collaborative effort needs to exist between the two-year and the four-year sectors.

Transfer-approved curricula have been established through articulation agreements

between the two institutional types. According to the Missouri Coordinating Board for

Higher Education (CBHE) (2000), "Harmonious and equitable consideration of any

problem which a student may encounter in moving from one institution to another is an

ultimate objective of these transfer guidelines" (p. 1).

Transfer Shock

Adequate course preparation may not be enough to promote the success of

transfer students at a four-year institution. There are many social and academic

differences between two-year and four-year institutions, and even students who are

academically prepared at the two-year institution will be faced with other adjustments

after the transfer process has taken place. The rate of retention can be lowered when students begin to struggle with these social and academic adjustments (Laanan, 2004). Because students spend less time on campus establishing friendship and organizational bonds, and because many community college students are part-time and have numerous other family and work priorities, the social aspect of campus life is less pronounced at the two-year institution. Studies have shown the success of transfer students' increases when they become more involved both socially and academically at the four-year institution (Laanan, 2004). So students will need to adjust to a different institutional culture as well as to a larger campus and class size. The social and academic adjustments that take place can have an effect on students' grade point average (GPA) as well as their overall persistence (Laanan, 2004).

The drop in GPA that can occur when a student transfers is known as transfer shock. Transfer shock is a phenomenon that has generated extensive research over the years (Glass & Harrington, 2002; Laanan, 2003; Quanty, Dixon & Ridley, 1999; Townsend, 2001). Townsend (2001) described transfer shock as a drop in a student's GPA that takes place when the two-year student transfers to a four-year institution. What is the cause of this phenomenon? Is it a result of the students' inability to adjust to the differences between the two institutions both academically and socially? Laanan (2003) suggested that students often begin their college career at the community college with lower educational aspiration and persistence. Lower aspirations and lower resulting persistence could affect the ability of students to adjust to the new culture and environment they experience at the four-year institution.

Due to open admission at the community college, two-year institutions serve students with a different level of academic preparation than is common at the four-year college. Students entering four-year institutions are typically better prepared academically for higher education, allowing these institutions to spend less time on helping students adjust to the rigors of higher education (Cohen & Brawer, 2003). Cohen & Brawer (2003) pointed out, "One of the community college's primary purposes has been to accept students from secondary school, provide them with general education and introductory collegiate studies, and send them on to senior institutions for the baccalaureate" (p. 343). Because the community college has a traditional mission of accepting all students regardless of their academic preparedness, they not only spend more time acclimating student to higher education but also must devote needed effort to remediation. Remediation is designed to help students develop the academic skills necessary to succeed in higher education. Cohen & Brawer (2003) reported, "all public two-year institutions offer remedial courses and the number of students enrolled in such courses range from 40 to 70 percent" (pp. 262-263). Some community colleges exceed 70% of students requiring at least one developmental course, for example, the percent of students requiring at least one developmental course at El Paso Community College exceeds 95.3% (Combs, 2002).

Transfer shock may, therefore, also be a phenomenon that occurs because students at the two-year institutions have not adequately been prepared for the rigors of higher education at a four-year institution. The promotion of academic rigor needs to be an effort between all levels of our educational system beginning at the K-12 level and extending to the two and four-year institutions. According to the *Public Policies for the*

Coordinating Board for Higher Education (2008, July), "Missouri postsecondary

institutions, and the Missouri K-12 community share a common interest in promoting

student preparation as a foundation of enrollment, retention, and success in Missouri

postsecondary institutions" (p. 56). As a result, no single institutional type can or should

be solely responsible for this endeavor. A strong collaboration between administration

and faculty at all levels could enhance the students' ability to obtain their desired level of

education.

       The Missouri Department of Higher Education (MDHE) recognizes a need to

promote collaboration throughout all levels of education within the state. One endeavor

established to meet this need is the *P-20 Initiatives in Higher Education*, with P-20

pertaining to pre-school through grade 20. According to the MDHE (2009, April 23), the

P-20 Council was created in response to Senate Bill 580, established in 2006. Its goal is

to promote collaboration at all levels of education, beginning with pre-K through

graduate school, to ensure a seamless transition of students through the education

pipeline. The state has established regional P-20 networks across the state for this

purpose. These initiatives include the following: A state P-20 Council, regional P-20

networks, P-20 Curriculum Alignment, creation of longitudinal data systems, and early

childhood partnerships. Many of the regional P-20 networks are in the early stages of

formation; yet these collaborations are seen as having the potential to strengthen the type

of cooperation needed to promote preparedness for college level coursework as well as

promote efficient and effective transfer processes (Missouri Department of Higher

Education, 2009, April 23).

An additional initiative for the purpose of promoting higher education degree

attainment in the state of Missouri is the *Imperatives for Change: Building a Higher*

Education System for the 21st Century. The *Imperatives for Change* were adopted by the

CBHE in 2008 and are intended to demonstrate the value of higher education, foster

increased understanding of the importance of higher education, and result in expanded

resources. Through this initiative, the state anticipates that it can reduce the number of

high school graduates requiring remedial coursework from 35.4% in 2007 to 30% in

2025. In addition, the state expects to increase the number of high school graduates

attending an institution of higher education from 70% in 2007 to 75% in 2025. These

types of target goals have the potential to strengthen the success of students obtaining

degrees at both two-year and four-year institutions (Missouri Department of Higher

Education, 2009).

The role of community colleges in preparing students for transfer to a four-year

institution is two-fold. The first is to promote the successful completion of an associate's

degree or completion of the appropriate transfer credits. The second is to prepare students

for success at a four-year institution once the transfer has occurred. The four-year

institution is not an idle participant in this process. The ability of institutions to work

together collaboratively allows both institutions to be more successful (Fincher, 2002).

This collaboration could include sound articulation agreements between the institutions

as well as the willingness of the four-year institutions to accommodate the non-traditional

student. The nontraditional student is becoming more common at all levels of higher

education, and these students require flexible course scheduling due to jobs and families

(Fincher, 2002). Once students transfer, the four-year institution should be willing to facilitate their adjustment to this new environment.

Community College Transfer Function

In order to discover the success of transfer students at four-year institutions, the rate of transfer must first be determined. This, however, has been the bases of much debate in the research (Castaneda, 2003; Cohen & Brawer, 2003; Fonte, 1993). The problem with the various studies in this area is that researchers have defined transfer rates differently. Consequently, each study yields different results. Castaneda (2003) described two studies, one conducted by Bradburn and Hurst in 2001 and one by Spicer and Armstrong in 1996. Each used different definitions for transfer rates; as a result, the calculated rates varied from 25% to 52%. Cohen and Brawer (2003) utilized a definition of transfer presented by the Center for the Study of Community Colleges as follows:

> All students entering the community college in a given year who have no
>
> prior college experience, and who complete at least twelve college credit
>
> units within four years of entry, divided into the number of that group who
>
> take one or more classes at an in-state, public university within four years.
>
> (p. 56)

This definition is problematic as well in several respects. First, many students enroll in community colleges and complete twelve units within four years, with no plan for or desire to transfer. They may be taking courses for professional development or to complete a certificate program that is considered a terminal credential. The Cohen definition is also problematic in that many students transfer to private colleges and to out-of-state institutions, particularly when the college is located in a state's border area, as are

a number of the community colleges considered in this study. It is also viewed as an inappropriate measure by many community college professionals in that many students enter the community college with no intention of transferring, even after completing an associate's degree in an area such as nursing. When the definition is limited only to those who express an interest in completing a bachelor's degree, rates climb to the higher percentages as shown in some of the studies mentioned by Castaneda (2003).

Clearly defining transfer could serve to improve the ability to calculate viable, successful transfer rates. Fonte (1993) suggested three recommendations to improve transfer rate calculations. These recommendations include the proposals that transfer rates should be based on student intentions, transfer rates for occupational students should be calculated separately, and only students who have obtained twelve or more hours of transfer courses should be included in transfer rate calculations. The intention of many students entering community colleges is not to obtain a degree and transfer to a four-year institution; rather, many enter to update job skills or acquire skills in order to obtain a higher paying job.

Compounding the problem of producing consistent data based on different definitions of transfer rate are the current variations occurring in the patterns of student transfer. Townsend (2001) noted that community college students display a wide variety of patterns other than the traditional one of transferring to a four-year institution after the completion of an associate's degree. She identified the following variations:

1. Transfer to a four-year school before completing the A.A. or A.S. degree.

2. Transfer with a non-transfer degree such as the Associate in Applied Science degree.

3. Transfer from and to the community college … moving rapidly back and forth among two-year and four-year colleges.

4. Transfer of dual credit courses offered by a community college to high school students.

5. Transfer of community college courses taken during the summer.

6. Transfer of community college courses taken concurrently with four-year college courses. (p. 2)

As described by Townsend & Dever (1999), students moving from high school to a community college and then to a four-year institution or from high school to a four-year institution make up the traditional view of degree attainment. When considering transfer as a reflection of student 'flow', the community college is generally thought of as a component of vertical flow. However, when taking into account the variations mentioned above, the flow is not necessarily vertical but is rather a swirling pattern. According to LeBard (1999), the reasons student display this swirling pattern varies and ranges from financial reasons, academic difficulty, career change, family commitments, and inability to decide on career goals (p. 89). This swirling pattern is not only displayed among community college students but is also prevalent among native students attending four-year institutions.

Research on transfer rates that adheres to the definition given by Cohen and Brawer (2003) would exclude many swirling students who do not follow the traditional transfer pattern. These students now follow unpredictable patterns that must also be considered when looking at transfer rates (Townsend, 2001). In order to obtain useful data, research designed to measure transfer rate not only needs to use a consistent and

valid definition of transfer, but also must take into account the diverse patterns of student transfer.

Because of the current variations in transfer behaviors, determining the effectiveness of the transfer function for the community college may require more than looking at the traditional 2+2 pattern. At both the community college and the four-year institution level, determining a process for tracking students with diverse transfer behavior is essential and devoting attention to the unique needs of these students is important in promoting effective transfer (LeBard, 1999). These types of transfer patterns are becoming more common and show no signs of disappearing.

Retention and Student Success

In order for a student to obtain a baccalaureate degree through the transfer process, the community college needs to implement policies that promote student retention and success. With the community college's open-door policy, there is both a wide variation in preparation among students enrolled and great diversity in ethnicity, age, and academic interest. To determine the effectiveness of policies implemented to promote student retention and success at the community college, student diversity becomes a critical issue. A study conducted by Wild and Ebbers (2002) found that research on retention based on traditional-age students in a university setting does not apply to community college students. The diversity of the community college student includes differences in socio-economic background, minority groups, first generation students, single-parent students, students working full-time, and others. This diversity among students must be taken into account when designing research. Wild and Ebbers (2002) asserted, "It is important that new research initiatives be undertaken that are

targeted directly at community colleges. These initiatives should include the development of theories and models related specifically to community college student retention" (p. 504). If the community college is to be effective in developing successful transfer students, addressing the needs of the diverse population must be a priority issue.

In order for students to obtain a four-year degree, persistence to the completion of the degree must occur. Studies show persistence is enhanced for full-time students. The results obtained through a longitudinal study conducted by the National Center for Education Statistics (2008) revealed "that students who always attend college full-time had higher rates of persistence or attainment than students who always attended part-time. Yet, the persistence or attainment rate for students who alternated between full- and part-time attendance was higher than either that for full-time or part-time students" (p. 22). In addition to attending part-time, almost 20% of students transferring from a two-year institution to a four-year institution will wait two to three years before enrolling at a four-year institution (Fredrickson, 1998). Meeting the needs of part-time students, full-time students, and students that have stopped out is important to promoting degree completion.

Another area of research explores the correlation between student transfer success and the number of hours completed at the community college prior to transfer. A study conducted by Keeley & House (1993) showed students who transfer early display a lower success rate at the four-year institution than do those who complete an A.A. degree before transferring. Laanan (2001) found similar results, showing students who completed the associate's degree before transfer were more likely to complete a bachelor's degree. Forty three percent of associate's degree completers had received a

bachelor's degree within four years after transfer compared to 17% among those who transferred without the degree. These studies indicate the completion of the associate's degree may be an important component of success for the transfer student, and make this study particularly important in that it would suggest that encouraging students to transfer before A.A. completion would not be their best interest.

<div align="center">*Effect of Early Transfer*</div>

For a number of reasons, students may not complete an associate's degree before transferring to a four-year institution. In the past, it was more common for transfer students to complete their first two years of higher education at the community college level and then transfer to the four-year institution for the completion of a four-year degree (Cejda & Kaylor, 2001). The 2+2 transfer pattern is no longer the norm. Cejda and Kaylor (2001) found that the reasons students transfer early include fear of falling behind the four-year students in given programs and a perceived lack of value of the associate's degree. Assuming that attainment of the associate's degree influences retention at the four-year institution, these findings indicate a need for a collaborative effort between both sending and receiving institutions to emphasize the value of the associate's degree, serving to benefit the institutions as well as the students (Cejda & Kaylor, 2001). Clear articulation agreements between the two institutions could eliminate the fear of transfer students falling behind native students at the four-year institutions. If students are assured their courses will articulate and will not have to be repeated, they would be at no disadvantage. This could promote the belief that the associate's degree is an efficient and effective means to the attainment of a bachelor's degree.

Studies also show that a student's academic aspiration has an effect on persistence, retention, and success for transfer students. Students entering the community college have lower overall academic aspirations than do those entering four-year institutions (Laanan, 2003). Laanan suggested the differences in aspirations can be influenced through encouragement or lack of encouragement by parents, inadequate high school preparation, and learning experiences occurring at the high school level. The type of high school courses taken can result in or be a reflection of aspirations. Laanan (2003) proposed that a student's high school experience and selected curriculum can have a significant effect on or be an indication of aspirations. Students taking courses in math, science, and language typically have higher self-concepts and higher academic aspirations than do those without this preparation. What has happened prior to a student entering the community college can have a significant effect on a student's ability to obtain an associate's degree and continue to complete a baccalaureate. Berry (2003) noted, "College may not be for everyone, but it should be attainable for students who complete high school and have a view toward progressing to the next educational level" (p. 393).

When considering the effect of academic aspirations on success, what has become known as "cooling out" needs to be considered. Cooling out is a lowering of aspirations after beginning a college career. Some research suggests that the community college may be responsible for decreasing the chances for degree attainment by lowering student aspirations. In a study conducted by Dougherty (1994), findings indicated as many as 70% to 75% of first time community college students have aspirations to complete a bachelor's degree; however, less than one-fifth actually succeed. Parcarella (1999)

concluded students entering the community college with plans to complete a four-year

degree will require a longer time to complete their degree than will those who begin at

the four-year institution. In addition, Pascarella and Terenzini (1991) stated students

entering a community college with plans to complete a four-year degree are less likely to

persist to completion than those that enter a four-year institution. This should not be a

surprise, given the other factors influencing community college student attendance. But

there may, nonetheless, be a cooling out effect.

Do academic aspirations have an effect on the number of students from two-year

institutions succeeding in their attempt to obtain a bachelor's degree? Rehberg (1978)

found there is a connection between the two:

As early as the end of the ninth grade ambivalence born perhaps of

uncertainty, characterized those who would later enter the two-year

college. The study showed the lowering of educational aspirations of most

of the students who would later enter the community college. If this can be

labeled as cooling out, then many students have their aspirations cooled

long before they enter the community college. Once they enroll, the

community college is faced with a cohort that has less strongly held

aspirations and a higher degree of uncertainty over their future educational

plans than the students who enter the four-year college. (p. 86-87)

Contradictory findings in research conducted by Romano (2004) indicated there is

a "heating up" process that occurs at the community college. Heating up occurs when

students raise their educational aspirations once they have entered the community

college. Even though community colleges may serve to raise aspiration, they also need to

ensure they prepare students for a successful transfer once they have completed their lower level course work by providing proper counseling, ensuring effective articulation agreements with four-year institutions, and setting high expectation for their students.

As indicated earlier, students transfer from two-year institutions to four-year institutions for different reasons. In addition, research shows early transfer to the four-year institution may promote a decreased rate of successful attainment of a four-year degree. Being knowledgeable of this information can allow the community college to better meet the needs of the students and promote a greater likelihood of success at the four-year institution.

Success Rates of Two-Year Transfer Students Attending Four-Year Institutions

As discussed earlier, a drop in GPA for transfer students could be the result of transfer shock when students move to the four-year institution (Townsend, 2001). This can occur due to the inability to adapt to new academic and social environment or as a result of insufficient preparation for upper-division coursework due to institutional differences (Laanan, 2003; Townsend, 2001). The results of a comparison study conducted by Quanty and Dixon (1999), in which the prerequisites for upper-level courses were taught at both the two-year and the four-year institutions, indicated student performance at the four-year institution was not affected by where the prerequisites were taken. The community college students performed as well as the native students when completing their upper-level coursework. Vaughan (2006) stated that records show that community college students transferring to a four-year institution at the junior level compare favorably with native students.

Other studies, however, indicate an existence of transfer shock and its effect on persistence and success. Glass and Harrington (2002) found evidence of transfer shock the first semester after transfer. In addition, they found that during the first semester when a student's GPA lowers, many times the student perceives failure and drops out of the four-year institution. By the end of the first semester, transfer shock appeared to diminish and the mean GPAs for the transfer students and the native students showed no significant difference. This research also compared the persistence to graduation for the transfer students and the native students. The results of this comparison are as follows:

> Of those students who remained in the spring semester, 54.7% (23 of 42) transfer students graduated, while 87.8% (36 of 41) native students graduated. The graduation rate for the native students was significantly higher. It should be noted, however, that the 19 transfer students and the five native students who did not graduate … did so in the following two semesters. (p. 424)

This study though including a very small sample indicated that the time-to-completion for the transfer students was longer than that of the native students and lends support to one of the hypotheses of this study. Working articulation agreements between two-and four-year institutions can serve to reduce the time-to-completion for transfer students resulting in completion patterns similar to native students (Townsend, 2001). Articulation agreements should eliminate the need to repeat courses or take additional courses to fulfill the requirements of the four-year institution.

Laanan (2004) asserted that the new environment and culture to which transfer students are exposed—including larger class and campus size, increased academic rigor, and new friends—all contribute to transfer shock and result in numerous adjustments for transfer students. Further study is indicated to determine how each factor affects educational success at the four-year institution. Research indicates both institutions play a vital role in facilitating the ease of transfer and the likelihood of success for transfer students. Glass and Harrington (2002) declared that services such as counseling, tutoring, and mentoring at the four-year institution could serve to lower the effect of transfer shock and help transfer students adjust to a new academic and social atmosphere more effectively. The community college also needs to ensure students are academically prepared for the coursework at the four-year institution. Counseling at the community college could serve to prepare the students for the experience of transfer. In order to promote this success, a collaborative effort needs to exist between two-year and four-year institutions for the purpose of ensuring a smooth transfer process.

Collaborative Efforts in Missouri Two and Four-year Institutions

Research on the existence of transfer shock and its effects on student success indicate a need for increased efforts at both the two-year and four-year level to aid students in the transition from one institution to another. In 2000, The Missouri CBHE published the *Guidelines for Student Transfer and Articulation among Missouri Colleges and Universities*. The guidelines were established to facilitate the ease of transfer from two-year institutions to four-year institution. According to the CBHE:

These credit transfer guidelines are intended to ensure that high school graduates with clear educational objectives may complete a degree program offered by

colleges and universities in the shortest possible time, whether the student remains

in one institution or transfers to another. (p. 1)

The guidelines established what is referred to as the 42-hour block of core courses. The

42-hour block transfer now gives students another state-approved option other than the

A.A. degree transfer. This poses several questions for both the two-year and the four-year

institutions based on the research just reviewed.

1. Do the total number of hours taken by students to obtain a B.S. degree,

   differ between the students who transfer with the 42-hour block when

   compared to the students who transfer with an A.A. degree? Research

   suggesting that the more hours a student completes at the community

   college, the better the likelihood of success, would indicate that the 42-

   hour block option may be less successful.

2. How closely are articulation agreements followed by the accepting

   institutions? Are students required to take additional lower-level

   courses after they transfer?

3. Is there a difference in the success rate of students transferring to a

   four-year institution with the 42-hour block as opposed to the A.A.

   degree? Is the 42-hour block transfer promoting or hindering success

   after transfer?

The students' ability to obtain their desired level of education should not be

hindered due to the inability or unwillingness of institutions to work together due to

institutional habit, convenience, competition, or territoriality (Missouri Department of

Higher Education, 2007). Glover (2008) found three factors important in promoting

collaboration among neighboring public two-year and four-year institutions. First, pre-existing value and belief systems such as student centeredness, public purpose of serving the common good, participative cultures of collaboration within the institution, and perceived solidarity with other institutions promote collaboration. The second, familiarity between the people and processes of the neighboring institutions, increases the likelihood of partnerships. The third factor involves the leadership style within the institution. To promote collaboration, leaders must actively articulate and demonstrate the value of collaboration. In Missouri, the CBHE strives to ensure that effective transfer and articulation becomes a priority for higher education institutions. The CBHE established the *Joint Leadership Statement on Commitment to Transfer* in 2007 to strengthen the commitment for collaboration among Missouri institutions previously established in the 2000 student transfer and articulation agreement. Through this agreement, the leaders of Missouri institution of higher education are committed to:

1. Work collaboratively with all Missouri institutions to improve the total transfer process at both the receiving and sending institutions;

2. Provide academic and financial support for the transfer student that is commensurate with the support provided for native students;

3. Develop an efficient transfer policy that minimizes the loss of course credits and curtails any unnecessary duplication of learning;

4. Share in the responsibility and cost for the development and implementation of articulation agreements;

5. Work to create a consolidated, multi-institutional database, searchable by institution, which provides common access to current course equivalencies and articulation agreements;

6. Identify and share best transfer practices. (para.3)

This renewed commitment to transfer success for Missouri students could result in a higher success rate for both 42-hour block transfers and A.A. degree transfers.

If the articulation agreements established by Missouri are accomplishing their purpose, there should be no difference in the successful completion of a degree program at the four-year institution between students transferring with the 42-hour block and those that transfer with an A.A. degree. In addition, if the articulation agreements are accomplishing their purposes and are succeeding ideally, there should be no difference in the total number of hours taken by students to obtain a bachelor's degree among 42-hour block transfer students, A.A. degree transfer students, and native students.

Theories of Student Success

Over the years, there have been numerous models designed to explain why students do or do not persist to graduation in higher education institutions. The bases for these models vary widely and include psychological theories, organizational sociology theories, environmental theories, and economic theories. The psychological theorists such as Rose and Elton (1966) and Ethington (1990) attribute leaving to individual shortcomings or weaknesses of the student, and the process of leaving is a result of an inability to cope with the demands experienced while attending college. Organizational sociology theorists such as Kamens (1971) and Bean (1983) describe the influence of organizational size, complexity, established routines, and rewards on student persistence.

Environmental theorists believed the same factors that shape social success such as social

status, race, and socioeconomic status determine student persistence. Pincus (1980)

claimed student attrition was a result of the promotion of social stratification and

preservation of educational and social inequality by educational institutions. Economic

theorists describe the decisions to attend college as being akin to a cost-benefit analysis

of investments of scarce resources that reflect decisions involved in whether to attend,

where to attend, and whether to attend part-time or full-time (Iwai & Churchill, 1982;

Manski & Wise, 1983). Interactionalist theorist, Tinto (1975), formulated a model to

explain student attrition based on the interactions between individual students and the

academic and social systems of an institution. Each theory explains to some extent factors

that play a role in student persistent; however, most of these theories focus on factors that

institutions are not able to control such as student attributes, attitudes, or social factors.

According to Terenzini (1987), Tinto's integration model provides insight into academic

and social institutional conditions that can be implemented within institutions to promote

student persistence and is consistent with the hypotheses presented in this study that

institutional policies, practices, and conditions impact persistence (p. 26). Therefore,

Tinto's Student Integration Model (SIM) of attrition will be utilized as a theoretical

framework for this study.

Tinto (1993) first established his Student Integration Model of attrition in 1975

and later revised it in 1993 (see Figure A), using the work of two other theories as a

foundation. He drew first from the field of social anthropology, utilizing Van Gennep's

theory of the "rites of passage" in tribal societies. Secondly, he utilized work from the

field of psychology with Durkheim's model of suicide providing a frame of reference

Pre-Entry Attributes   Goals/Commitments   Institutional Experiences   Integration   Goals/Commitment   Outcome

Family Background

Skills & Abilities

Prior Schooling

External Commitments

Goal & Institutional Commitments

Intentions

ACADEMIC SYSTEM

SOCIAL SYSTEM

Formal

Extracurricular Activities

Informal

Peer Group Interactions

Formal

Academic Performance

Informal

Faculty/Staff Interactions

Social Integration

Academic Integration

External Commitments

Goal & Institutional Commitments

Intentions

Departure Decision

ACADEMIC SYSTEM

Time (T)

Figure A. Reproduction of the Longitudinal Model of Student Departure Based on Tinto's SIM (Tinto, 1993, p. 114)

(Tinto, 1993). Tinto (1993) described Van Gennep's three phases—separation, transition, and incorporation—that individuals pass through when transferring membership from one group to another and explained how they apply to student attrition in higher education institutions (pp. 93-98). The length and sequence of each stage are not necessarily distinct for all students. Each stage may only occur partially and be repeated throughout a college career (Tinto, 1993). The first stage, separation, requires a student to separate to some degree from both family and past friends when entering college. Separation is likely to be more pronounced for residential college students than nonresidential. For students from college-educated families, the separation phase is likely to be accepted and encouraged (Tinto, 1993).

The transition phase occurs as students begin to learn the social and intellectual skills required to successfully participate in their new environment, the college. Some students find they cannot deal with the stress associated with this learning phase and withdraw from the academic setting. The third phase, incorporation, occurs as students are integrated into the culture of the college. According to Tinto (1993), some institutions provide programs to help with integration; however, others do not, and students are left to manage the integration process on their own.

Tinto utilized Durkheim's Theory of Suicide to explain the role of community in developing a sense of belonging and the act of withdrawal. Tinto (1993) claimed the behavior associated with suicide and withdrawal represent a form of voluntary withdrawal from local communities and are a reflection of characteristics of both the community and the individual. Tinto's 1993 SIM of attrition is primarily based on Durkheim's egotistical form of suicide that occurs when individuals are unable to

integrate and establish membership within communities due to conflicting values with the community or lack of personal affiliation between the individual and other members of the community. Egotistical suicide occurs when individuals cannot integrate socially and intellectually within society. Tinto equates this to student withdrawal from higher education institutions due to the inability to integrate into the academic and social cultures of the institution. Tinto (1993) stated, "One has to inquire as to the social and intellectual character of an institution and the student and faculty communities that comprise it and the mechanisms which enable individuals to become integrated as competent members of those communities" (p. 104). Conditions within institutions can serve to promote integration and persistence or hinder integration and contribute to a higher degree of attrition.

Tinto describes both internal and external attributes students bring to an institution such as abilities, family background, former academic background, intentions, commitments, ethnicity, sex, and social class. These factors influence persistence by affecting how students cope with the adjustments, difficulties, and isolation within institutions; however, these factors are largely beyond immediate institutional control. External obligations and financial concerns also affect persistence. External obligations become a greater factor in commuting students with job and family commitments. Student with a full-time work schedule and family responsibilities are less likely to interact with faculty and peers and less likely to integrate into the social and academic life of the college. However, strong family support can serve to promote persistence. Not only can external obligations and financial concerns influence decisions on whether to attend college, but they can also shape choices as to the specific college a student will

choose to attend. Students may choose to begin their college experience at a less expensive institution such as a two-year institution with the intention of transferring to a four-year institution. In some cases, financial conditions change and students may be forced to leave an institution due to lack of finances (Tinto, 1993).

The Student Integration Model of attrition implies that, regardless of student attributes such as ethnicity, social class, and external obligations, integration into the academic and social life of the college will increase the likelihood of student persistence. Tinto (2002) describes five conditions (expectation, advice, support, involvement, and learning) that institutions can promote to support student persistence. Unlike student attributes and personal characteristics, these five conditions are under institutional control and can be changed if institutions are serious in their pursuit of student persistence. As institutions modify policies to improve retention, focus should be placed on social and academic conditions that serve to integrate individuals into the institution. The five conditions as described by Tinto (2005) are as follows:

- High expectations: Students are more likely to persist and graduate in settings that expect them to succeed and where expectations are clear and consistent. Students are affected by the expectations of faculty and staff for their individual performance. (p. 2)

- Advising: Students are more likely to persist and graduate in settings that provide clear and consistent information about institutional requirements and effective advising about the choices students have regarding their programs of study and future career goals. Students need a clear roadmap, including clear articulation agreements. Most students are either

undecided about their field of study or change their minds, at least once,

during their college years. (p. 2)

- Support: This includes academic, social, and personal support. Most

  students require some form of support in their first year of college.

  Support may be provided in structured forms such as summer bridge

  programs or mentor programs, or it may be a result of formal and informal

  contact with faculty and staff. (p.3)

- Involvement: Students should be considered a valued member of the

  institution. The frequency and quality of contact with faculty, staff, and

  other students promote persistence, especially during the first year. This is

  true for all types of institutions and all types of students. For commuting

  students, the classroom may be the only place where they are involved

  with other students and faculty. (p. 3)

- Learning: Students are more likely to persist and graduate in settings that

  foster learning. The more students are actively involved in learning the

  more value they place on the process increasing the likelihood they will

  persist to graduation. Learning should be an active process and not a

  spectator sport. (p. 3)

Tinto (1997) proposed the use of learning communities as a means to enable

students to develop a supportive community of peers that would assist them in integrating

into both the academic and social life of the institution. Nonresidential students have to

attend to a multiplicity of obligations outside the college, and college is only one of the

many tasks they must complete daily. For these students, learning communities may be

the only viable path to greater student involvement. Astin (1999) found students who interact frequently with faculty members are more likely to express satisfaction with all aspects of their institutional experience. Clearly, academic integration becomes an important component of persistence and can serve as an avenue to social integration. Terenzini and Pascarella (1994) found the extent of student contact with faculty is linked to student perceptions of intellectual growth during college, autonomy, independence, increases in interpersonal skills, educational aspirations, persistence, and educational attainment. The process of integrating in the academic and social life of an institution is easier for residential students. Because of the increasing number of commuting students, institutions need to determine how the involvement experienced by residential students can be made more readily available to those who do not live on campus (Terenzini & Parcarella, 1994).

Not included in the five institutional conditions stated above that influence persistence is affordability. Financial consideration may determine if a student attends college, what institution they choose, if they will need to work full-time or part-time, and if they can persist to graduation. Tinto (1993) noted, however, that students do and will withdraw from college due to financial fluctuations. In some cases, this may be a temporary departure or it may be permanent. The act of leaving, even temporarily, reduces the likelihood the student will return and complete a degree. Institutions that offer financial aid that can assist students and prevent departure will likely result in persistence and higher rates of retention (p. 179). In a study conducted by Gross, Hossler, and Ziskin (2007) findings indicated financial aid increased the likelihood of student persistence and the amount received may explain campus retention and graduation rates

at some institutions. In addition, receiving necessary financial aid allows students more

time to devote to academic and social aspects of college by reducing the need to work.

Pascarella and Terenzini (1991) proposed that coordinated efforts at local, state, and

federal levels could serve to provide additional funding necessary to eliminate the

inequalities of student support.

Tinto's SIM of attrition applies primarily to the integration of first-year students

at four-year institutions. Could it also apply to first-year students at community colleges

and transfer students? Because the characteristics of students entering two-year

institutions differ from students entering four-year institutions, would academic and

social integration in these institutions be equally important? Community college students

are typically older, have family and work responsibilities, live at home, have lower

socioeconomic status, and are more ethnically diverse. Tinto (1993) stated:

Even though it is evident that two-year institutions typically do not have

significant social communities on campus and that informal contact between

faculty, staff, and students may not be as wide-ranging, there are reasons to

believe that informal social and intellectual contact beyond the classroom may

also be important to persistence in community colleges. (p. 78-79)

Research has shown academic and social integration at two-year institutions is equally

important in promoting persistence. Many students feel contact with faculty is critical in

completing their programs. In a study conducted by Karp, Hughes and O'Gara (2008),

findings indicated 90% of students at two-year institutions that were actively integrated

into college life during their first year persisted to the second year. Even though

integration occurs at two-year institutions, the integration process may occur differently

than in four-year institutions. Karp, Hughes and O'Gara (2008) found social integration was likely to occur through academic integration. The academic setting resulted in relationships that extended beyond the classroom and in some cases resulted from contact with small study groups. In addition, this study supports past research that indicates community college students rarely experience social integration as a result of participating in extracurricular activities. Regardless, both academic and social integration occur in the two-year institution and are important in promoting persistence (Karp, Hughes, & O'Gara, 2008).

In an overview of research conducted to determine the effects of academic and social student engagement on persistence, McClenney and Marti (2006) found most studies have been conducted on students associated with four-year institutions. McClenney and Marti (2006) designed a study that specifically utilized community college data to determine the relationship between student engagement and persistence. This study was based on the five benchmarks established by the Community College Survey of Student Engagement (CCSSE)—active and collaborative learning, student effort, academic challenge, student-faculty interaction, and support for learners—to determine if they are valid predictors of persistence of community college students. Their research brought together data from three different studies. The first was from the Florida Community College System conducted by the Florida Department of Education, the second from the Achieving the Dream Initiative conducted by the Lumina Foundation, and the third from the Hispanic Student Success Consortium Institutions conducted by the CCSSE (McClenney and Marti, 2006). The two measures were academic outcomes and persistence outcomes. The combined results of the studies indicated active and

collaborative learning and academic challenge were the strongest predictors of credit

completion ratio, and student effort and support for learners were the most consistent

predictors of persistence. For both measures, academic integration is as important for

community college students as it is for the four-year students. As stated by McClenney &

Marti:

> The broad conclusion that can be reached from the present studies is that the
>
> current lack of support for student integration and engagement models is due to a
>
> lack of data rather that a lack of applicability of student integration and
>
> engagement models. These studies demonstrate that the broad measures of student
>
> engagement on the CCSR are predictive of outcomes measuring academic success
>
> and persistence in community colleges. (pp. 92-93)

This research indicates that the institution controlled factors discussed by Tinto

can make a critical difference to how successfully transfer students persist, and how well

they acclimate to the four-year environment.

Students transferring from two-year institutions to four-year institutions have

been integrated into the academic and social life of the two-year institution. To be

successful after transfer, they will need to integrate into the academic and social life of

the four-year institution. Upon transfer, students will be interacting with students in the

four-year institution who are already integrated into the institution's college life.

Eggleston and Laanan (2001) stated:

> Transfer students will be confronted with a variety of issues such as negative
>
> attitudes toward transfer students, admissions issues, registration problems, new
>
> student program issues, problems with academic advising, student financial aid

problems, housing issues, problems with student activity involvement, career

planning and placement issues, publication resources, adjustment to institutional

change, articulation and special academic opportunities. (p. 90)

These factors require an adjustment period for transfer students that native students have

already dealt with. Institutions can play an important role in assisting transfer students by

informing them of the adjustment they will experience and what to expect (Laanan,

2001).

Sending institutions need to be aware of successful programs offered by other

institution that have a positive effect on student persistence and success. Hossler, Ziskin,

Moore and Wakhungu (2008) noted that the success of students within institutions is a

reflection of policies, programs, and practices occurring on campus. Also, the

identification of such policies is vital to the promotion of persistence (p. 21). Eggleston

and Laanan (2001) claimed support programs offered at four-year institutions to promote

success of native students would also be effective in promoting the success of transfer

students. Helm and Cohen (2001) suggested ways in which the presidents of community

colleges can promote successful transfer and maintained that if the president is committed

to promoting successful transfer, institutional changes will take place. Presidents can set

the agenda for their colleges and raise expectations for transfer by promoting this agenda

through advising and admission processes and faculty roles. Also, changing the public's

perception of the transfer function of the community college can be promoted by the

president. Depending on the public's current perception, this process may require a great

deal of time, communication, and effort on the part of the president with the community.

However, as stated by Helm and Cohen (2001), "No number of articulation agreements

with universities will be of any value if the local high school staff members and the students and their parents see the college as the wrong place to start if the student is serious about progress toward the baccalaureate" (p. 103).

There are numerous examples of programs that have been implemented in institutions across the nation that promote successful transfer processes. Examples of these programs include Summer Scholars Transfer Institute, College Transfer Days, Transfer Centers, Transfer Clubs, Summer Bridge Program, Exploring Transfer Program, and Scholars Program (Eggleston & Laanan, 2001; Helm & Cohen, 2001; Zamani, 2001). These programs serve to bring staff, faculty, and students together on the receiving campus to promote integration into the academic and social life of the institution. They serve as collaborative efforts between institutions and are examples of institutional conditions that can be implemented to promote successful transfer. Successful examples of these centers and programs exist at some of America's most prestigious universities. One example is the Transfer Re-entry and Student Parent Center established at University of California at Berkeley. This center is utilized by both transfer and native students at the university. The information provided by the center includes useful tips and strategies that make the transfer process successful. Articulation between sending and receiving institutions is clearly defined, as are tips on how to get involved in academic and social aspects of the university. Typically, about one-third of the students entering in a fall semester are transfer students. These transfer students graduate with similar grade point averages and at similar rates of completion as students starting as freshmen (University of California Berkeley, 2008). This is one of America's most prestigious universities that illustrate student progression and successful transfer need not slow student progress and

the responsibility should not lie solely with the two-year sector. Both institutions must be

responsive and aggressive in addressing the role of transfer in the production of upward

mobility (Zamani, 2001).

Tinto's SIM of attrition is used as the theoretical framework for this study

because it focuses on institutional conditions and commitments required to promote

persistence. These conditions apply to all types of institutions and promote persistence in

all types' of students regardless of attributes, personal characteristics, socioeconomic

status, or ethnicity. As seen in the research, integration into the academic and social life

of an institution is equally important for success at both two-year and four-year

institutions. In addition, Tinto incorporates the importance of financial aid and

affordability into the promotion of persistence. Based on Tinto's SIM of attrition theory,

one might assume that a statewide system of articulation and transferability will not work

in the long run if students are taking more time-to-graduation following one track rather

than another. This is likely to reduce persistence and may interfere with the ability to

receive the necessary financial aid required to persist to graduation.

Past research has shown that transferring students experience a period of

adjustment when moving from a community college to a four-year institution due to

transfer shock. Information from this study provides an insight into how effective the

higher education system is in terms of transfer student success and how significantly

transfer issues affect time-to-completion, based on transfer preparation at the two-year

college. This study also provides necessary information for both institutional types that

could be utilized to design a collaborative effort to promote successful transfers.

Summary and Overview of the Following Chapter

Determining the effectiveness of the 42-hour block transfer can provide important information for students, community colleges, four-year institutions, and the state of Missouri. This chapter has reviewed the literature related to factors that affect the persistence of transfer students such as transfer shock and the effects of early transfer. In addition, it has reviewed the transfer function of community colleges and how collaborative efforts between two-year and four-year institutions can serve to increase persistence and success of transfer students. It has also briefly summarized the theoretical models that have been developed to explain student persistence, and has demonstrated how Tinto's SIM of attrition best serves this study. The research suggests that shortening a student's time at the community college prior to transfer may reduce the likelihood of success. This would suggest that as state policy, a 42-hour block transfer option will not be an effective way to accelerate progression to a degree. This study examines that concern and will add to the body of research concerning transfer policy and student success.

Chapter Three provides the rationale for the design of this study as well as a review of the purpose of the study and the research questions. The null hypotheses for both full-time and part-time participants will be outlined in this chapter. In addition, a comprehensive description of the participants is provided and the reasoning for separating the full-time and part-time population, allowing independent analysis of each. This chapter also describes the instruments, design, and procedures utilized. Moreover, Chapter Three presents and explains the quantitative analysis procedures used in this study.

CHAPTER 3

Methods

This study was designed in response to the lack of evidence supporting the effectiveness of the 42-hour transfer block established as part of a statewide articulation agreement in the state of Missouri. The 42-hour transfer block is composed of general education core courses and was established by the state in 2000 to ensure the completion of a four-year degree in the *shortest possible time* for transfer students (MDHE, 2000, italics added). Yet there is no evidence that the 42-hour transfer option facilitates the ease of transfer or that it decreases time-to-degree completion for the students that transfer with this option as opposed to those that transfer with the A.A. degree. As indicated in the review of the literature, there are contradicting studies that suggest that the fever hours a community college student has when transferring, the less the likelihood that the student will succeed. In addition, there is no evidence that either group of transfer students complete a four-year degree as efficiently as native students. It is important to determine if the 42-hour transfer option is less effective, as effective, or more effective in promoting efficiency in terms of number of college credits taken and the time required to complete a four-year degree than the A.A. degree transfer. Finally, it is important to determine if either group of transfer students completes a four-year degree in the same time frame as native students.

This chapter provides a rationale for the design of this study, reviews the purpose of the study, restates the research questions, and lists the null hypotheses. It includes a comprehensive description of the participants and the process utilized for their selection.

This chapter also describes the procedures, research design, and statistical methods employed in the data collection and analysis.

Rationale for Design

When describing the rational for the design of this research, it is important to keep in mind that it is an evaluative study. Because this research is determining the effectiveness of established transfer agreements, it is categorized as evaluative research, and in order to accomplish this evaluation, a summative quantitative approach was used (Glatthorn & Joyner, 2005). The study evaluates the differences between three groups, which include 42-hour block transfer students, A.A. degree transfer students, and native students in terms of total number of terms and total number of hours accumulated to the completion of a four-year degree. Because this research is looking at variations between the three groups at the point of the four-year degree completion, "between subjects" approach is utilized. In addition, the design of this study is nonexperimental due to the nature of the categorization of the three subgroup of the independent variable. The three subgroups—42-hour block transfer students, A.A. degree transfer students, and native students—are not a result of manipulation or control but rather are categorized according to their mode of transfer or non-transfer (Mertler & Vannatta, 2005). In addition, gender, ethnicity, the university attended, and the community college attended were incorporated into the research design as covariates to control for their possible effect on the two dependent variables, terms and hours accumulated.

A multivariate statistical approach was utilized, using a variance-covariance matrix. Four-year degree completers were grouped according to their mode of transfer: 42-hour block, A.A. degree, or as a native student with no transfer at the time of

enrollment at the university. The total number of terms accumulated and the total number of hours accumulated to the completion of a four-year degree were determined for each student within each group. When evaluating time-to-completion, the attendance status of the students, full-time or part-time, was taken into consideration. Without this separation, attending part-time as opposed to full-time would artificially affect completion time. Thus, full-time and part-time students were analyzed independently of each other.

Review of the Purpose of the Study

The two articulation agreements established by the state of Missouri are the A.A. degree and the 42-hour block transfer. Another transfer arrangement, the Associate of Science degree, is considered a "special agreement" that is arranged only between specific institutions. Because this "special agreement" is not statewide, it was not considered in this study. The Associate of Arts degree in Teaching is a relative new statewide articulation agreement, and as such, there has not been sufficient time to generate data for research purposes. Therefore, it was not considered in this study. The A.A. degree transfer was established in 1987 and the 42-hour block transfer in 2000. The 42-hour block guidelines have now been in place long enough for a number of students to transfer and move through the four-year institutions to complete a four-year degree.

If the two articulation agreements are accomplishing their purpose, there should be no significant difference in the time required to complete a degree program at the four-year institution between students transferring with the 42-hour block, those transferring with an A.A. degree, and those who begin their college career as a native student at the four-year institution. In addition, if the two established articulation agreements are accomplishing their stated purposes and are succeeding ideally, there should be no

significant difference in the total number of hours taken by students to obtain a four-year degree between the three groups.

The purpose of this study was to compare the time-to-completion and the number of hours required for native students who did not transfer, those who transferred with an A.A. degree, and those who transferred with the 42-hour block to the successful completion of a degree program at two Missouri universities for each of the three subgroups of students.

Research Questions

Extensive research exists addressing the effects of transfer in terms of the adjustment students experience at a new institution. Adjustment factors include effects of transfer shock such as a drop in a student's GPA, persistence of transfer students, and the retention rates (Castaneda, 2002; Fonte, 1993; Laanan, 2003; Parcarella, 1999; Townsend, 2001). This study focused on the number of terms and the numbers of hours students accumulate while earning a four-year degree. The central research question for this study is, "Are there significant differences in time-to-completion and in hours-to-completion of a four-year degree based on transfer status for Missouri transfer students in comparison to native students after adjusting for ethnicity, gender, university attended, and community college attended?" The following six questions served to guide the development of this study's design and methodology.

Research Question One

Are there significant differences in time-to-degree completion based on transfer status for Missouri transfer students in comparison to native students after

adjusting for ethnicity, gender, university attended, and community college

attended?

Research Question Two

Are there significant differences in the number of college credits earned based on

transfer status for Missouri transfer students in comparison to native students after

adjusting for ethnicity, gender, university attended, and community college

attended?

Research Question Three

Do native students complete a four-year degree program in fewer semesters than

both A.A. degree transfer students and 42-hour block transfer students?

Research Question Four

Do A.A. degree transfer students complete a degree program in fewer semesters

than the 42-hour block transfer students?

Research Question Five

Do native students complete a degree program with fewer college credit hours

than A.A. degree transfer students and 42-hour block transfer students?

Research Question Six

Do A.A. degree transfer students complete a degree program with fewer college

credit hours than 42-hour block transfer students?

<div align="center">*Null Hypotheses*</div>

In an effort to answer the research questions stated above, the following null

hypotheses were tested. Each of the null hypotheses anticipated no difference between

the three groups of students. From the six question stated above, 12 hypotheses were

constructed. Six were designed to test the full-time students and six to test the part-time students.

Null hypotheses for full-time participants.

H_o1: There are no significant differences in time-to-degree completion based on transfer status for Missouri full-time transfer students in comparison to full-time native students after adjusting for ethnicity, gender, university attended, and community college attended.

H_o2: There are no significant differences in the number of college credits earned based on transfer status for Missouri full-time transfer students in comparison to full-time native students after adjusting for ethnicity, gender, university attended, and community college attended.

H_o3: Full-time native students will not complete a four-year degree program in fewer semesters that both full-time A.A. degree transfer students and full-time 42-hour block transfer students.

H_o4: Full-time A.A. degree transfer students will not complete a degree program in fewer semesters than full-time 42-hour block transfer students.

H_o5: Full-time native students will not complete a degree program with fewer college credit hours than full-time A.A. degree transfer student and full-time 42-hour block transfer students.

H_o6: Full-time A.A. degree transfer students will not complete a degree program with fewer college credit hours than full-time 42-hour block transfer students.

Null hypotheses for part-time participants.

H_o7: There are no significant differences in time-to-degree completion based on transfer status for Missouri part-time transfer students in comparison to part-time native students after adjusting for ethnicity, gender, university attended, and community college attended.

H_o8: There are no significant differences in the number of college credits earned based on transfer status for Missouri part-time transfer students in comparison to part-time native students after adjusting for ethnicity, gender, university attended, and community college attended.

H_o9: Part-time native students will not complete a four-year degree program in fewer semesters that both part-time A.A. degree transfer students and part-time 42-hour block transfer students.

H_o10: Part-time A.A. degree transfer students will not complete a degree program in fewer semesters than part-time 42-hour block transfer students.

H_o11: Part-time native students will not complete a degree program with fewer college credit hours than part-time A.A. degree transfer student and part-time 42-hour block transfer students.

H_o12: Part-time A.A. degree transfer students will not complete a degree program with fewer college credit hours than part-time 42-hour block transfer students.

The null hypotheses for this study are all non-directional due to the lack of existing research on the effectiveness of the 42-hour block and A.A. degree in Missouri. Without existing data, the ability to predict if a difference occurs among the three groups of full-time students and the three groups of part-time students was limited.

The initial test of the study was to determine if there is a difference among the three groups of full-time students and the three groups of part-time students in total terms and total hours required to complete a four-year degree after adjusting for the covariates. In order to test null hypotheses one, two, seven, and eight, a one-way Multivariate Analysis of Covariance (MANCOVA) was used. The Bonferroni post hoc was utilized to test null hypotheses three, four, five, six, nine, ten, eleven, and twelve. This statistical method provided a means for determining which subgroup of students differed in terms accumulated and hours accumulated to a four-year degree. This test was selected for the multiple comparisons of means because it has more power than other multiple comparison methods if the number of comparisons is small and reduces the likelihood of Type II errors occurring. Using the adjusted significant level also controls for Type I errors (Field, 2009). The quantitative analysis section of this chapter provides more details describing the statistical methods utilized for this study.

Participants

Two Missouri universities were utilized in this study. The first was the University of Missouri-St. Louis (UMSL) located in St. Louis, Missouri, and the second was Missouri State University (MSU) located in Springfield, Missouri. These two universities were selected because they receive the largest number of transfer students of Missouri's public universities, and both accept the established 42-hour block option and the A.A. degree. The sending community colleges for UMSL are St. Louis Community College (STLCC) in St. Louis, St. Charles Community College (SCC) in Cottleville, East Central College (ECC) in Union, Jefferson College (JEFFCO) in Hillsboro, and Mineral Area College (MAC) in Park Hills. The sending community colleges for MSU are Ozarks

Technical Community College (OTC) in Springfield, Crowder College (CC) in Neosho, Mineral Area College (MAC) in Park Hills, and Three Rivers Community College (TRC) in Poplar Bluff. The Missouri community colleges represented in this study included Crowder College, East Central College, Jefferson College, Metropolitan Community College, Mineral Area College, Ozarks Technical Community College, St. Louis Community College, St. Charles Community College, and Three Rivers Community College. This represents nine of the 12 community college districts in the state. All 12 community colleges offer the two Missouri transfer options to students that intend to transfer to a four-year institution to earn their four-year degree, but three of the 12 community colleges were not represented in the population for this study, due largely to their location in the state.

The population for this study included both full-time and part-time students that completed the 42-hour block transfer or the A.A. degree transfer from a regionally accredited Missouri community college and then transferred to either UMSL or MSU to complete a four-year degree. The population also included native students who began their college career at either UMSL or MSU and completed a four-year degree. Because the study was specifically designed to determine the effectiveness of the two transfer options established by the state of Missouri, students with out-of state credits were not included. The distinction of the status of students, full-time or part-time, was important since whether a student attends full-time or part-time affects the time-to-completion of a four-year degree. Even though the study did not determine why individual students attended part-time as opposed to full-time, it did eliminate the effects part-time attendance would have on the time-to-completion when including part-time students with

full-time students in the data analysis. By separating the full-time students from the part-time students and testing each group of participants independently. The steps and process used to screen the original data obtained from both UMSL and MSU and the exclusions utilized to determine the populations for this study are described in detail in the procedures section of this chapter.

Because the 42-hour block transfer articulation agreement was established in 2000, data used for four-year degree program completion for the two full-time groups and the two part-time groups of transfer students at both universities began with students who completed a degree program through one of the two universities from the fall 2005 semester through the fall 2008 semester. The fall of 2005 was chosen as a beginning point for the data collection because it provided sufficient time for Missouri community colleges to have incorporated the 42-hour block option for students, provided students time to complete the 42-hour block at the community college, and complete their degree programs at the universities. Students transferring to the two universities began their college career at the community college beginning in the fall term of 2002 or later. Native students who completed a degree program through one of the two universities between the fall 2005 semester through the fall 2008 semester and began their college career at one of the two universities in the fall 2002 semester or later were selected for this study. These dates were chosen for the native students because they coincided with the time frame used for the transfer students.

After screening the original data to eliminate students who did not fit the criteria, participants were selected for each of the three full-time groups and each of the three part-time groups from the corresponding population. The first group included full-time

native students. Native students are students who begin their education and complete a

degree program at the university. The second group was full-time students who

transferred to the universities after the completion of an A.A. degree from an accredited

Missouri community college and continued with their education to complete a degree

program at the universities. The third group was composed of full-time students who

transferred to the universities after the completion of the 42-hour transfer block from an

accredited Missouri community college and continued with their education to complete a

degree program at the universities. Participants for the three groups of part-time students

were also selected from the data generated from both universities using the same

selection criteria to include part-time native students, part-time A.A. degree transfer

students, and part-time 42-hour block transfer students. This selection process resulted in

a total of six subgroups for this study.

　　　　The total number of terms accumulated to degree completion for each student was

determined from the data received. For full-time and part time transfer students, total

terms included all full-time and part-time terms accumulated and transferred from the

community college and all full-time and part-time terms accumulated from the university

where degree completion occurred. For native students, total terms included all full-time

and part-time terms accumulate at the university. Any part-time term that occurred for

some students due to hours transferred after enrolling at the university was not included

in the determination of full-time and part-time terms for either the full-time students or

the part-time students.

　　　　The total number of hours accumulated to degree completion for each student was

determined from the data received from both university institutional research offices. For

full-time and part time transfer students, total hours included hours accumulated and transferred from the community college, hours transferred after enrolling at the university, and hours accumulated from the university where degree completion occurred. For full-time and part-time native students, total number of hours accumulated included hours transferred after enrolling at the university and the hours accumulated from the university where degree completion occurred. The total number of hours accumulated included dual enrollment credits and advanced placement credits for all full-time and part-time students. Both universities accept dual enrollment credits and advanced placement testing credits from the community colleges, and both universities offer both types of credit to native students. Also, CBHE policies support dual enrollment credits and advanced placement testing credits as part of the 42-hour block and the A.A. degree transfers. All developmental-level courses taken at both the community college level and the university level were excluded from college hours. Developmental courses are classified in the state of Missouri as non-credit courses resulting in no college credit accumulation. In other words, this study examines time-to-degree completion *after* a student has completed developmental work.

For full-time students and part-time students, gender, ethnicity, university attended, and community college attended were determined. These factors served as covariates to determine any effect they may have on the dependent variables.

Population

After screening and combining the original data received from UMSL and MSU, the population consisted of $N = 2,412$ students from both universities. As seen in Table 1, of the 2,412 students, 465 (19.3%) were full-time, and 1,947 (80.7%) were part-time.

Also, as seen in Table 1, the three categories of full-time students—42-hour block

transfers, A.A. degree transfers, and native students—consisted of 20 (.8%), 39 (1.6%),

and 406 (16.8%), respectively. The three categories of part-time students—42-hour block

transfers, A.A. degree transfers, and native students—consisted of 140 (5.8%), 578

(24.0%), and 1,229 (51.0%), respectively. Because of the unexpected small number of

full-time students and the unexpected large number of part-time students, the 2,412

Table 1

*Frequency Counts and Percentages for Full-time and Part-time Students by Subgroups
and for Total Population (N = 2412)*

Students	f	P
Student Subgroups		
Full-time 42-hour block	20	.8
Full-time A.A. degree	39	1.6
Full-time native	406	16.8
Part-time 42-hour block	140	5.8
Part-time A.A. degree	578	24.0
Part-time native	1229	51.0
Total	2412	100.0
Total Population		
Full-time students	465	19.3
Part-time students	1947	80.7
Total	2412	100.0

students were separated into two independent populations to eliminate the effect of part-time status on time-to-completion of a four-year degree if full-time and part-time students were combined in the same statistical analysis. Table 2 and Table 3 summarize the frequency and percentages of the full-time population and the part-time population respectively.

Table 2

Frequency Counts and Percentages for Full-time Student Population by Subgroups (N=465)

Student	f	P
Full-time Student Subgroups		
42-hour block	20	4.3
A.A. degree	39	8.4
Native	406	87.3
Total	465	100.0

From this point forward in this study, the full-time and part-time populations are described and analyzed separately. From the full-time population, three groups of 20 students each were selected using s random systematic sampling approach. For the full-time 42-hour block group, all students from the population were selected. From the part-time population, three groups of 120 students each were selected using a random stratified sampling approach. This sampling process was selected to help ensure each number of part-time semesters was equally represented and reflected what existed in the 1,947 part-time student population.

Table 3

Frequency Counts and Percentages for Part-time Student Population by Subgroups (N=1947)

Students	*f*	*P*
Part-time Student Subgroups		
42-hour block	140	7.2
A.A. degree	578	29.7
Native	1229	63.1
Total	1947	100.0

Instruments

The collection of data utilized student records from the existing databases at UMSL and MSU. Through discussions with both universities, it was determined that sufficient data were available for the student subgroups from the fall 2005 semester to the fall 2008 semester. In addition, it was determined the following data were available from student records at both universities:

1. The existing student records distinguished between the three student groups: native students, A.A. degree transfer students, and 42-hour block transfer students.

2. The number of college credits each student accumulated at the time of the completion of a degree program at the university was available. For transfer students, this included college credits from both the community college and the university.

3. Developmental-level courses were included on transcripts and could be distinguished and excluded from college credit hours.

4. The number of semesters accumulated by each student at the time of degree completion at both universities could be determined. For both transfer groups, this included both community college semesters and university semesters.

5. The number of dual enrollment and advanced placement hours and terms could be determined.

6. Students' four-year degree completion was indicated, including the program in which the degree was awarded.

Item six suggests that consideration must be given to the number of hours required to complete particular degree programs at the universities. It is possible that different degree programs required significantly different numbers of college credits. It was determined if a given degree programs required more than 125 hours, students associated with these programs would not be included in the study. After the random selection of the three full-time groups and the three part-time groups, it was found that no resulting degree program majors were included that required more than 125 hours.

The data collected from both UMSL and MSU included the following information:

1. The first term enrolled at the community college for transfer students.

2. The first term enrolled at the universities for all students.

3. The graduation term at the universities for all students.

4. The number of full-time and part-time terms as well as the total number of terms accumulated at the community college and transferred to the universities for the transfer students.

5. The number of full-time and part-time terms as well as the total number of terms transferred after enrolling at the universities for all students.

6. The number of full-time and part-time terms as well as the total number of terms accumulated at both universities for all students.

7. The total number of hours that were transferred from the community colleges to the universities for the transfer students.

8. The total number of hours that were transferred after enrolling at the universities for all students.

9. The total number of hours that were taken at the universities for all students.

10. The number of Missouri two-year and four-year institutions attended prior to enrolling at the universities for all students.

11. The number of out-of-state two-year and four-year institutions attended prior to enrolling at the universities for all students.

12. The number of other institutions attended prior to enrolling at the universities for all students.

13. The gender, ethnicity, and university from which the student graduated for all students.

14. The community college from which the students transferred from for the transfer students.

15. The major for each students and the number of credit hours required for each

     major.

The information listed above was used to determine total terms accumulated and

total hours accumulated for both the full-time population and the part-time population.

Details on the procedures used to calculate terms and hours are given in the procedure

section of this chapter.

Design

All Institutional Review Board (IRB) forms were completed and submitted for

approval from both universities. After obtaining approval to engage in research from the

IRB, the process of data collection began. Through previous discussions with both

universities, the data elements required for this study were identified. Upon IRB

approval, the data required for this study were generated by the Institutional Research

(IR) Department of each university.

A multivariate statistical approach was utilized for this research using a variance-

covariance matrix. For the group analysis, the independent variable was four-year degree

completers with three subgroups for the full-time population and three subgroups for the

part-time population. Four-year degree completers were grouped according to their mode

of transfer, 42-hour block or A.A. degree, or as a native student with no transfer hours at

the time of enrollment at the university.

The first dependent variable was the total number of semesters required by

students to complete a university degree. For transfer students, this included both the

semesters accumulated at the community college and the semesters taken at the

university, and for the native students, it included the semesters taken at the university.

The categories for this variable were set up on a continuous scale beginning with a minimum of 8 semesters and extending to a maximum of 14. Full-time and part-time semesters were determined. If a student completed 12 or more hours during a fall or spring semester, the semester was categorized as full-time. If a student completed less than 12 hours during a fall or spring semester, the semester was categorized as part-time. Each category increased by increments of one for each term completed. Summer terms for which a student completed six or more hours were categorized as a full-time term. If a student completed five or fewer hours during a summer term, it was categorized as part-time.

The second dependent variable was the total number of college credits accumulated to the completion of a university degree. For transfer students, this included both the college credits obtained at the community college, the college credits transferred after enrolling at the university, and the college credits taken at the university. For the native students, this included college credits transferred after enrolling at the university and the college credits taken at the university. The categories for this variable were set up on a continuous scale beginning with 120 hours as the first category. The categories increased in increments of one for each credit hour earned. The dual credit and advanced placement credit are included in total hours accumulated.

Four covariates were incorporated into this study to reduce the error variance. These include gender, ethnicity, university attended, and community college attended. The information for each covariate was given in the original data received form UMSL and MSU.

Procedures

Prior to applying for IRB approval, it was predetermined that the data necessary for this study would be available from both universities. Before receiving the data, all student identifiers were removed and replaced with a record number. Because the data were generated from existing student records and all identifiers had been removed, informed consent was not required. Appendix B lists the data elements utilized for this study.

The following provides a list of the criteria required for this study. Student records that did not contain the following criteria were excluded from this study.

1. Students who transferred to one of the two universities with the 42-hour block or the A.A. degree from a regionally accredited Missouri community college.

2. Students who began as first-time freshman at the community college or university and did not transfer in previous credits or degrees.

3. Students who had no out-of-state credits.

4. Students who graduated from one of the two universities between fall 2005 and fall 2008.

5. Students who began their college career in the fall 2002 or later.

6. Students who transferred no more that 11 college credits after enrolling at one of the two universities.

After identifying the criteria required for the selection of students, the formatting and screening process took place. The following outlines the procedure and steps required to process the data received from both universities and prepare it for statistical

analysis. An Excel spreadsheet was used to format and screen the data before entering

into SPSS for analysis and allowed the researcher to:

1. Format the data received from MSU to match that from UMSL:

    a. Calculate the number of credit hours for each semester each student

       attended at the university.

    b. Reorder and recode all elements.

    c. Eliminate elements not required for this study.

2. Excluded all the following from the data received from UMSL and MSU:

    a. Students who did not graduate with a four-year degree.

    b. Transfer students who did not transfer with the 42-hour block or the A.A.

       degree.

    c. Transfer students who did not begin as a first-time freshman at the

       community college.

    d. Native students who did not begin as first-time freshmen at the

       universities.

    e. Students who had out-of-state credits.

    f. Transfer students who had transferred from an institution other than a

       Missouri community college.

3. Determine the semester all students began their college career.

4. Exclude the following:

    a. Students who began prior to fall 2002.

    b. Students who did not graduate between fall 2005 and fall 2008.

5. Determine the major for MSU graduates from graduate codes.

6. Determine the number of credits required for each degree program from both universities.

7. Calculate the following variables from the data received from both universities:

    a. Total number of terms accumulated to a four-year degree = total terms taken at the community college + total terms taken at the university.

    b. Total number of full-time terms accumulated to a four-year degree = total full-time terms taken at the community college + total full-time terms taken at the university.

    c. Total number of part-time terms accumulated to a four-year degrees = total part-time terms taken at the community college + total part-time terms taken at the university.

    d. Total number of hours accumulated to a four-year degree = total hours taken at the community college + total hours transferred after enrolling at the university + total hours taken at the university.

8. Exclude students that transfer more than 11 hours after enrolling at the university.

9. Assign codes to the following data elements: original enrollment status, gender, ethnicity, university, and community college attended.

10. Code four-year degree completers according to whether they were 42-hour block transfer students, A.A. degree transfer students, or native students (see Appendix B for codes given).

The remaining data consisted of 2,412 student records, establishing the population for this study. This information was entered into an SPSS data file. Initial frequency analysis of the data revealed a disproportionate number of part-time students; 80.7% of the population. Because of the effect of part-time status on time-to-graduation, the data were separated into full-time student and part-time student populations. Students were randomly selected from each of the existing populations to create the three subgroups required for each. Two additional SPSS data files were created, one for full-time participants and one for part-time participants, and each was analyzed independently. The quantitative analysis is described in the following section of this chapter.

Quantitative Analysis

The collected data were analyzed using a one-way Multivariate Analysis of Covariance (MANCOVA). This statistical method was selected because it was the appropriate statistical tool used to determine if group differences occur among more than one dependent variable while controlling for covariates that may influence the dependent variables (Mertler & Vannatta, 2005). Figure B provides a diagram of the statistical model for this study. The study consisted of one independent variable (four-year degree completers) with three subgroups: 42-hour transfer students, A.A. degree transfer students, and native students. The two dependent variables were total number of terms accumulated to four-year degree completion and total number of hours accumulated to four-year degree completion. Both dependent variables were set up on a continuous scale. In addition, four covariates were used; gender, ethnicity, university attended, and community college attended. The covariates were used to eliminate their effect on the dependent variables before the results of the MANCOVA were interpreted (Mertler &
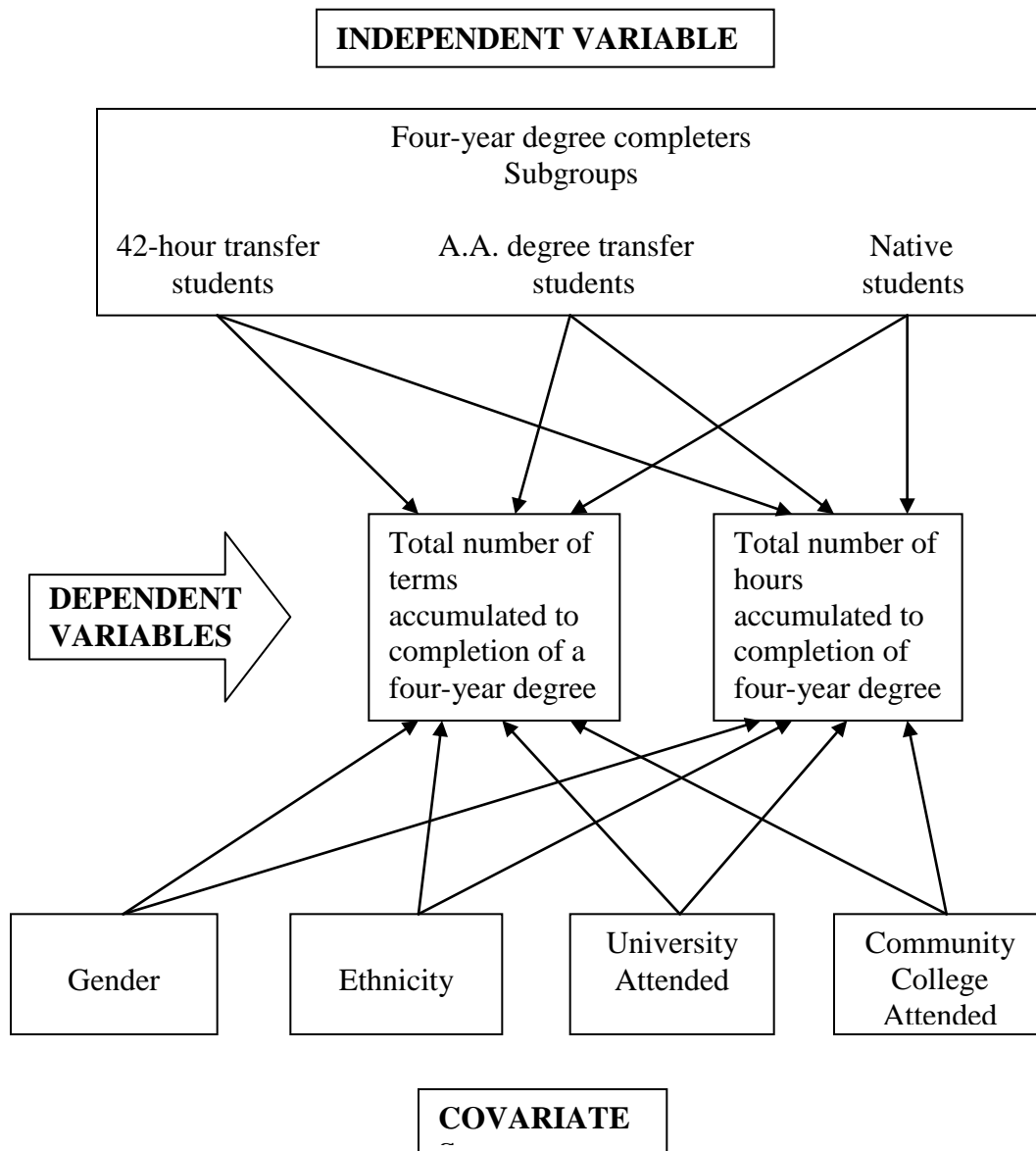
Figure B. Diagram of statistical model. Independent variable: four-year degree

completers. Subgroups of independent variable: 42-hour block transfer students, A.A.

degree transfer students, and native students. Dependent variables: total number of terms

accumulated to a four-year degree and total number of hours accumulated to a four-year

degree. Covariates: gender, ethnicity, university attended, and community college

attended.

Vannatta, 2005).One *Pearson r* was conducted to determine if the two dependent

variables were correlated and another to determine if the covariates were correlated. The

results of the first *Pearson r* indicated the two dependent variables were correlated. The

results of the second *Pearson r* showed correlation between some of the covariates. The

justification for retaining all covariates is given in Chapter Four. The correlation of

dependent variables is a requirement of MANCOVA; thus, the analysis proceeded as

planned.

Each procedure and analysis that follows was conducted independently on the

full-time participants and the part-time participants. As a prelude to the discussion of the

analysis process for this study, an overview of the assumptions for MANCOVA is first

given. A series of pre-analysis tests were performed to determine if any of the

assumptions were violated. The assumptions are listed below (Mertler& Vannatta, 2005).

1. The observations within each sample must be randomly sampled and must be

    independent of each other.

2. The observations on all dependent variables must follow a multivariate normal

    distribution in each group (multivariate normality).

3. The relationships among all pairs of dependent variables for each cell in the

    data matrix must be linear (linearity).

4. It must be assumed that there is homogeneity of variance-covariance matrices

    for each dependent variable, and that the correlation between any two

    dependent variables is the same in all groups.

The first step was to check for missing data, and the second was to check for

outliers. No missing data occurred, and the outliers were found to be due to transposed

numbers during the data entry and were corrected. Boxplots were used for checking

outliers. In addition, frequency distributions and descriptive statistics were analyzed to

check the data for extreme values to make sure there were no values that were not within

the appropriate range and to determine if all values corresponded to the coded values for

the various categories. Finally, the data were checked for normality and linearity to

ensure no violations occurred. Normality was tested through inspection of histograms and

a significance test for skewness and kurtosis. These assumptions were not violated, and

the MANCOVA analysis proceeded.

The first step in the MANCOVA analysis was to conduct a preliminary

MANCOVA to check the assumption of variance-covariates and homogeneity of

regression slope. Box's Test was used to test variance-covariates. The result of Box's

Test was not significant, and the Wilks' Lambda was utilized as the multivariate test

statistic to use in the interpretation of the results of the MANCOVA. The results of the

preliminary MANCOVA indicated there were no problems encountered, and the full

MANCOVA was completed (Mertler & Vannatta, 2005). Because the assumptions were

met, when a significant value was obtained, it was assumed to be a significant difference

between the means of the three subgroups.

The next step in the statistical analysis was to perform a multiple comparison test

to compare all subgroup combinations and identify any significantly different pairs. For

this purpose, the adjusted means were compared and a Bonferroni post hoc test was used

along with the Bonferroni correction for determining significance. This test was selected

for the multiple comparisons of means because it has more power than other multiple

comparison methods if the numbers of comparisons are small and reduces the likelihood

of Type II errors occurring. Using the adjusted significant level also controlled for Type I errors (Fields, 2009). The adjusted significance level was obtained by dividing the significance (.05) by the number of comparisons (three), resulting in a significance level of .017. The test was conducted on both the full-time and part-time participants for both dependent variables. The results of the Bonferroni were examined to determine which group was significantly different in total terms accumulated and total hours accumulated to completion of four-year degree.

The final step included further analysis on the covariates that had an effect on the dependent variables. For the full-time students, the covariate community college attended had an effect. To determine if there was a significant difference, the means of the total terms and total hours were compared and a Gabriel post hoc test was used. This post hoc test was selected because it is designed to accommodate situation in which sample sizes are different. To determine if there was a significant difference, the Bonferroni correction for determining significance was used. For the 42-hour block transfer students the adjusted significance level was .01 (0.05/5 = .01) and for the A.A. degree transfer students, the adjusted significance level was .017 (0.05/3 = .017).

For the part-time students, the covariate university attended had an effect. To determine if there was a difference, descriptive statistics were conducted for the purpose of comparing the mean and standard deviation of the total terms and total hours accumulated and compared for the three subgroups of part-time students. In addition, independent-samples t-test was conducted for each subgroup of students for both total terms and total hours accumulated. This test was selected because in each case two means were being compared and different participants were used in each condition. To

determine significance, the two-tailed probability was used because there was no

prediction concerning the direction of the effect for university attended (Fields, 2009).

Limitations

The following limitations applied to this study:

1. This study did not take into account certain factors that might influence the

   rate at which a student progresses through postsecondary level institutions,

   such as job and family commitments and economic barriers. For example,

   students who work may carry lighter loads but still be classified as full-time.

   In addition, these factors may affect the status of students, resulting in some

   being classified as part-time.

2. This study was limited to data obtained from only two universities in

   Missouri: UMSL and MSU. It is conceivable that factors unique to these

   universities affect time-to-completion and hours taken, therefore influencing

   completion in unique ways.

3. This study did not include transfer students from every community college in

   Missouri. It includes only community colleges that had students transfer to

   either UMSL or MSU.

4. This study did not include transfers from four-year institutions to four-year

   institutions. It included only transfers from community colleges to

   universities.

5. This study did not include a determination of the quality of instruction offered

   at the various community colleges in Missouri that could impact future

success of the students. It assumed that this factor balances out across all the

combined community colleges.

6.   This study did not take into account the quality of lower-division instruction at

either university, which may affect persistence, performance, and time-to-

completion of native students.

Summary and Overview of the Following Chapter

Chapter Three provided the rationale for the design of this study as well as a

review of the purpose of the study and the research questions. The null hypotheses for

both full-time and part-time participants were outlined in this chapter. In addition, a

comprehensive description of the participants was provided, as was the reasoning for

separating the full-time student population from the part-time population, allowing

independent analysis of each. The chapter also described the instruments, design, and

procedures. The quantitative analysis section explained the type of design and the

statistical techniques utilized in the study.

Chapter Four reviews the research questions and hypotheses. It also provides an

overview of the selection of participants for this study as well as demographic

descriptions of the full-time subgroups and part-time subgroups. Detailed information is

provided about the results of the statistical analysis. The results are presented

independently for both the full-time students and the part-time students. Finally, a

summary of the hypotheses for both full-time and part-time participants is given.

CHAPTER 4

Results

This study was designed to determine the effectiveness of established transfer

agreements between community colleges and four-year institutions in the state of

Missouri. The purpose of the study was to compare the number of hours accumulated and

the time required to successfully complete a degree at a Missouri university, defined by

the number of semesters accumulated for native students who began at the university, for

those who transferred with an A.A. degree, and for those who transferred with the 42-

hour general education block. Success was evaluated based upon the number of

semesters and the number of credit hours required to complete a four-year degree. The

study incorporated gender, ethnicity, the university attended, and the community college

attended as covariates in determining factors that might also influence progress toward

degree completion.

If the two Missouri articulation agreements are accomplishing their stated

purpose, there should be no significant difference in the time-to-completion of a degree

program at the four-year institution among students transferring under each of these

agreements, and those who began their college career as a native student at the four-year

institution. Moreover, if the two established articulation agreements are succeeding

ideally, there should be no significant difference among the three student groups in the

total number of credit hours taken to obtain a four-year degree.

This chapter begins with an overview of the procedure used to determine the

participants in this study, which resulted in the decision to divide respondents into two

distinct groups: full-time students and part-time students. Because of the effect of part-

time status on the time-to-completion of a four-year degree, the full-time and part-time

participants were tested independently. Following this overview, the research questions

that guided this study are reviewed. The chapter is then composed of a section for full-

time participants and a section for part-time participants. Each of these two main sections

includes the demographics and descriptive statistics for the participants involved,

followed by the presentation of the data analysis techniques employed, and concludes

with an description of the results obtained. The chapter ends with a brief overview and

summary.

Population and Participant Selection

The participants for this study were selected using databases of existing student

records generated from the University of Missouri – St. Louis (UMSL) and Missouri

State University (MSU.) Nine of the 12 community colleges in Missouri were

represented in the generated data. The population for this study included both full-time

and part-time students who completed and transferred the 42-hour block or the A.A.

degree from a regionally accredited Missouri community college to either UMSL or

MSU to complete a four-year degree. The population also included native students who

began their college career at either UMSL or MSU and completed their degree at the

university. The two databases were combined, and the following criteria were used to

identify qualified participants for this study:

1. Students who transferred to one of the two universities with the 42-hour

    block or the A.A. degree from a regionally accredited Missouri

    community college.

2. Students who began as first-time freshman at the community college or at the university and did not transfer in previous credits or degrees.

3. Students who had no out-of-state credits.

4. Students who graduated from one of the two universities between fall 2005 and fall 2008.

5. Students who began their college career in the fall 2002 or later.

6. Students who transferred no more that 11 college credits after enrolling at one of the two universities.

Based on the required criteria listed above, all student records that did not meet these criteria were eliminated.

After screening the original data from both universities, the population consisted of 2,412 students. Initial frequency analysis of this data revealed that 80.7% of the population qualified as part-time students under the definitions, leaving only 19.3% as full-time students. Table 1 in Chapter Three summarizes the frequency counts and percentages of full-time and part-time students from this population. Because of the effect of part-time status on time-to-graduation, the data were separated into two populations consisting of a full-time student population and a part-time student population. Table 2 and Table 3 in Chapter Three summarized the frequency counts and percentages of the three student subgroups for both the full-time and the part-time populations, respectively. The full-time population was composed of 465 students with 4.3% meeting the definition for the 42-hour block transfer students ($N = 20$), 8.4% qualifying as A.A. degree transfer students ($N = 39$), and 87.3% meeting the definition for native students ($N = 406$). The part-time population was composed of 1,947 students,

with 7.2% in the 42-hour block category ($N = 140$), 29.7% in the A.A. degree student group ($N = 578$), and 63.1% qualifying as native students ($N = 1229$).

From the full-time population, three groups of 20 students each were selected using a random systematic sampling approach. As a result, for the full-time 42-hour block group, all students from the population were selected. From the part-time population, three groups of 120 students each were selected using a random stratified sampling approach. This sampling process was selected for the part-time students to help ensure each number of part-time semesters was equally represented and reflected what existed in the 1,947 part-time student population. After reviewing the research design and questions, the remaining portion of this chapter is divided into two sections, the first to review the findings for full-time participants and the second for part-time participants.

Overview of Research Design

For the group analysis, the independent variable was four-year degree completion with three subgroups for the full-time population and three subgroups for the part-time population. Four-year degree completers were grouped according to their mode of transfer: 42-hour block student, A.A. degree student, or native student with no transfer hours at the time of enrollment at the university.

The first dependent variable was the total number of semesters required by students to complete a university degree. For transfer students, this variable included both the semesters accumulated at the community college and the semesters taken at the university, and for the native students, total terms included the semesters taken at the university. Full-time and part-time semesters were determined by whether a student completed 12 or more hours during a fall or spring semester. If a student completed 12 or

more hours during the semester, the semester was categorized as full-time while if a student completed fewer than 12 hours, the semester was categorized as part-time. Summer terms in which a student completed six or more hours were categorized as full-time. If a student completed five or fewer hours during a summer term, the terms was categorized as part-time.

The second dependent variable was the total number of college credits accumulated to the completion of a university degree. For transfer students, this variable included both the college credits obtained at the community college, the college credits transferred after enrolling at the university, and the college credits taken at the university. For the native students, total hours included college credits transferred after enrolling at the university and the college credits taken at the university. Dual credit and advanced placement credits were included in total hours accumulated.

Four covariates were incorporated into this study to reduce the error variance. These included gender, ethnicity, university attended, and community college attended. The information for each covariate was given in the original data received from UMSL and MSU.

Research Questions

Before presenting the results, a review of the research questions is in order. The central research question for this study is, "Are there significant differences in time-to-completion and in hours-to-completion of a four-year degree based on transfer status for Missouri transfer students in comparison to native students after adjusting for ethnicity, gender, university attended, and community college attended?" The following six

questions served to guide the development of this study's design, methodology, and analysis.

Research Question One

Are there significant differences in time-to-degree completion based on transfer status for Missouri transfer students in comparison to native students after adjusting for ethnicity, gender, university attended, and community college attended?

Research Question Two

Are there significant differences in the number of college credits earned based on transfer status for Missouri transfer students in comparison to native students after adjusting for ethnicity, gender, university attended, and community college attended?

Research Question Three

Do native students complete a four-year degree program in fewer semesters than both A.A. degree transfer students and 42-hour block transfer students?

Research Question Four

Do A.A. degree transfer students complete a degree program in fewer semesters than the 42-hour block transfer students?

Research Question Five

Do native students complete a degree program with fewer college credit hours than A.A. degree transfer student and 42-hour block transfer students?

Research Question Six

Do A.A. degree transfer students complete a degree program with fewer college credit hours than 42-hour block transfer students?

From the six questions stated, six null hypotheses were constructed to test the full-time participants and six to test the part-time participants. The six null hypotheses for full-time participants and part-time participants will be listed and briefly discussed in the summary finding sections for full-time and part-time participants later in this chapter. Detailed discussion and explanations of the rationale and standards identified for the purpose of determining if each given null hypothesis was rejected or retained will be provided in Chapter Five.

Analysis of Full-time Population

In this section, results of the demographic and descriptive statistics for the full-time participants are reviewed, followed by a presentation of the results of the statistical analysis for this group and a summary of the findings.

Demographics for Full-time Participants

The data analysis process for this portion of the study began with demographic analyses of the selected full-time student population. The narrative, tables, and figures in this subsection present the frequencies and percentages of the distribution of the four covariates for the full-time population, the full-time participants, and each of the three subgroups—42-hour block students, A.A. degree students, and native students.

Table 4 summarizes the gender frequencies and percentages for the three student groups, all participants combined, and the full-time population. Over all, there were more female than male participants in each of the three student subgroups. As seen in Table 4,

the 42-hour block group was composed of slightly more female than either the A.A.

degree group or the native group. The results for the three subgroups are consistent with

the gender composition of the full-time population of females ($N = 73$, 58.7%) and males

($N = 192$, 41.3%) and are reflective of the general division in higher education as a

whole.

Table 4

Gender Frequency Counts and Percentages for the Three Subgroups (N=20), Full-Time
Participants (N=60), and Full-Time Population (N=465)

Gender	f	P
42-hour Block Students		
Male	6	30.0
Female	14	70.0
Total	20	100.0
A.A. Degree Students		
Male	8	40.0
Female	12	60.0
Total	20	100.0
Native Students		
Male	8	40.0
Female	12	60.0
Total	20	100.0
Full-Time Participants		
Male	22	36.7
Female	38	63.3
Total	60	100.0
Full-Time Population		
Male	192	41.3
Female	273	58.7
Total	465	100.0

A summary of the ethnicity frequencies and percentages for the three student

subgroups as well as the combined full-time participants and the full-time population is

given in Table 5. The categories used for this study were Caucasian, African American,

Asian, Hispanic, and Other. As seen in Table 5, the three subgroups were composed

primarily of Caucasian which is consistent with the total population of full-time students

(90.8% Caucasian, $N = 422$). The remaining frequencies and percentages for African

American, Asian, Hispanic, and Other are also listed in Table 5.

Table 5

Ethnicity Frequency Counts and Percentages for the Three Subgroups (N=20), Full-Time Participants (N=60, and Full-Time Population (N=465)

Ethnicity	*f*	*P*
42-hour Block Students		
Caucasian	17	85.0
African American	1	5.0
Asian	1	5.0
Other	1	5.0
Total	20	100.0
A.A. Degree Students		
Caucasian	18	90.0
African American	1	5.0
Hispanic	1	5.0
Total	20	100.0
Native Students		
Caucasian	18	90.0
African American	1	5.0
Hispanic	1	5.0

Total	20	100.0
Full-Time Participants		
Caucasian	53	88.3
African American	3	5.0
Asian	2	3.3
Hispanic	1	1.7
Other	1	1.7
Total	60	100.0
Full-Time Population		
Caucasian	422	90.8
African American	12	2.6
Asian	13	2.8
Hispanic	17	3.7
Other	1	.2
Total	465	100.0

The frequencies and percentages for the covariate, university attended, are presented in Table 6. For the two universities used in this study, UMSL has significantly more transfer students than MSU in its population. Approximately 75% of the student population from UMSL is composed of transfer students, and approximately 30% from MSU are transfer students. As seen in Table 6, a substantially greater number of 42-hour block transfer students were from UMSL than from MSU while a substantially greater number of native students were from MSU than from UMSL. There were an equal number of A.A. degree students from both universities. These results reveal a larger number of transfer students attend UMSL under the 42-hour block arrangement than MSU and a much higher percentage of native students at MSU.

Table 6

University Attended Frequency Counts and Percentages for the Three Subgroups (N=20), and Full-Time Participants (N=60)

University Attended	*f*	*P*
42-hour Block Students		
University of Missouri-St. Louis	15	75.0
Missouri State University	5	25.0
Total	20	100.0
A.A. Degree Students		
University of Missouri-St. Louis	10	50.0
Missouri State University	10	50.0
Total	20	100.0
Native Students		
University of Missouri-St. Louis	4	20.0
Missouri State University	16	80.0
Total	20	100.0
Full-Time Participants		
University of Missouri-St. Louis	29	48.3
Missouri State University	31	51.7
Total	60	100.0

Table 7 summarizes the frequencies and percentages of the community colleges attended for the 42-hour block transfer students, A.A. degree transfer students, combined full-time participants, and full-time population. Six Missouri community colleges are represented in the sample; however, as seen in Table 7, the majority of students transferred from either St. Louis Community College (STLCC) or St. Charles Community College (SCC) to UMSL or from Ozarks Technical Community College (OTC) to MSU. The frequency and percentage for the remaining community colleges

represented in the sample are also listed in Table 7. One revealing statistic in this analysis

is that full-time students from Ozarks Technical Community College are much more

likely to complete the A.A. before transferring than are students from the other colleges.

Since the majority of these students transfer to MSU which is located in the same

community, the results are reflected in the percentage of transfers to MSU who have

completed the A.A. degree.

Table 7

Community College Attended Frequency Counts and Percentages for the Three
Subgroups (N=20), Full-Time Participants (N=60), and Full-Time Population (N=465)

Community College Attended	*f*	*P*
42-hour Block Students		
East Central	1	5.0
Jefferson	2	10.0
Mineral Area	3	15.0
OTC	5	25.0
St. Louis	5	25.0
St Charles	4	20.0
Total	20	100.0
A.A. Degree Students		
Jefferson	1	5.0
OTC	10	50.0
St. Louis	5	25.0
St Charles	4	20.0
Total	20	100.0
Native Students		
None	20	100.0
Total	20	100.0

Full-Time Participants

East Central	1	1.7
Jefferson	3	5.0
Mineral Area	3	5.0
OTC	15	25.0
St. Louis	10	16.7
St Charles	8	13.3
None	20	33.3
Total	60	100.0

Full-Time Population

East Central	2	.4
Jefferson College	3	.6
Mineral Area	3	.6
Ozarks Technical	23	5.1
St. Louis	14	3.0
St. Charles	13	2.8
Three Rivers	1	.2
None	406	87.3
Total	465	100.0

After the completion of the demographic statistics for the four covariates utilized for the full-time participants in this study, descriptive statistics were conducted and are presented in the following subsection.

Descriptive Statistic Analysis for Full-time Participants

This subsection presents the results of the descriptive analysis of the two dependent variables for this study: the total number of terms accumulated and the total number of hours accumulated to the completion of a four-year degree. The results for the two dependent variables for the three subgroups of full-time students are listed in Table

8. As indicated in the Table 8, mean number of terms accumulated and the mean number of hours accumulated is less for the native students than for either the 42-hour block transfer students or the A.A. degree students. The two transfer groups required approximately the same number of semesters and hours to complete a four-year degree with the 42-hour block students requiring slightly more terms and hours than the A.A. degree students.

Table 8

Descriptive Statistics of the Number of Total Terms and Total Hours Accumulated to a 4-year Degree for the Three Subgroups of Full-time Participants (N=60)

	N	Minimum	Maximum	*M*	*SD*
Total Number of Terms Accumulated for Full-Time Participants					
42-hour Transfer Students	20	8	12	10.45	1.43
A.A. Degree Transfer Students	20	9	13	10.10	1.25
Native Students	20	8	10	9.10	0.72
Valid N	60				
Total Number of Hours Accumulated for Full-Time Participants					
42-hour Transfer Students	20	123	152	138.65	11.09
A.A. Degree Transfer Students	20	122	154	135.91	10.29
Native Students	20	121	140	128.85	5.79
Valid N	60				

In determining the total number of terms required by full-time transfer students to complete a four-year degree, two categories were used in the calculation: terms accumulated at the community college and terms taken at the university. For the native students, this measure included only the terms taken at the university. The minimum terms for this study began at eight, and the maximum included was 14. Table 9 displays

the results of the two categories of total terms accumulated for the three subgroups of

full-time participants. The maximum number of allowed hours transferred after enrolling

at the universities for this study was 11. Also, the part-time term that occurred for some

students due to the hours transferred after enrolling at the university was not included in

the determination of full-time and part-time status for either the full-time students or the

part-time students. As expected, the data in Table 9 reveals 42-hour block students

transfer fewer terms to the university than A.A. degree students but take more terms at

the university once enrolled.

Table 9

Descriptive Statistics of the Three Categories of the Number of Total Terms Accumulated to a 4-year Degree for the Three Subgroups of Full-time Participants (N=20)

	N	Minimum	Maximum	*M*	*SD*
Total Number of Terms Accumulated for Full-Time Participants					
42-hour Transfer Students					
Terms Transferred to UMSL/MSU	20	3	6	4.45	0.83
Terms Taken at UMSL/MSU	20	4	8	6.00	1.30
Valid N	20				
A.A. Degree Transfer Students					
Terms Transferred to UMSL/MSU	20	4	6	4.95	0.76
Terms Taken at UMSL/MSU	20	4	7	5.15	0.88
Valid N	20				
Native Students					
Terms Transferred to UMSL/MSU	20	0	0	0.00	0.00
Terms Taken at UMSL/MSU	20	8	10	9.10	0.72
Valid N	20				

The total number of hours required to complete a four-year degree for transfer students were derived from three categories: the hours accumulated at the community college, the hours transferred after enrolling at the university, and the hours taken at the university. For the native students, total hours accumulated included the hours transferred after enrolling at the university and the hours taken at the university. For this study, the minimum number of hours began at 120 and the allowable maximum hours transferred after enrolling at the university, for all student groups, was 11. As described in Chapter Three, students with more than 11 hours transferred after enrolling at the university were excluded from this study.

Table 10 lists the mean and standard deviation for each of the three categories of hours accumulated as described above for the three subgroups of students. There were no hours transferred after enrolling at the university for the A.A. degree transfer students. As expected, the results revealed the 42-hour block students transfer fewer hours than the A.A. degree students but take more hours at the university once enrolled. The data also revealed that the mean number of hours transferred in for the 42-hour block students was $M = 58.5$ which is substantially greater than the required 42 hours and within six hours of the number generally required for an A.A. degree (64), indicating this group of students is taking more hours than minimally required at the community college. Furthermore, the mean number of hours $M = 69.50$ taken at the university for the A.A. degree students is greater than what would normally be required to complete a degree suggesting A.A. transfer students are taking more hours than minimally required at the university.

After the completion of a general review of demographic and frequency statistics, statistical analyses were conducted and are presented in the following subsection.

Table 10

Descriptive Statistics of the Three Categories of the Number of Total Hours Accumulated to a 4-year Degree for the Three Subgroups of Full-time Participants (N=20)

	N	Minimum	Maximum	*M*	*SD*
Total Number of Hours Accumulated for Full-Time Participants					
42-hour Transfer Students					
Hours Transferred to UMSL/MSU	20	43	81	58.05	9.64
Hours Transferred After Enrolling at UMSL/MSU	20	0	11	3.35	4.39
Hours Taken at UMSL/MSU	20	52	104	77.25	14.15
Valid N	20				
A.A. Degree Transfer Students					
Hours Transferred to UMSL/MSU	20	56	79	66.45	5.91
Hours Transferred After Enrolling at UMSL/MSU	20	0	0	0.00	0.00
Hours Taken at UMSL/MSU	20	60	90	69.50	9.89
Valid N	20				
Native Students					
Hours Transferred to UMSL/MSU	20	0	0	0.00	0.00
Hours Transferred After Enrolling at UMSL/MSU	20	0	8	1.60	2.72
Hours Taken at UMSL/MSU	20	120	142	127.35	5.91
Valid N	20				

Results of Statistical Analysis for Full-time Participants

The data collected for full-time participants were analyzed using a one-way

Multivariate Analysis of Covariance (MANCOVA). This statistical method was used to

determine if student status—42-hour block, A.A. degree, or native—has an effect on the

two dependent variables—total number of terms and total number of hours

accumulated—while controlling for the covariates.

Prior to conducting the MANCOVA, a series of pre-analysis tests was performed

to determine if multivariate normality, linearity, and homogeneity of variance-covariance

matrices were violated. First, the data were screened for missing data and outliers. In

addition, frequency distributions and descriptive statistics were analyzed to check the

data for extreme values to determine if there were values not within the appropriate range

and if all values corresponded to the coded values for the various categories. No missing

data, outliers, or extreme values occurred in the full-time participant data. The data were

then checked for normality and linearity to ensure no violations occurred. Normality was

tested through inspection of histograms and significance test for skewness and kurtosis.

There are no substantial violations of the assumptions for this test allowing the analyses

to continue as planned.

In order to conduct a MANCOVA, the dependent variables must be correlated

and the correlation between the two dependent variables must be the same in all groups

(Mertler & Vannatta, 2005). To determine if correlation existed, a *Pearson r* was

conducted. The results presented in Table 11 indicated that total terms were positively

correlated to total hours with $r = 804$, $p < .001$. Also, the correlation between the two

dependent variables was the same for the three subgroups of students. These results were

consistent with correlation requirements for MANCOVA.

Table 11

Full-time Participants Pearson Correlation Results for Total Terms and Total Hours
(N=60)

		Total Terms to 4-year degree	Total Hours to 4-year degree
Total Terms to 4-year degree	Pearson Correlation	1	.804[**]
	Sig. (2tailed)		.000
	N	60	60
Total Hours to 4-year degree	Pearson Correlation	.804[**]	1
	Sig. (2 tailed)	.000	
	N	60	60

[**] . Correlation is significant at the 0.01 level (2 tailed)

Furthermore, a *Pearson r* was conducted to determine if the four covariates were

correlated. According to Mertler & Vannatta, 2005, when conducting a MANCOVA, no

correlation should exist between the covariates. The *Pearson r* results for the four

covariates are listed in Table 12. The university attended and the community college

attended were correlated with $r = .369$, $p = .004$ at a significant level of 0.01. The feeder

community colleges for the two universities are a result of their geographical location

within the state. The primary feeder community colleges for UMSL included STLCC and

SCC. MSU's primary feeder community college is OTC. Because different community

colleges are involved in this study for the two universities, the covariates for university

attended and community college attended were both retained.

Table 12

Full-time Participants Pearson Correlation Results for Gender, Ethnicity, University Attended, and Community College Attended (N=60)

		Gender	Ethnicity	University Attended	CC Attended
Gender	Pearson Correlation	1	-.134	-.044	0.26
	Sig. (2 tailed)		.307	.739	.842
	N	60	60	60	60
Ethnicity	Pearson Correlation	-.134	1	-.101	-.166
	Sig (2-tailed)	.307		.443	,205
	N	60	60	60	60
University Attended	Pearson Correlation	-.044	-.101	1	.369[**]
	Sig. (2-tailed)	.739	.443		.004
	N	60	60	60	60
CC Attended	Pearson Correlation	.026	-.166	.369[**]	1
	Sig. (2-tailed)	.842	.205	.004	
	N	60	60	60	60

[**]. Correlation is significant at the 0.01 level (2-tailed).

A preliminary MANCOVA was conducted to check for variance-covariates and homogeneity of regression slope. The Box's Test revealed that equal variances are assumed, $F(6, 80975.077) = 2.136$, $p = .046$; therefore, Wilks' Lambda was used as the multivariate statistic. The preliminary MANCOVA also indicated that factor-covariate interaction was not significant, with Wilks' $\Lambda = .946$, $F(6, 98.000) = .459$, $p = .837$. This

result indicated the one-way MANCOVA was the appropriate statistical test to use for the analysis of the data.

The results of the MANCOVA analysis can be seen in Table 13. The findings revealed significant differences among the four-year degree completers on the combined dependent variables, Wilks' $\Lambda = .698$, $F(4, 104.000) = 5.11$, $p = .001$, multivariate $\eta^2 = .164$. This would suggest the mode of transfer (42-hour transfer or A.A. degree transfer) or no transfer (native student) influences in a significant way the terms and hours accumulated to a four-year degree. The covariate (community college attended) significantly influenced the combined dependent variables, Wilks' $\Lambda = .849$, $F(2, 52.000) = 4.62$, $p = .014$, multivariate $\eta^2 = .151$, suggesting the community college attended has an effect on the dependent variables. As seen in Table 13, the remaining covariates, gender, ethnicity, and university attended did not significantly influence the combined dependent variables.

Analysis of covariance (ANCOVA) was conducted on each dependent variable as a follow-up test to the MANCOVA. Results for the between-subjects effect are displayed in Table 14. The degree completers category differences were significant for total terms accumulated to a four-year degree, $F(2, 53) = 10.74$, $p < .001$, partial $\eta^2 = .288$ and total hours accumulated to a four-year degree, $F(2, 53) = 8.53$, $p = .001$, partial $\eta^2 = .243$. Community college attended differences were significant for total terms accumulated to a four-year degree, $F(1, 53) = 8.92$, $p = .004$, partial $\eta^2 = .144$ and for total hours accumulated to a four-year degree, $F(1, 53) = 6.88$, $p = .011$, partial $\eta^2 = .155$. There were no significant differences for total terms accumulated or total hours accumulated for gender, ethnicity, and university attended. This significant difference found for both the

effect of three subgroups of students and the effect of the community college attend on the two dependent variables required further investigation as described below.

Table 13

Multivariate Tests for Full-time Students

Effect	Value	*F*	Hypothesis *df*	Error *df*	Sig.	η^2
Intercept						
Wilks' Lambda	.197	106.029[a]	2	52.000	.000	.803
Gender						
Wilks' Lambda	.999	.024[a]	2	52.000	.976	.001
Ethnicity						
Wilks' Lambda	.978	.593[a]	2	52.000	.556	.022
University Attended						
Wilks' Lambda	.968	.848[a]	2	52.000	.434	.032
CC Attended						
Wilks' Lambda	.849	4.640[a]	2	52.000	.014	.151
Four-year Degree Completers						
Wilks' Lambda	.698	5.112[a]	2	52.000	.001	.164

a. Exact statistic
b. The statistic is an upper bound on F that yields a lower bound on the significance level.
c. Design: Intercept + gender + ethnicity + university attended + community college attended + degree students.
d. Four-year Degree Completers include 42-hour block, A.A. degree, and native students.

Table 14

Test of Between-Subjects Effect for Full-time Students

Source	Dependent Variable	SS	df	MS	F	Sig.	η^2
Correct Model	Terms	35.431[a]	6	5.905	4.987	.000	.361
	Hours	1815.656[b]	6	302.609	3.827	.003	.302
Intercept	Terms	64.518	1	64.518	54.492	.000	.507
	Hours	15906.445	1	15906.445	201.140	.000	.791
Gender	Terms	.016	1	.016	.014	.907	.000
	Hours	3.644	1	3.644	.046	.831	.001
Ethnicity	Terms	1.286	1	1.286	1.086	.302	.020
	Hours	19.538	1	19.538	.247	.621	.005
University Attended	Terms	1.452	1	1.452	1.226	.273	.023
	Hours	130.810	1	130.810	1.654	.204	.030
CC Attended	Terms	10.563	1	10.563	8.921	.004	.144
	Hours	543.723	1	534.723	6.875	.001	.115
Four-year Degree Completers	Terms	25.437	2	12.719	10.742	.000	.288
	Hours	1348.648	2	674.324	8.527	.001	.243
Error	Terms	62.752	53	1.184			
	Hours	4191.327	53	79.082			
Total	Terms	5959.000	60				
	Hours	1091153.000	60				
Corrected Total	Terms	98.183	59				
	Hours	6006.983	59				

a. R Squared = .302 (Adjusted R Squared = .223)
b. R Squared = .361 (Adjusted R Squared = .289)

The adjusted and unadjusted means for total terms accumulated and total hours accumulated were compared to determine if a difference occurred between the three student subgroups as seen in Table 15. The comparison of adjusted means revealed that total terms accumulated for the native students was lower and differed by 3.64 points from the 42-hour transfer students and 2.92 points from the A.A. degree transfer students. Moreover, the total hours accumulated for the native students were also lower and differed by 25.78 points from the 42-hour transfer students and 20.34 from the A.A. degree transfer students, indicating that native full-time students complete their degree in fewer terms and hours than either group of transfer students. In addition, the adjusted mean for terms accumulated for both transfer groups were approximately the same with a .72 point difference between the 42-hour and A.A. degree students. However, the adjusted mean for hours accumulated indicated a difference of 5.44 points with the 42-hour block students requiring more hours than the A.A. degree students to complete a four-year degree.

Table 15

Adjusted and Unadjusted Means for Total Terms and Total Hours Accumulated for Full-time Student Groups

Student Groups	Total Terms Accumulated		Total Hours Accumulated	
	Adjusted *M*	Unadjusted *M*	Adjusted *M*	Unadjusted *M*
42-hour Transfers	11.30[a]	10.45	144.89[a]	138.65
A.A. degree Transfers	10.58[a]	10.10	139.45[a]	135.95
Native Students	7.66[a]	9.10	119.11[a]	128.85

a. Covariates appearing in the model are evaluated at the following values: Gender = .63, Ethnicity = 1.23, University Attended = .52, Community College Attended = 10.27.

In addition to comparing the adjusted means in Table 15 to determine which groups differed in terms accumulated and hours accumulated, the Bonferroni post hoc test was conducted to compare all group combinations and identify any significantly different pairs. For this purpose, the Bonferroni correction for determining significance was used. This test was selected for the multiple comparisons of means because it has more power than other multiple comparison methods if the number of comparisons is small and because it reduces the likelihood of Type II errors occurring. Using the Bonferroni's adjusted significant level also controlled for Type I errors (Fields, 2009). The adjusted significance level was obtained by dividing the significance (.05) by the number of comparisons (three), resulting in .017.

The findings for total terms accumulated to a four-year degree using the Bonferroni post hoc test are presented in Table 16. These results indicated that native students significantly differed in total terms accumulated to a four-year degree from 42-hour transfer students but not from A.A. degree students when using a significant level of .017. The data also revealed no significant difference in total terms accumulated between the two transfer student groups. The results for total hours accumulated to a four-year degree are presented in Table 17, indicating that native students significantly differed in total hours accumulated to a four-year degree from 42-hour transfer students but not from A.A. degree student. As with the terms accumulated, there were no significant differences between 42-hour block students and A.A. degree students in total terms accumulated or total hours accumulated.

Table 16

Multiple Comparison-Bonferroni for Full-time Students (Total Terms Accumulated to four-year Degree)

Dependent Variable	(I) Degree Students	(J) Degree Students	Mean Difference (I-J)	*SE*	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
Total Terms Accumulated	Bonferroni						
	42-hour	A.A.	.35	.371	1.000	-.57	1.27
		Native	1.35*	.371	.002[a]	.43	2.27
	A.A.	42-hour	-.35	.371	1.000	-1.27	.57
		Native	1.00*	.371	.028	.08	1.92
	Native	42-hour	-1.35*	.371	.002[a]	-2.27	-.43
		A.A.	-1.00*	.371	.028	-1.92	.08

Based on observed means.
The error term is Mean Square (Error) = 87.404.
*.The mean difference is significant at the .05 level.
a. Bonferroni's adjusted significance α = .017

The results of the MANCOVA indicated the covariate community college

attended had an effect on both dependent variables for the full-time students. This result

occurred for total terms accumulated to four-year degree, $F(1, 53) = 8.921$, $p = .004$,

partial $\eta^2 = .144$ and for total hours accumulated to four-year degree, $F(1, 53) = 6.88$, $p =$

.011, partial $\eta^2 = .115$. To determine the differences in terms and hours accumulated for

transfer students from different community colleges, descriptive statistics were

conducted. Table 18 lists the mean and standard deviation for each of the community

colleges attended by transfer students for both total terms and total hours accumulated. A

comparison of the means for the 42-hour block students revealed the total terms

Table 17

Multiple Comparison-Bonferroni for Full-time Students (Total Hours Accumulated to four-year Degree)

Dependent Variable	(I) Degree Students	(J) Degree Students	Mean Difference (I-J)	*SE*	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
Total Hours Accumulated	Bonferroni						
	42-hour	A.A.	2.70	2.956	1.000	-4.59	9.99
		Native	9.80[*]	2.956	.005[a]	2.51	17.09
	A.A.	42-hour	-2.70	2.956	1.000	-9.99	4.59
		Native	7.10	2.956	.059	-.19	14.39
	Native	42-hour	-9.80[*]	2.956	.005[a]	-17.09	-2.51
		A.A.	-7.10	2.956	.059	-14.39	.19

Based on observed means.
The error term is Mean Square (Error) = 87.404.
*.The mean difference is significant at the .05 level.
a. Bonferroni's adjusted significance α = .017

accumulated for students attending MAC was lower and differed by 1.33 to 2.58 points

from the other community colleges. The total hours accumulated for the 42-hour block

students attending MAC was lower when compared to the other community colleges and

differed by 14.0 to 22.4 points. Because there was only one student who attended ECC,

the mean and standard deviation for total terms accumulated and total hours accumulated

is not   compared with the other community colleges. For the A.A. degree students, the

total terms accumulated for students attending SCC was lower and differed by .95 points

from OTC and 1.55 from STLCC. The total hours accumulated for the A.A. degree

students attending SCC was also lower when compared to the other community colleges

and differed by 5.35 to 9.95 points. Because there was only one student that attended

JEFFCO in this group, the mean and standard deviation for total terms accumulated and

total hours accumulated is not compared.

Table 18

Descriptive Statistics of the Community Colleges Attended for Total Terms and Total
Hours Accumulated for Full-time Transfer Students (N = 20)

	N	Minimum	Maximum	*M*	*SD*
Total Terms Accumulated					
42-hour Transfer Students					
ECC	1	8	8	8.00	-
JEFFCO	2	9	11	10.00	1.41
MAC	3	8	9	8.67	.58
OTC	5	9	12	11.00	1.41
STLCC	5	10	12	11.00	1.00
SCC	4	10	12	11.25	.96
Total	20				
A.A. Degree Transfer Students					
JEFFCO	1	9	9	9.00	-
OTC	10	9	13	10.20	1.32
STLCC	5	9	12	10.80	1.30
SCC	4	9	10	9.25	.50
Total	20				
Total Hours Accumulated					
42-hour Transfer Students					
ECC	1	126	126	126.00	-
JEFFCO	2	130	146	138.00	11.31
MAC	3	123	125	124.00	1.00

OTC	5	128	152	141.00	11.58
SLCC	5	135	150	146.40	6.50
SCC	4	125	149	140.50	10.88
Total	20				
A.A. Degree Transfer Students					
JEFFCO	1	122	122	122.00	-
OTC	10	124	150	136.60	10.79
STLCC	5	131	154	141.20	9.37
SCC	4	124	139	131.25	7.85
Total	20				

While the comparison of the means for total terms and total hours accumulated to a four-year degree revealed a difference between community colleges, additional testing was required to determine if the difference was significant. When deciding the appropriate test to use, sample size was taken into account. The Gabriel post hoc test was selected for comparisons of means for both the 42-hour block students and the A.A. degree students because it is designed to accommodate situations in which sample sizes are different (Fields, 2009). The results for total hours accumulated for the 42-hour block students are found in Table 19. Because ECC had only one student, it was excluded from the test. The results indicated the students attending MAC differed in total hours accumulated from students attending STLCC at the 0.05 level. However, using the Bonferroni correction of .01 significant level (0.05/5 = .01) the difference was not significant. Furthermore, there were no significant differences in total terms accumulated among the different community colleges for the 42-hour block students nor were there

any significant differences revealed in total terms or total hours accumulated for A.A.

degree students.

Table 19

Multiple Comparison-Gabriel for Community College Attended for 42-hour Students
(Total Hours Accumulated to a 4-year Degree)

Dependent Variable	(I) CC Attended	(J) CC Attended	Mean Difference (I-J)	*SE*	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
Total Hours							
	JEFFCO	MAC	14.00	8.417	.640	-13.30	41.30
		OTC	-3.00	7.714	1.000	-27.54	21.54
		STLCC	-8.40	7.714	.937	-32.94	16.14
		SCC	-2.50	7.985	1.000	-28.16	23.16
	MAC	JEFFCO	-14.00	8.417	.640	-41.30	13.30
		OTC	-17.00	6.734	.184	-38.78	4.78
		STLCC	-22.40*	6.734	.042	-44.18	-.62
		SCC	-16.50	7.042	.255	-39.40	6.40
	OTC	JEFFCO	3.00	7.714	1.000	-21.54	27.54
		MAC	17.00	6.734	.184	-4.78	38.78
		STLCC	-5.40	5.831	.979	-24.41	13.61
		SCC	.50	6.185	1.000	-19.64	20.64
	STLCC	JEFFCO	8.40	7.714	.937	-16.14	32.94
		MAC	22.40*	6.734	.042	.62	44.18
		OTC	5.40	5.831	.979	-13.61	24.41
		SCC	5.90	6.185	.975	-14.24	26.04
	SCC	JEFFCO	2.50	7.895	1.000	-23.16	28.16
		MAC	16.50	7.042	.255	-6.40	39.40
		OTC	-.50	6.185	1.000	-20.64	19.64
		STLCC	-5.90	6.185	.975	-26.04	14.24

*. The mean difference is significant at the 0.05 level.
a. Bonferroni's adjusted significance α = .01

Summary for Full-Time Participants

This subsection provided an overview of the analysis process for full-time participants and included demographic analyses for the four covariates and descriptive analyses of total terms and total hours accumulated to a four-year degree for the three subgroups of participants: 42-hour students, A.A. degree students, and native students. Finally the statistical analysis was presented, explaining the pre-analysis tests used to identify outliers, normality, linearity, and homogeneity of variance-covariance matrices. In addition, a *Pearson r* was conducted to determine if the two dependent variables were correlated and another to determine if the four covariates were correlated. A one-way MANCOVA was conducted to discover the effect of student status on time-to-completion of a four-year degree as measured by total number of terms accumulated and total number of hours accumulated while controlling for gender, ethnicity, university attended, and community college attended.

To discover which subgroups of students differed in terms and hours accumulated, adjusted means were compared and a Bonferroni post hoc test was performed to compare all group combinations. Additionally, to find out if there was a significant difference in total terms and total hours accumulated between the community colleges attended for the three subgroups of students, a Gabriel post hoc test was conducted.

Collectively, these findings resulted in the rejection of some null hypotheses and the retention of others. The following is a list of the null hypotheses designed to test the full-time participants, whether each hypothesis was rejected or retained, and a brief

explanation describing the results for each. Each of the null hypotheses stated that there

would be no significant difference between the three groups of students.

H_o1: There are no significant differences in time-to-degree completion based on

transfer status for Missouri full-time transfer students in comparison to full-time

native students after adjusting for ethnicity, gender, university attended, and

community college attended.

- The null hypothesis was rejected because the statistical analysis found a

    significant difference associated with the mode of transfer (42-hour block

    or A.A. degree) or no transfer (native students) among the four-year

    degree completers for total terms accumulated to a four-year degree,

    Wilks' $\Lambda = .698$, $F(4, 104.000) = 5.11$, $p = .001$, multivariate $\eta^2 = .164$.

    In addition, the ANCOVA follow-up test to MANCOVA indicated the

    between-subjects effects for degree students yielded a significant

    difference in terms accumulated with $F(2, 53) = 10.74$, $p < .001$, partial η^2

    $= .288$.

- The MANCOVA analysis also revealed the community college attended

    by transfer students had an effect on the time-to-degree completion

    resulting in a significant difference, Wilks' $\Lambda = .849$, $F(2, 52.000) = 4.62$,

    $p = .014$, multivariate $\eta^2 = .151$. Additionally, the ANCOVA follow-up

    test to MANCOVA indicated the covariate, community college attended,

    had a significant effect on the total terms accumulated to a four-year

    degree for the two subgroups of transfer students, $F(1, 53) = 8.92$, $p =$

    $.004$, partial $\eta^2 = .144$.

H$_o$2: There are no significant differences in the number of college credits earned based on transfer status for Missouri full-time transfer students in comparison to full-time native students after adjusting for ethnicity, gender, university attended, and community college attended.

- This null hypothesis was rejected as a result of conducting a MANCOVA. The results of the test indicated a significant difference occurred in total hours accumulated to a four-year degree depending on the transfer status of the students, Wilks' Λ = .698, $F(4, 104.000) = 5.11$, $p = .001$, multivariate η^2 = .164. Furthermore, the ANCOVA follow-up test to MANCOVA indicated the between-subjects effects for four-year degree completers yielded a significant difference in hours accumulated with $F(2, 53) = 8.53$, $p = .001$, partial η^2 = .243.

- The MANCOVA results also revealed the community college attended by transfer students had an effect on the time-to-degree completion resulting in a significant difference, Wilks' Λ = .849, $F(2, 52.000) = 4.62$, $p = .014$, multivariate η^2 = .151. Additionally, the ANCOVA follow-up test to MANCOVA indicated the covariate, community college attended, had a significant effect on the total hours accumulated to a four-year degree for the two subgroups of transfer students, $F(1, 53) = 6.88$, $p = .011$, partial η^2 = .115.

H$_o$3: Full-time native students will not complete a four-year degree program in fewer semesters than both full-time A.A. degree transfer students and full-time 42-hour block transfer students.

- This null hypothesis was rejected because the data revealed native students complete a four-year degree in fewer terms than 42-hour block transfer students.

- Even though a comparison of adjusted means revealed native students completed a four-year degree in fewer terms than either group of transfer students., a Bonferroni post hoc test revealed a significant difference of p = .002 with a mean difference of 1.35 between native students and 42-hour block students with native students accumulating fewer terms; however, there was no significant difference in the time-to-degree completion between native students and A.A. degree students (p = .028).

$\mathbf{H_o4}$: Full-time A.A. degree transfer students will not complete a degree program in fewer semesters than full-time 42-hour block transfer students.

- This null hypothesis was accepted because the data indicated that no significant difference in time-to-completion of a four-year degree between A.A. degree transfer students and 42-hour block students occurred. This conclusion was based on the results generated from a Bonferroni post hoc test which yielded a significance of p = 1.000 and a mean difference of .35 between the two.

$\mathbf{H_o5}$: Full-time native students will not complete a degree program with fewer college credit hours than full-time A.A. degree transfer student and full-time 42-hour block transfer students.

- The analysis resulted in the rejection of this hypothesis because the data revealed native students complete a four-year degree in fewer hours than 42-hour block transfer students.

- The Bonferroni results conveyed a significant difference ($p = .005$ with a mean difference of 9.80) in the total hours accumulated to a four-year degree between the native students and the 42-hour block transfer students with native students accumulating fewer hours; however, there was no significant difference between the native students and the A.A. degree transfer students ($p = .059$).

$\mathbf{H_o6}$: Full-time A.A. degree transfer students will not complete a degree program with fewer college credit hours than full-time 42-hour block transfer students.

- This null hypothesis was accepted since the data indicated that no significant difference existed in the total number of hours accumulated to a four-year degree between the two transfer student groups. Bonferroni results indicated $p = 1.000$ with a mean difference of 2.70. between the two student subgroups.

Additional research question: Does the community college attended have a significant influence on the time-to-degree completion and in the number of college credits accumulated for full-time transfer students?

- Because the MANCOVA and the follow-up ANCOVA indicated the covariate, community college attended, had an effect on both the total terms and total hours accumulated to a four-year degree for transfer students, further investigation into this finding was in order.

- To determine which community college differed in time-to-degree completion and number of college credits accumulated, descriptive statistics were conducted.

- To determine if a significant difference occurred among the community colleges, a Gabriel post hoc test was performed using an adjusted significant level of .01 (0.05/5) for the 42-hour block students and a significant level of .017 (0.05/3) for the A.A. degree students. The results indicated no significant difference occurred in total terms accumulated and total hours accumulated to a four-year degree for either group of transfer students attending the different community colleges.

Chapter Five will examine each hypothesis and describe in detail the major research findings that were obtained during the course of this study and their implications. This will include an explanation of the rational and standards identified for the purpose of determining if each given hypotheses was rejected or retained.

Analysis of Part-time Participants

This section includes the results of the demographics and descriptive statistics for the part-time participants. In addition, the results of the statistical analysis are presented for part-time students followed by a summary of the findings.

Demographics for Part-time Participants

As with the full-time student analysis, the data analysis process for this portion of the study began with demographic analyses of the four covariates for the part-time participants with results being presented in the same format as before. As a refresher, 120 students were randomly selected for each of the three part-time student subgroups.

Table 20 summarizes the gender frequencies and percentages for the three student subgroups, for all part-time participants combined, and for the total population of part-time students. As with the full-time participants, there were more female than male participants in each of the three student groups. As seen in Table 20, the 42-hour block group was composed of slightly fewer females than either the A.A. degree group or the native group. These results are consistent with the part-time population of females (N 1155 = 59.3%) and males (N 792 = 40.7%).

Ethnicity frequencies and percentages for the three student groups as well as for the combined part-time participants and the part-time population are listed in Table 21. As with the full-time student analyses, the categories used were Caucasian, African American, Asian, Hispanic, and Other. As listed in Table 21, the three subgroups were composed primarily of Caucasian which is consistent with the part-time participants with 85.6% Caucasian ($N = 308$) and the population of part-time students with 87.2% Caucasian ($N = 1697$). The remaining frequencies and percentages for ethnicity are displayed in Table 21. These frequencies and percentages are consistent with those found earlier with the full-time participants.

Table 20

Gender Frequency Counts and Percentages for the Three Subgroups (N=120), Part-Time Participants (N=360), and Part-Time Population (N=1947)

Gender	*f*	*P*
42-hour Block Students		
Male	53	44.2
Female	67	55.8
Total	120	100.0
A.A. Degree Students		
Male	44	36.7
Female	76	63.3
Total	120	100.0
Native Students		
Male	44	36.7
Female	76	63.3
Total	120	100.0
Part-Time Participants		
Male	141	39.2
Female	219	60.8
Total	360	100.0
Part-Time Population		
Male	792	40.7
Female	1155	59.3
Total	1947	100.0

Table 21

*Ethnicity Frequency Counts and Percentages for the Three Subgroups (N=120), Part-
Time Participants (N=360), and Part-Time Population (N=1947)*

Ethnicity	*f*	*P*
42-hour Block Students		
Caucasian	104	86.7
Black	1	.8
Asian	2	1.7
Hispanic	7	5.8
Other	6	5.0
Total	120	100.0
A.A. Degree Students		
Caucasian	98	81.7
Black	10	8.3
Hispanic	8	6.7
Other	4	3.3
Total	120	100.0
Native Students		
Caucasian	106	88.3
Black	9	7.5
Asian	1	.8
Hispanic	2	1.7
Other	2	1.7
Total	120	100.0
Full-Time Participants		
Caucasian	308	85.6
Black	20	5.6
Asian	3	.8
Hispanic	17	4.7
Other	12	3.3

Total	360	100.0
Part-Time Population		
Caucasian	1697	87.2
Black	102	5.2
Asian	30	1.5
Hispanic	106	5.4
Other	12	.6
Total	1947	100.0

The frequencies and percentages for university attended are summarized in Table 22. As discussed earlier, for the two universities used in this study, UMSL has more transfer students than MSU in its population with approximately 75% of UMSL's students transferring in and 30% of MSU's student body entering as transfers. As indicated in Table 22, both transfer groups were composed of a greater number of students from UMSL while the native group was composed of a greater number of students from MSU. This is consistent with the demographics for each university as well as with the results obtained earlier with the full-time students.

The results for the community college attended for the three subgroups, the part-time participants, and the part-time population are summarized in Table 23. The results for part-time students were similar with that found for the full-time students. Seven Missouri community colleges were represented in the sample; however, as seen in Table 23, the majority of transfer students moved from either STLCC or SCC to UMSL or from OTC to MSU. The frequency and percentage for the remaining community colleges represented in the sample as well as those represented in each of the three subgroups are listed in Table 23.

Table 22

University Attended Frequency Counts and Percentages for the Three Subgroups
(N=120), Part-Time Participants (N=360), and Part-Time Population (N=1947)

University Attended	f	P
42-hour Block Students		
University of Missouri-St. Louis	80	66.7
Missouri State University	40	33.3
Total	120	100.0
A.A. Degree Students		
University of Missouri-St. Louis	84	70.0
Missouri State University	36	30.0
Total	120	100.0
Native Students		
University of Missouri-St. Louis	36	30.0
Missouri State University	84	70.0
Total	120	100.0
Part-Time Participants		
University of Missouri-St. Louis	200	55.6
Missouri State University	160	44.4
Total	360	100.0

Table 23

Community College Attended Frequency Counts and Percentages for the Three Subgroups (N=120), Part-Time Participants (N=360), and Part-Time Population (N=1947)

Community College Attended	*f*	*P*
42-hour Block Students		
East Central	1	.8
Jefferson	8	6.7
Mineral Area	6	5.0
OTC	41	34.2
St. Louis	37	30.8
St Charles	27	22.5
Total	120	100.0
A.A. Degree Students		
East Central	2	1.7
Jefferson	10	8.3
Mineral Area	5	4.2
OTC	36	30.0
St. Louis	43	35.8
St Charles	22	18.3
Three Rivers	2	1.7
Total	120	100.0
Native Students		
None	120	100.0
Total	120	100.0
Part-Time Participants		
East Central	3	.8
Jefferson	18	5.0
Mineral Area	11	3.1
OTC	77	21.4

St. Louis	80	22.2
St Charles	49	13.6
Three Rivers	2	.6
None	120	33.3
Total	360	100.0
Part-Time Population		
Crowder	1	.1
East Central	13	.7
Jefferson College	50	2.6
Metropolitan	1	.1
Mineral Area	22	1.1
OTC	238	12.1
St. Louis	257	13.2
St. Charles	133	6.8
Three Rivers	3	.2
None	1229	63.1
Total	1947	100.0

This subsection presented the demographic statistics for the four covariates utilized for the part-time participants in this study. The following subsection exhibits the descriptive statistics that were generated for the part-time participants.

Descriptive Statistic Analysis for Part-time Participants

The descriptive statistics results for the two dependent variables in this subsection are presented in the same format as those for the full-time participants. The results for the two dependent variables for the three subgroups of part-time students are listed in Table 24. As with full-time students, the mean number of terms and mean number of hours accumulated is less for the part-time native students than either transfer group. Also, the

42-hour block students and the students with A.A. degrees required approximately equal

numbers of semesters and hours to complete a four-year degree with the A.A. degree

students requiring slightly more terms and hours than the 42-hour block students.

Table 24

Descriptive Statistics of the Number of Total Terms and Total Hours Accumulated to a 4-year Degree for the Three Subgroups of Part-time Participants (N=360)

	N	Minimum	Maximum	*M*	*SD*
Total Number of Terms Accumulated for Part-Time Participants					
42-hour Transfer Students	120	9	14	12.02	1.53
A.A. degree Transfer Students	120	10	14	12.19	1.33
Native Students	120	9	14	11.12	1.42
Valid N	360				
Total Number of Hours Accumulated for Part-Time Participants					
42-hour Transfer Students	120	120	162	136.57	9.98
A.A. degree Transfer Students	120	122	158	137.03	9.63
Native Students	120	120	146	130.08	7.34
Valid N	360				

The categories used to determine the total number of terms required by part-time

transfer students to complete a four-year degree, are the same as those used for full-time

students. As described earlier with the full-time student analyses, the minimum terms

began at eight, and the maximum included were 14. Table 25 displays the results of the

two categories of total terms accumulated for the three subgroups of part-time

participants. As with the full-time participants, the maximum number of allowed hours

transferred after enrolling at the universities was 11, and the part-time term that occurred

for some students due to these transferred hours was not included in the determination of

full-time and part-time status. As would be expected, 42-hour block students transfer

fewer terms to the university than A.A. degree students but take more terms once they

transfer than the A.A. degree students.

Table 25

*Descriptive Statistics of the Three Categories of the Number of Total Terms Accumulated
to a 4-year Degree for the Three Subgroups of Part-time Participants (N=120)*

	N	Minimum	Maximum	*M*	*SD*
Total Number of Terms Accumulated for Part-Time Participants					
42-hour Transfer Students					
Terms Transferred to UMSL/MSU	120	4	10	5.98	1.43
Terms Taken at UMSL/MSU	120	4	9	6.06	1.11
Valid N	120				
A.A. Degree Transfer Students					
Terms Transferred to UMSL/MSU	120	4	10	6.42	1.19
Terms Taken at UMSL/MSU	120	4	8	5.77	1.05
Valid N	120				
Native Students					
Terms Transferred to UMSL/MSU	120	0	0	0.00	0.00
Terms Taken at UMSL/MSU	120	9	14	11.12	1.42
Valid N	120				

As listed in Table 26, the categories used to calculate the total number of hours

required by part-time students to complete a four-year degree is the same as those used

for full-time students. Again, the minimum number of hours began at 120, and the

allowable maximum hours transferred after enrolling at the university, for all student

Table 26

Descriptive Statistics of the Three Categories of the Number of Total Hours Accumulated
to a 4-year Degree for the Three Subgroups of Part-time Participants (N=120)

	N	Minimum	Maximum	*M*	*SD*
Total Number of Hours Accumulated for Part-Time Participants					
42-hour Transfer Students					
Hours Transferred to UMSL/MSU	120	46	89	63.87	9.05
Hours Transferred After Enrolling at UMSL/MSU	120	0	11	1.53	2.94
Hours Taken at UMSL/MSU	120	54	99	71.17	0.85
Valid N	120				
A.A. Degree Transfer Students					
Hours Transferred to UMSL/MSU	120	62	90	68.94	6.83
Hours Transferred After Enrolling at UMSL/MSU	120	0	11	1.18	2.39
Hours Taken at UMSL/MSU	120	51	96	66.92	9.82
Valid N	120				
Native Students					
Hours Transferred to UMSL/MSU	120	0	0	0.00	0.00
Hours Transferred After Enrolling at UMSL/MSU	120	0	10	1.64	2.72
Hours Taken at UMSL/MSU	120	113	146	128.45	7.80
Valid N	120				

groups were 11. The data indicated the mean number of hours transferred to the university for 42-hour block students was $M = 63.87$ which is sustainably greater than the required 42 hours and is within less than one hour of the number generally required for the A.A. degree. This suggests 42-hour block students are taking more hours than minimally required at the community college before transfer.

For the part-time participants, descriptive statistics for the total number of full-time and part-time terms were also conducted. As seen in Table 27 below, the minimum number of full-time terms was 4 and the maximum 13. For part-time terms, the minimum number was 1 and the maximum 7. In comparing the means for full-time terms, the native students' mean of 7.80 was lower and differed by 0.46 points from the 42-hour transfer students and 0.77 points from the A.A. degree transfer students. Furthermore, in comparing the means for the part-time terms, the native students' mean of 3.32 was lower and differed by .043 points from the 42-hour transfer students and 0.30 points from the A.A. degree transfer students. These numbers indicated only slight differences in the number of full-time and part-time semesters for the three student subgroups with approximately 70% full-time semesters and 30% part-time semesters for each of the three student subgroups.

This concludes the demographic and descriptive analysis for the part-time participants. The following subsection presents the results of the statistical analyses.

Table 27

Descriptive Statistics for the Total Number of Full-time and Part-time Terms Taken for the Three Subgroups of Part-time Participants (N = 120)

	N	Minimum	Maximum	*M*	*SD*
Total F-T and P-T Terms Accumulated for Part-Time Participants					
42-hour Transfer Students					
Total F-T Terms	120	5	13	8.26	1.44
Total P-T Terms	120	1	7	3.75	2.10
Valid N	120				
A.A. Degree Transfer Students					
Total F-T Terms	120	6	12	8.57	1.37
Total P-T Terms	120	1	7	3.62	1.81
Valid N	120				
Native Students					
Total F-T Terms	120	4	11	7.80	1.18
Total P-T Terms	120	1	7	3.32	1.92
Valid N	120				

Results of Statistical Analysis for Part-time Participants

For the part-time participants, a one-way MANCOVA was also used to determine if student status—42-hour block, A.A. degree, or native—has an effect on the two dependent variables—total number of terms and total number of hours accumulated—while controlling for the four covariates.

As with the full-time analysis, prior to conducting the MANCOVA, a series of pre-analysis tests was performed to determine if multivariate normality, linearity, and homogeneity of variance-covariance matrices were violated. The pre-analysis revealed no violations in required assumptions for MANCOVA.

The results presented in Table 28 for the *Pearson r* indicated that total terms were positively correlated to total hours ($r = .558$, $p < .001$). Also, the correlation between the two dependent variables was the same for the three subgroups of students.

Table 28

Part-time Participant Pearson Correlation Results for Total Terms and Total Hours (N=360)

		Total Terms to 4-year degree	Total Hours to 4-year degree
Total Terms to 4-year degree	Pearson Correlation	1	.558[**]
	Sig. (2tailed)		.000
	N	360	360
Total Hours to 4-year degree	Pearson Correlation	.558[**]	1
	Sig. (2 tailed)	.000	
	N	360	360

[**]. Correlation is significant at the 0.01 level (2 tailed)

The *Pearson r* results to determine if the four covariates were correlated are listed in Table 29, showing correlation between university attended and the community college attended with $r = .302$, $p = < .001$ at a significant level of 0.01. As before, because the primary feeder community colleges for UMSL (STLCC and SCC) and for MSU (OTC)

are a result of their geographic location within the state, both covariates university

attended and community attended were retained.

The *Pearson r* results listed in Table 29 also indicated university attended and

ethnicity were correlated with r = -.206, p < .001 at a significant level of 0.01. Ethnicity

was retained as a covariate for this study because the variability in ethnicity that was

shared by the two universities was 4.24%.

Table 29

Part-time Participants Pearson Correlation Results for Gender, Ethnicity, University Attended, and Community College Attended (N=360)

		Gender	Ethnicity	University Attended	CC Attended
Gender	Pearson Correlation	1	.106	-.118	.014
	Sig. (2 tailed)		.044	.025	.797
	N	360	360	360	360
Ethnicity	Pearson Correlation	.106	1	-.206**	-.056
	Sig (2-tailed)	.044		.000	,287
	N	360	360	360	360
University Attended	Pearson Correlation	-.118	-.206**	1	.302**
	Sig. (2-tailed)	.025	.000		.000
	N	360	360	360	360
CC Attended	Pearson Correlation	.014	-.056	.302**	1
	Sig. (2-tailed)	.797	.287	.000	
	N	360	360	360	360

**. Correlation is significant at the 0.01 level (2-tailed).

MANCOVA was the appropriate statistical test to use for the analysis of the part-time data because the results of the preliminary MANCOVA revealed that equal variances are assumed $F(6, 3176421.231) = 2.616$, $p = .015$, and factor-covariate interaction was not significant, with Wilks' $\Lambda = .952$, $F(6, 698.000) = 2.916$, $p = .008$. The results of the MANCOVA analysis are displayed in Table 30. The findings revealed significant differences among the four-year degree completers category on the combined dependent variables, Wilks' Λ .951, $F(4, 704.000) = 4.45$, $p = .001$, multivariate $\eta^2 = .025$. This would suggest the mode of transfer (42-hour transfer or A.A. degree transfer) or no transfer (native student) influences the terms accumulated and the hours accumulated to a four-year degree. The covariate (university attended) significantly influenced the combined dependent variables, Wilks' $\Lambda = .883$, $F(2, 352.000) = 23.33$, $p < .001$, multivariate $\eta^2 = .117$ suggesting the university attended has an effect on total terms accumulated and total hours accumulated to a four-year degree. As seen in Table 30, the remaining covariates, gender, ethnicity, and community college attended did not significantly influence the combined dependent variables.

Analysis of covariance (ANCOVA) was conducted on each dependent variable as a follow-up test to MANCOVA. Results for the between-subjects effect are displayed in Table 31. The four-year degree completers category differences were significant for total hours accumulated to a four-year degree, $F(2, 353) = 8.72$, $p < .001$, partial $\eta^2 = .047$ but not total terms accumulated $F(2,353) = 2.84$, $p = .060$, partial $\eta^2 = .016$. University attended differences were significant for total terms accumulated to a four-year degree, $F(1, 353) = 8.96$, $p = .003$, partial $\eta^2 = .025$ and for total hours accumulated to a four-year degree, $F(1, 353) = 46.60$, $p < .001$, partial $\eta^2 = .117$.

Table 30

Multivariate Tests for Part-time Students

Effect	Value	F	Hypothesis df	Error df	Sig.	η^2
Intercept						
Wilks' Lambda	.163	902.127[a]	2	352.000	.000	.837
Gender						
Wilks' Lambda	.998	.399[a]	2	352.000	.671	.002
Ethnicity						
Wilks' Lambda	.993	1.205[a]	2	352.000	.301	.007
University Attended						
Wilks' Lambda	.883	23.333[a]	2	352.000	.000	.117
CC Attended						
Wilks' Lambda	.995	.811[a]	2	352.000	.445	.005
Four-year Degree Completers						
Wilks' Lambda	.951	4.454[a]	4	704.000	.001	.025

e. Exact statistic
f. The statistic is an upper bound on F that yields a lower bound on the significance level.
g. Design: Intercept + gender + ethnicity + university attended + community college attended + degree students.
h. Four-year Degree Completers include 42-hour block, A.A. degree, and native students.

Table 31

Test of Between-Subjects Effect for Part-time Students

Source	Dependent Variable	SS	df	MS	F	Sig.	η^2
Correct Model	Terms	102.813[a]	6	17.136	8.568	.000	.127
	Hours	7228.969[b]	6	1204.828	16.548	.000	.220
Intercept	Terms	1068.739	1	1068.739	534.399	.000	.836
	Hours	131312.662	1	131312.662	1803.506	.000	.791
Gender	Terms	1.554	1	1.554	.777	.379	.002
	Hours	6.588	1	6.588	.090	.764	.000
Ethnicity	Terms	2.762	1	2.762	1.381	.241	.004
	Hours	6.695	1	6.695	.092	.762	.000
University Attended	Terms	17.924	1	17.924	8.963	.003	.025
	Hours	3393.198	1	3393.198	46.604	.000	.117
CC Attended	Terms	2.826	1	2.826	1.413	.235	.004
	Hours	2.503	1	2.503	.034	.853	.000
Four-year Degree Completers	Terms	11.347	2	5.673	2.837	.060	.016
	Hours	1270.159	2	635.079	8.722	.000	.047
Error	Terms	705.962	353	2.000			
	Hours	25701.806	353	72.810			
Total	Terms	50723.000	360				
	Hours	6551071.000	360				
Corrected Total	Terms	808.775	359				
	Hours	32930.775	359				

c. R Squared = .302 (Adjusted R Squared = .223)
d. R Squared = .361 (Adjusted R Squared = .289)

As with the full-time participants, the adjusted and unadjusted means for total

terms accumulated and total hours accumulated were listed and are presented Table 32. A

comparison of the adjusted means for total hours accumulated for the native students

were also lower and differed by 8.68 points from the 42-hour transfer students and 9.34

points from the A.A. degree transfer students, indicating that as with the full-time

participants, native part-time students complete their degrees with fewer hours than did

either of the transfer groups, who completed in approximately the same number of hours.

Table 32

Adjusted and Unadjusted Means for Total Terms and Total Hours Accumulated for Part-time Student Groups

	Total Terms Accumulated		Total Hours Accumulated	
Student Groups	Adjusted M	Unadjusted M	Adjusted M	Unadjusted M
42-hour Transfers	11.95[a]	12.02	137.23[a]	136.57
A.A. degree Transfers	12.13[a]	12.19	137.89[a]	137.03
Native Students	11.25[a]	11.12	128.55[a]	130.08

a. Covariates appearing in the model are evaluated at the following values: Gender = .63, Ethnicity = 1.23, University Attended = .52, Community College Attended = 10.27.

In addition to comparing the adjusted means in Table 32 to determine which

subgroups differed in hours accumulated, the Bonferroni post hoc test was conducted to

compare all group combinations and identify any significantly different pairs. This test

was selected for part-time participants for the same reasons it was used for full-time

participants. Also, the Bonferroni adjusted significance level of .017 was used for this

group. Initial findings for between-subjects effect, revealed no significant difference for

total terms accumulated for four-year degree completers. Because of this the Bonferroni

test was not conducted for terms. The results for total hours accumulated to a four-year

degree are presented in Table 33. As suggested by the initial ANOVA analysis, the

results for the Bonferroni test indicated that native students significantly differed in total

hours accumulated to a four-year degree from both 42-hour transfer students and A.A.

degree students. There were no significant differences between 42-hour block students

and A.A. degree students in total hours accumulated.

Table 33

Multiple Comparison-Bonferroni for Part-time Students (Total Hours Accumulated to four-year Degree)

Dependent Variable	(I) Degree Students	(J) Degree Students	Mean Difference (I-J)	*SE*	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
Total Hours	Bonferroni						
	42-hour	A.A.	-.46	1.170	1.000	-3.27	2.36
		Native	6.48*	1.170	.000^a	3.67	9.30
	A.A.	42-hour	.46	1.170	1.000	-2.36	3.27
		Native	6.94*	1.170	.000^a	4.13	9.76
	Native	42-hour	-6.48*	1.170	.000^a	-9.30	-3.67
		A.A.	-6.94*	1.170	.000^a	-9.76	-4.13

Based on observed means.
The error term is Mean Square (Error) = 87.404.
*.The mean difference is significant at the .05 level.
a. Bonferroni's adjusted significance α = .017

The results of the MANCOVA for between subjects effect for part-time students (Table 31) indicated the covariate, university attended, has an effect on both dependent variables for the part-time students. This result occurred for total terms accumulated to a four-year degree, $F(1, 353) = 8.96$, $p = .003$, partial $\eta^2 = .025$ and for total hours accumulated to a four-year degree, $F(1, 353) = 46.60$, $p < .001$, partial $\eta^2 = .117$. To determine if the differences in terms and hours accumulated for student subgroups attending different universities, descriptive statistics were performed. Table 34 lists the mean and standard deviation for each of the universities attended by students for both total terms and total hours accumulated. A comparison of the means for total terms and total hours accumulated was lower for UMSL than for MSU for the three student subgroups. The mean for total terms accumulated for the 42-hour block students attending UMSL was lower by 0.57 points, the A.A. degree students by 0.71 points, and the native students by 0.05 points for total terms accumulated. For total hours accumulated, the mean for the 42-hour block students attending UMSL was lower by 7.55 points from MSU, the A.A. degree students by 8.14 points, and the native students by 4.76 points. Although this finding does not relate specifically to one of the study's research questions, the data do suggest that even when students transfer with approximately the same number of hours, they are able to complete a degree more quickly and with fewer hours at some universities than at others.

While the comparison of means indicated there was a difference in total terms and total hours accumulated between the two universities for the three student subgroups, additional analyses was needed to determine if there were significant differences. In order

Table 34

Descriptive Statistics of the University Attended for Total Terms and Total Hours Accumulated for Part-time Participants (N=120)

	N	Minimum	Maximum	*M*	*SD*
Total Terms Accumulated					
42-hour Transfer Students					
UMSL	80	9	14	11.83	1.48
MSU	40	9	14	12.40	1.58
Total	120				
A.A. Degree Transfer Students					
UMSL	84	10	14	11.98	1.29
MSU	36	10	14	12.69	1.31
Total	120				
Native Students					
UMSL	36	9	14	11.08	1.44
MSU	84	9	14	11.13	1.41
Total	120				
Total Hours Accumulated					
42-hour Transfer Students					
UMSL	80	120	162	134.05	6.50
MSU	40	122	162	141.60	10.88
Total	120				
A.A. Degree Transfer Students					
UMSL	84	122	158	134.58	8.04
MSU	36	125	158	142.72	10.70
Total	120				
Native Students					
UMSL	36	120	146	126.75	6.47
MSU	84	122	146	131.51	7.27
Total	120				

to accomplish this, independent-samples *t*-test were conducted for each subgroup of

students for both total terms and total hours accumulated. This test was selected because

in each case two means were being compared and different participants were used in each

condition. To determine significance, the two-tailed probability was used because there

had been no prediction concerning the direction of the effect for university attended

(Fields, 2009).

The results of the independent-samples *t*-test given in Table 35 indicate there was

a significant difference in total terms accumulated between UMSL and MSU for the A.A.

degree student group only; however, it represented only a small-sized effect. On average,

A.A. degree student accumulated fewer total terms from UMSL ($M = 11.98$, $SE = .141$)

than students from MSU ($M = 12.69$, $SE = .218$) indicating a significance of $t(118) = -$

2.79, $p = .006$, with a small-sized effect of $r = .25$. Even though the 42-hour block

transfer student and native students accumulated fewer terms from UMSL that from

MSU, the difference was not significant. The 42-hour transfer students accumulated

fewer total terms from UMSL ($M = 11.83$, $SE = .166$) than from MSU ($M = 12.40$, $SE = $

.250), though the difference was not significant $t(118) = -1.96$, $p = .052$, with a small-

sized effect of $r = .18$. Furthermore, native students accumulated fewer total terms from

UMSL ($M = 11.08$, $SE = .240$) than did students from MSU ($M = 11.13$, $SE = .154$),

though this difference also was not significant $t(118) = -.168$, $p = .867$, $r = .02$.

The independent-samples *t*-test also indicated there was a significant difference in

total hours accumulated between UMSL and MSU for the three student groups as seen in

Table 35. Beginning with the 42-hour block students, this group accumulated fewer total

hours from UMSL ($M = 134.05$, $SE = 1.045$) than students from MSU ($M = 141.60$, *SE*

=1.485), with a significance of $t(118) = -4.17$, $p < .001$, and a medium-sized effect of $r =$

.35. Second, the A.A. degree student accumulated fewer total hours from UMSL ($M =$

134.58, $SE = .877$) than students from MSU ($M = 142.72$, $SE = 1.783$). The difference

was significant at $t(118) = -4.10$, $p < .001$, with a large-sized effect of $r = .50$. Lastly, the

native students accumulated fewer total hours from UMSL ($M = 126.75$, $SE = 1.078$) than

students from MSU ($M = 131.51$, $SE = .793$), with a significance of $t(118) = -3.40$, $p =$

.001, and a medium-sized effect of $r = .30$. The results of this test revealed a significant

difference in total hours for each student subgroup with students attending UMSL

completing a four-year degree with fewer hours than those attending MSU. Furthermore

in each case for hours accumulated, the size effect was medium-sized or large-sized in all

cases.

Table 35

Independent Samples t-Test for University Attended Total Terms and Total Hours Accumulated to a 4-year Degree

	t	df	Sig. (2-tailed)	Mean Difference	SE	95% Confidence Interval Lower	Upper
Total Terms Accumulated							
42-hour	-1.96	118	.052	-.58	.294	-1.16	.01
A.A. Degree	-2.79	118	.006*	-.72	.258	-1.23	.21
Native	-.17	118	.867	-.05	.283	-.61	.51
Total Hours Accumulated							
42-hour	-4.17	118	.000*	-7.56	1.813	-11.14	-3.96
A.A. Degree	-4.10	118	.000*	-8.14	1.987	-12.13	-4.15
Native	-3.40	118	.001*	-4.76	1.402	-7.54	-.199

*. The mean difference is significant at the .05 level.

Summary for Part-Time Participants

Described in this subsection is an overview of the analysis process for part-time

participants. Included were demographic analyses for the four covariates and the

descriptive analyses of the total terms and total hours accumulated to a four-year degree

for the three subgroups of part-time students. Finally the statistical analysis was presented

by first conducting a *Pearson r* to determine if the two dependent variables were

correlated, and an additional *Pearson r* to ascertain if the four covariates were correlated.

A one-way MANCOVA was utilized to determine the effect of transfer status (42-hour

block or A.A. degree) or no transfer (native) on time-to-completion of a four-year degree

as measured by total number of terms and total number of hours accumulated while

controlling for gender, ethnicity, university attended, and community college attended.

A Bonferroni post hoc test was performed for total hours, to compare all subgroup

combinations. Finally, to determine if there was a significant difference in total terms and

total hours accumulated from the two universities attended for the three subgroups of

students, an independent-samples *t-test* was performed for each of the three subgroups of

students.

Collectively, these findings resulted in the rejection of some null hypotheses and

the retention of others. The following is a list of the null hypotheses designed to test the

part-time participants and whether each hypothesis was rejected or retained and a brief

explanation describing the results for each. Each of the null hypotheses stated that there

would be no significant difference between the three subgroups of students.

H$_o$7: There are no significant differences in time-to-degree completion based on

transfer status for Missouri part-time transfer students in comparison to part-time

native students after adjusting for ethnicity, gender, university attended, and community college attended.

- This null hypothesis was accepted because the statistical analysis did not reveal a significant difference in total terms accumulated associated with the mode of transfer (42-hour block or A.A. degree) or no transfer (native students) among the four-year degree completers. The results generated from MANCOVA yielded Wilks' Λ .951, $F(4, 704.000) = 4.45$, $p = .001$, multivariate $\eta^2 = .025$ indicating a significant difference for the combined dependent variables; however, the ANCOVA follow-up test to MANCOVA for between-subjects effects of degree students indicated no significant difference for terms accumulated $F(2,353) = 2.84$, $p = .060$, partial $\eta^2 = .016$ only hours accumulated.

- The MANCOVA analysis also revealed the university attended by transfer students had an effect on the time-to-degree completion resulting in a significant difference, Wilks' $\Lambda = .883$, $F(2, 352.000) = 23.33$, $p < .001$, multivariate $\eta^2 = .117$. Additionally, the ANCOVA follow-up test to MANCOVA indicated the covariate, university attended, had a significant effect on the total terms accumulated to a four-year degree for the two subgroups of transfer students, $F(1, 353) = 8.96$, $p = .003$, partial $\eta^2 = .025$.

$\textbf{H}_\textbf{o}\textbf{8}$: There are no significant differences in the number of college credits earned based on transfer status for Missouri part-time transfer students in comparison to

part-time native students after adjusting for ethnicity, gender, university attended, and community college attended.

- This null hypothesis was rejected as a result of conducting a MANCOVA. The results of the test indicated a significant difference occurred in total hours accumulated to a four-year degree for the four-year degree completers, Wilks' Λ .951, $F(4, 704.000) = 4.45$, $p = .001$, multivariate η^2 = .025 . In addition, the ANCOVA follow-up test to MANCOVA indicated the between-subjects effects for the three subgroups of students yielded a significant difference in hours accumulated with $F(2, 353) = 8.72$, $p < .001$, partial $\eta^2 = .047$.

- The MANCOVA results also revealed the university attended by students had an effect on the time-to-degree completion resulting in a significant difference, Wilks' $\Lambda = .883$, $F(2, 352.000) = 23.33$, $p < .001$, multivariate $\eta^2 = .117$. Furthermore, the ANCOVA follow-up test to MANCOVA indicated the covariate, university attended, had a significant effect on the total hours accumulated to a four-year degree for the two subgroups of transfer students, $F(1, 353) = 46.60$, $p < .001$, partial $\eta^2 = .117$.

H_o9: Part-time native students will not complete a four-year degree program in fewer semesters than both part-time A.A. degree transfer students and part-time 42-hour block transfer students.

- This null hypothesis was accepted because the statistical analysis did not reveal a significant difference in total terms accumulated between native students as compared to A.A. degree students and 42-hour block students.

Even though the MANCOVA indicated a significant difference on the
combined dependent variables, the between-subjects effects for degree
students $F(2,353) = 2.84$, $p = .060$, partial $\eta^2 = .016$ indicated no
significant difference for terms accumulated between the subgroups.

H$_o$10: Part-time A.A. degree transfer students will not complete a degree program
in fewer semesters than part-time 42-hour block transfer students.

- This null hypothesis was accepted because the statistical analysis did not
  reveal a significant difference in total terms accumulated between A.A.
  degree students and the 42-hour block students. As explained earlier, the
  results generated from MANCOVA indicated a significant difference;
  however, the between-subjects effects for four-year degree completers
  indicated no significant difference for terms accumulated between the two
  groups.

H$_o$11: Part-time native students will not complete a degree program with fewer
college credit hours than part-time A.A. degree transfer student and part-time 42-
hour block transfer students.

- The analysis resulted in the rejection of this hypothesis because the data
  revealed native students complete a four-year degree in fewer hours than
  both groups of transfer students.

- The descriptive analysis revealed a difference in hours accumulated for the
  three subgroups. A Bonferroni test was used to determine if the difference
  was significant. The results of the Bonferroni post hoc test conveyed a
  significant difference ($p < .000$ with a mean difference of 6.48) in the total

hours accumulated to a four-year degree between the native students and the 42-hour block transfer students. Furthermore, the results revealed a significant difference ($p < .000$ with a mean difference of 6.94) in the total hours accumulated between native and A.A. degree students.

H₀12: Part-time A.A. degree transfer students will not complete a degree program with fewer college credit hours than part-time 42-hour block transfer students.

- This null hypothesis was accepted since the data indicated that no significant difference existed in the total number of hours accumulated to a four-year degree between the two transfer student groups. Bonferroni results indicated $p = 1.000$ with a mean difference of .46.between the two subgroups.

Additional research question: Does the university attended have a significant influence on the time-to-degree completion and in the number of college credits accumulated for part-time transfer and native students.

- Because the MANCOVA and the follow-up ANCOVA indicated the covariate, university attended, had an effect on both the total terms and total hours accumulated to a four-year degree for students, further investigation into this finding was in order.

- Descriptive indicated total terms and total hours accumulated was lower for UMSL than for MSU for the three student subgroups.

- To determine if a significant difference occurred, an independent-samples *t*-test was conducted for each subgroup of students for both total terms and total hours. The results indicated a significant difference in terms

accumulated between UMSL and MSU for the A.A. degree students,

$t(118) = -2.79$, $p = .006$ with only a small–sized effect of $r = .25$. In

addition, no significant difference was found for the 42-hour block

students and native students. Moreover, a significant difference occurred

for the three student subgroups in terms of hours accumulated with $t(118)$

$= -4.17$, $p < .001$, having a medium-sized effect of $r = .35$ for the 42-hour

block students, $t(118) = -4.10$, $p < .001$, having a large-sized effect of $r =$

.50 for the A.A. degree students, and $t(118) = -3.40$, $p = .001$, with a

medium-sized effect of $r = .30$ for the native students.

Chapter Five will examine each of the hypotheses and describe in detail the major

research findings that were obtained during the course of this study and their

implications. This will include an explanation of the rational and standards identified for

the purpose of determining if each given hypotheses was rejected or retained.

Summary and Overview of Remaining Chapter

Chapter Four reviewed the purpose of this study, described the population and

participant selection process, provided an overview of the research design, and reviewed

the research questions. Demographic data for the four covariates and descriptive statistic

analysis for both the full-time and the part-time participants were included. Results were

presented for the statistical analysis of the data independently for both the full-time

students and the part-time students. Finally, a summary of the null hypotheses results was

given. Table 36 lists the research questions and the type of statistical analysis used to test

each. The statistical test used for research question one through six were the same for the

full-time and part-time participants. Different statistical test were used to test the two additional questions for community college attended and university attended.

      The following and concluding chapter will focus on a discussion of the findings, analysis, and implication of this study as it relates to Tinto's Student Integration Model. An examination of the significance of the hypotheses will be provided as well as the rational and standards identified for the purpose of determining if each given hypotheses was rejected or retained. Chapter Five also examines how this study contributes to existing knowledge and provides recommendations for further research as well as concluding remarks.

Table 36

Analyses Summary by Research Question

Research Question	Analyses
RQ1: Are there significant differences in time-to-degree completion based on transfer status for Missouri transfer students in comparison to native students after adjusting for ethnicity, gender, university attended, and community college attended?	One-way MANCOVA
RQ2: Are there significant differences in the number of college credits earned based on transfer status for Missouri transfer students in comparison to native students after adjusting for ethnicity, gender, university attended, and community college attended?	One-way MANCOVA

RQ3: Do native students complete a four-year degree   Comparison of Adjusted

program in fewer semesters than both A.A. degree transfer   Means and Bonferroni

students and 42-hour block transfer students?   test

RQ4: Do A.A. degree transfer students complete a degree   Comparison of Adjusted

Program in fewer semesters than the 42-hour block   Means and Bonferroni's

transfer students?   test

RQ5: Do native students complete a degree program with   Comparison of Adjusted

fewer college credit hours than A.A. degree transfer students   Means and Bonferroni's

and 42-hour block transfer students?   test

RQ6: Do A.A. degree transfer students complete a degree   Comparison of Adjusted

 program with fewer college credit hours than 42-hour block   Means and Bonferroni's

 transfer students?   test

Further Research Questions:

Does the community college attended have a significant   Comparison of Means

influence on the time-to-degree completion and in the   and Gabriel post hoc

number of college credits accumulated for full-time   test

transfer students?

CHAPTER 5

Summary and Discussion

The intent of this chapter is to provide a concise overview of the Theoretical Model used to guide this research, and how the findings support this model. Because the purpose, procedures, and methodology have been thoroughly reviewed in previous chapters, they will not be discussed in detail in Chapter Five. Instead, this chapter will focus on the findings generated from this research and the analysis of these findings by indicating their importance as they pertain to effective student transfer within the state of Missouri.

First, an overview of Tinto's Student Integration Model is provided that includes a discussion of both student attributes and institutional factors pertaining to student attrition and how this research contributes to the understanding of the importance of institutional involvement in the success of transfer students. This section also suggests there are factors within the two-year and four-year institutions involved in this study that could be modified in order to promote better degree attainment. The next section provides a summary of the findings for both full-time and part-time participants, including a discussion of the outcome for each hypothesis. The fourth section describes how the results contribute to an understanding of the theoretical model that guided this research. The fifth section reviews findings in relationship to the current body of literature and knowledge on transfer students, followed by a section that presents recommendations for future research. The last section provides a brief summary of the study and concluding remarks.

Overview of the Theoretical Framework

This study was guided by Tinto's theoretical Student Integration Model (SIM) that describes student attributes and institutional conditions that contribute to persistence in the academic setting. Other existing models describing student persistence focus on student shortcomings, institutional structure, socioeconomic status, or economic principles which for the most part are factors that cannot be controlled by higher education institutions (Bean, 1983; Ethington, 1990; Pincus, 1980; Rose & Elton, 1966). Tinto was among the first to recognize both internal and external student attributes and institutional conditions contribute to the likelihood students will persist to graduation. Currently, there is a gap in the research that examines how institutional factors influence student persistence, particularly among transfer students. The study helps to address this lack of research and provides evidence that suggest the institutional conditions described by Tinto play an important role in promoting successful degree attainment and may impede the time required by transfer students to finish a baccalaureate.

According to Tinto (1993), the persistence of students in the pursuit of degree attainment is influenced by both student attributes and institutional conditions. Internal and external student attributes such as abilities, family background, former academic background, intentions, commitments, ethnicity, gender, and social class are factors that students bring to an institution and cannot be controlled by the institution. Furthermore, external obligations such as job and family commitments as well as financial concerns can also affect students' ability to obtain a degree (Tinto, 1993). This study did not take into account these types of external obligations. However, with the number of part-time students discovered in the original population, such factors as job and family

commitments or financial concerns could play a role in whether students attended full-

time or part-time. In addition, these commitments could be a factor in a student's choice

to begin their college career at a less expensive two-year institution (Tinto, 1993).

According to Tinto's model, institutional factors are conditions within the

institution that can have a profound effect on student persistence. These five conditions

include high expectations, advising, support, involvement, and learning (Tinto, 2002).

Tinto's model was chosen for this study because these conditions can be managed by the

institutions and each can play an important role in student persistence to degree

attainment in both the two-year and the four-year institution, affecting both transfer

students and native students. Not included in the five institutional conditions listed above

is affordability. Financial consideration may determine if students attends college, what

institution they choose, if they will need to work full-time or part-time, and if they can

persist to graduation. Tinto (1993) noted, however, that students do and will withdraw

from college due to financial fluctuations. In some cases, this may be a temporary

departure or it may be permanent. In the case of this study, the number of students

attending part-time could be an indication of job and family commitments or financial

fluctuations. In a study conducted by Gross, Hossler, and Ziskin (2007) findings

indicated financial aid increased the likelihood of student persistence and the amount

received may explain campus retention and graduation rates at some institutions. In

addition, receiving necessary financial aid allows students more time to devote to

academic and social aspects of college by reducing the need to work. Pascarella and

Terenzini (1991) proposed that coordinated efforts at local, state, and federal levels could

serve to provide additional funding necessary to eliminate the inequalities of student

support. This implies that institutional policies, practices, and conditions impact

persistence and should be considered when determining student success.

Because these five conditions specifically mentioned by Tinto are under

institutional control, institutions can make the changes necessary if they are serious in

their pursuit of promoting student success. As institutions modify policies to improve

retention, focus should be placed on social and academic conditions that serve to

integrate individuals into the institution. The five conditions as described by Tinto (2005)

are as follows:

- High expectation: Students are more likely to persist and graduate in settings that

  expect them to succeed and where expectations are clear and consistent. Students

  are affected by the expectations of faculty and staff for their individual

  performance. (p. 2)

  - This factor is important to this study in that research indicated that many

    transfer student experience "transfer shock," and that this may be due in

    part to differences in institutional expectations (Cohen & Brawer, 2003;

    Laanan, 2004; Townsend, 2001).

- Advising: Students are more likely to persist and graduate in setting that provide

  clear and consistent information about institutional requirements and effective

  advising about the choices student have regarding their programs of study and

  future career goals. Students need a clear roadmap, including clear articulation

  agreements. Most students are either undecided about their field of study or

  change their minds, at least once, during their college years. (p. 2)

       o   This factor is critical to this study in that the data indicate that transfer

           student in both categories (42-hour block and A.A.) take more than the

           minimally required hours to complete a B.A.; indicating that they may not

           be receiving consistently good advice.

- Support: This includes academic, social, and personal support. Most students

  require some form of support in their first year of college. Support may be

  provided in structured forms such as summer bridge programs or mentor

  programs, or it may be a result of formal and informal contact with faculty and

  staff. (p. 3)

       o   The support factor is reflected in both the effects of transfer shock and in

           the tendency to take additional hours, and is therefore appropriate to

           analysis of these findings.

- Involvement: Students should be considered a valued member of the institution.

  The frequency and quality of contact with faculty, staff, and other students

  promote persistence, especially during the first year. This is true for all types of

  institutions and all types of students. For commuting students, the classroom may

  be the only place where they are involved with other students and faculty. (p. 3)

       o   If involvement is particularly important to the first year, it may be equally

           critical to success in the first year following transfer, and therefore has

           implications to these findings.

- Learning: Students are more likely to persist and graduate in settings that foster

  learning. The more students are actively involved in learning the more value they

place on the process increasing the likelihood they will persist to graduation.

Learning should be an active process and not a spectator sport. (p. 3)

      o   The learning factor is important in this case in that the findings suggest

           that transfer students may be required in some cases to repeat courses. In

           addition to prolonging "time to degree," this practice may indicate to

           students that some prior learning is not being valued.

Data from this study implies students transferring to a four-year institution with either the 42-hour block transfer or the A.A. degree transfer accumulate more hours than minimally required at the community college. This is particularly true for those transferring with the 42-hour block. This could possibly be a result of ineffective implementation of one or more of the five institutional conditions at the community college. In addition, the data suggests A.A. degree transfer students take more hours at the university than what is minimally required to complete a four-year degree, also indicating one or more of the five institutional conditions are not being effectively implemented at the universities. Based on Tinto's SIM of attrition theory, one might assume that a statewide system of articulation and transferability is not working effectively if students are taking more time to graduate following one track rather than another. This is likely to reduce persistence and may interfere with the ability to receive the necessary financial aid required to persist to graduation (Tinto, 1997).

The following section provides an overview of the demographic and descriptive analysis of both full-time and part-time participants. In addition, the major findings generated through the statistical analysis as well as the outcome of each hypothesis is given.

Major Findings

As described earlier, this study was separated into two distinct populations of

students, full-time and part-time, for the purpose of eliminating the effects part-time

attendance would have on time-to-degree completion when combining part-time and full-

time enrollees. Even though the demographics and descriptive statistics were presented

separately for the two populations in Chapter Four, the summary and discussion of these

findings will be combined in this chapter due to similarities between the two. For clarity,

the major findings resulting from the statistical analyses for the two populations will be

presented separately in order to thoroughly summarize and discuss the outcomes for each

hypothesis.

Overview of the Demographics for the Two Populations

The first covariate analyzed for both groups was gender. According to the

Statistical Summary of Missouri Higher Education 2008-2009, the frequencies and

percentages found in the two populations were consistent with the composition of the two

universities and the community colleges represented in this study (Missouri Department

of Higher Education, 2009). In both cases there were more females than males. The full-

time population was composed of 58.7% females ($N = 73$) and 41.3% males ($N= 192$)

while the part-time population was composed of 59.3% females ($N=1155$) and 40.7%

males ($N = 792$).

In both populations, the majority of students in this study were Caucasian with

88.3% for the full-time participants ($N= 60$) and 85.6% for the part-time participants ($N=$

360). The data provided by the *Statistical Summary of Missouri Higher Education*

(2009), show the Caucasian population for MSU is 84.8%, for OTC 89.2%, and for SCC

90.5%. UMSL and STLCC have a lower number of Caucasian students with 67.7% and 55.5% respectively (Missouri Department of Higher Education, 2009). For the full-time subgroups, the 42-hour block group was 85% Caucasian, and 90% for both the A.A. degree and native students. In the part-time subgroups, the percentage was consistent for Caucasian with 86.7% for the 42-hour block students, 81.7% for the A.A. degree students, and 88.3% for the native students. Each full-time subgroup was 5.0% African American and for the part-time participants, African American students made up .8% for the 42-hour block, 8.3% for the A.A. degree students, and 7.5% for the native students. The remaining ethnicities were represented in smaller percentages for both full-time and part-time. These results are consistent with the averages from the institutions represented. It is interesting to note here that very few part-time African American students chose to transfer using the 42-hour block. This may suggest that the conditions that influence their part-time enrollment (factors that Tinto would consider student-centered) also encourage them to remain at the community college as long as possible.

The third covariate represented in the demographic analyses was university attended. The numbers of students transferring from community colleges to the two universities are very different. On average, approximately 75% of the students attending UMSL are transfers with approximately 30% at MSU. This composition is reflected in the frequencies and percentages for the three subgroups of students from both the full-time and part-time participants. For the most part, the two transfer groups were composed of more students transferring to UMSL; however for the native students, more students were from MSU than UMSL. In the full-time groups, 75% of the 42-hour block students transferred to UMSL and 50% of the A.A. degree students transferred to UMSL, with

only 20% native students from UMSL. For the part-time participants, 80% of the 42-hour block and 84% of the A.A. students transferred to UMSL with only 30% of the native students from UMSL. Again, these figures are consistent with what is found at each of the two universities in terms of the number of transfers, but raise important questions about how differently these universities see themselves in terms of their responsibilities toward transfer students. Data demonstrate that transfer students are able to complete degrees at UMSL in significantly fewer terms and hours than at MSU—a possible reflection that UMSL is more attuned to transfer needs. Considering this observation in terms of Tinto's institutional factors that affect student success, further study is warranted to see if UMSL transfers are better advised, feel more involved, or believe that their prior learning has been given greater value.

The last covariate was community college attended. Among the two populations, a specific pattern emerged. The main feeder community colleges for UMSL were STLCC and SCC and for MSU the main feeder community college was OTC. This was consistent across both populations. For the full-time participants, six of the twelve community colleges were represented in the sample and seven for the part-time participants. For the 42-hour block students, 70% were from the three main feeder colleges for the two universities, as were 95% for the A.A. degree students. For the part-time participants, 87.5% of the 42-hour block students were from the three main feeder community colleges, with 84.1% for the A.A. degree students. These data suggest most students transferring from a community college to a four-year institution will move to an institution that is proximate to the community college they attended. This would underscore the importance of institutions within the same geographical locations forming

strong collaborative relationships in order to promote student success. Through these

relationships, the community colleges could provide better advisement to students who

intend to transfer and the four-year institution could promote an environment that

facilitates the ease of transfer and demonstrate valuing of coursework already completed.

The data indicate that a much higher percentage of students who transfer to MSU

from OTC complete their A.A. degrees before transferring. This would suggest a high

degree of confidence among OTC students that the A.A. degree will be accepted as a

whole, a positive indication of a strong articulation agreement. However, because the 42-

hour block is not clearly stated on OTC student transcripts, it is more difficult to

determine the number of students who complete the 42-hour block at OTC with the intent

to transfer to MSU (Missouri Department of Higher Education, 2010). Here again, the

research supports Tinto's contention that institutional policy and practice can positively

or negatively affect student success.

The students' ability to obtain their desired level of education should not be

hindered due to the inability or unwillingness of institutions to work together due to

institutional habit, convenience, competition, territoriality, or the inability of institution to

incorporate internal factors that support student success (Missouri Department of Higher

Education, 2007). The CBHE established the *Joint Leadership Statement on Commitment

to Transfer* in 2007 to strengthen the commitment for collaboration among Missouri

institutions previously established in the 2000 student transfer and articulation agreement.

Through this agreement, the leaders of Missouri institutions of higher education are

committed to:

1. Work collaboratively with all Missouri institutions to improve the total

   transfer process at both the receiving and sending institutions;

2. Provide academic and financial support for the transfer student that is

   commensurate with the support provided for native students;

3. Develop an efficient transfer policy that minimizes the loss of course credits

   and curtails any unnecessary duplication of learning;

4. Share in the responsibility and cost for the development and implementation

   of articulation agreements;

5. Work to create a consolidated, multi-institutional database, searchable by

   institution, which provides common access to current course equivalencies

   and articulation agreements;

6. Identify and share best transfer practices. (para. 3)

This renewed commitment to transfer success for Missouri students could result in a

higher success rate for both 42-hour block transfers and A.A. degree transfers if, in fact,

institutional factors are not impeding progress.

Overview of the Descriptive Statistics for the Two Populations

In this section the results of the descriptive statistics for the two dependent

variables, total terms accumulated and total hours accumulated to a four-year degree, are

given. As with the covariates, the results for full-time and part-time participants are

presented together. The next two sections present the results of the statistical analyses

conducted for both populations to determine if the differences revealed from the

descriptive statistics were significant.

When conducting descriptive statistics, the first data generated were the total

terms accumulated and total hours accumulated to completion of a four-year degree for

each of the three full-time and part-time subgroups. For the full-time students, the results

indicated the mean number of terms accumulated is less for the native students by a full

term ($M = 9.10$) than either 42-hour block students ($M = 10.45$) or A.A. degree students

($M = 10.10$). Furthermore, the native students ($M = 128.95$) required fewer hours by the

equivalent of approximately three, three credit classes to complete a four-year degree

than both 42-hour block students ($M = 138.65$) and the A.A. degree students ($M =$

135.91). The two transfer groups required approximately equal numbers of semesters and

hours, though the 42-hour block students did require slightly more terms and hours than

the A.A. degree students. Since no developmental courses were included in the analysis,

it is clear that transfer students are taking two to three more college level courses to

complete a baccalaureate degree than do their counterparts who begin at the university. A

growing number of community colleges are now requiring a college success or "first year

experience" course of students whose placement exams place them into one or more

developmental areas, which could account for one of these additional courses. Even with

this taken into account, the current system of higher education in Missouri is not

providing for the desired outcome described in Item 3 of the *Joint Leadership Statement*

cited above.

The results were similar for the part-time students for terms and hours

accumulated. Again, the part-time native students ($M = 11.12$) accumulated fewer terms

by a full term than either the 42-hour block students ($M = 12.02$) or the A.A. degree

students ($M = 12.19$). The same is true for the hours accumulated with native students

having fewer credits by the equivalent of two, three hour courses ($M = 130.08$) than the

42-hour block students ($M = 136.57$) and A.A. degree students ($M = 137.03$). As before,

the two transfer groups of students accumulated approximately the same number of terms

and hours to the completion of a four-year degree; however, in this case, the 42-hour

block students accumulated slightly fewer terms and hours than the A.A. degree students.

In both cases, full-time and part-time, the data indicated transfer students take longer to

complete a four-year degree and accumulated more hours than native students beginning

their college career at the university. These data suggest the two articulation agreements,

42-hour block transfer and the A.A. degree transfer, may not be promoting efficiency in

the obtainment of a four-year degree. Moreover, as expected, part-time status does effect

time-to-degree completion. The mean number of hours completed for part-time 42-hour

block students was 1.57 points greater than the mean for the full-time 42-hour block

students. For the part-time A.A. degree students it was 2.09 points greater, and for the

native students it was 2.02 points greater.

Next, the two categories for total terms accumulated were compared among the

three subgroups of students for both full-time and part-time participants, terms transferred

to the universities and terms taken at the universities. As would be expected, the results

indicated both the full-time and part-time 42-hour block students (full-time, $M = 4.45$ and

part-time, $M = 5.98$) transfer in fewer terms than A.A. degree students (full-time, $M =$

4.95 and part-time, $M = 6.42$). Also, the 42-hour block students required more terms

(full-time $M = 6.00$ and part-time $M = 6.06$) at the university to complete a four-year

degree than the A.A. degree students (full-time $M = 5.15$ and part-time $M = 5.77$). The

native students (full-time $M = 9.10$ and part-time $M = 11.12$) also accumulated fewer

terms than either of the transfer groups. As noted earlier, the full-time 42-hour block students required slightly more time to complete a four-year degree than the A.A. degree students and the part-time A.A. degree students required slightly more time to complete a four-year degree than the 42-hour block students.

The three categories for total hours accumulated—hours transferred to the universities, hours transferred after enrolling at the universities, and hours taken at the universities—were determined for full-time and part-time participants. As with the terms accumulated, both the full-time and part-time 42-hour block students (full-time, $M =$ 58.05 and part-time, $M = 63.87$) transfer in fewer hours than A.A. degree student (full-time, $M = 66.45$ and part-time, $M = 68.94$). The 42-hour block students also accumulated more hours at the university (full-time $M = 77.25$ and part-time $M = 71.17$) when completing a four-year degree than the A.A. degree students (full-time $M = 69.50$ and part-time $M = 66.92$). Furthermore, the native students (full-time $M = 127.35$ and part-time $M = 130.09$) accumulated fewer total hours than either of the transfer groups. Here again, as mentioned earlier, the full-time 42-hour block students required slightly more hours to complete a four-year degree than the A.A. degree students and the part-time A.A. degree students required slightly more hours to complete a four-year degree than the 42-hour block students.

Another interesting result revealed in this analysis was that the mean number of hours transferred to the university for the full-time 42-hour block students ($M = 58.05$) and for the part-time 42-hour block students ($M = 68.87$) was substantially greater in both cases than the required 42 hours. For the full-time students, this was 16.05 points greater than the required 42 hours, and for the part-time it was 21.87 points greater. Even though

the A.A. degree students transferred in more hours than the required 62-64, the difference

was only slightly higher for full-time (2.45-4.45 points) and part-time (4.94-6.94 points)

students. The data also indicated that once transfer students are at the university, they are

accumulating more hours than what should be required to complete a four-year degree.

These data clearly indicate that students who transfer with the 42-hour block of

general education credit do not do so immediately after finishing that block—or at least

complete the block while taking an additional four or five classes. They have

accumulated hours that are very near the number typically required for the AA degree

(62-64) but for some reason have elected not to complete the degree before transferring.

This study was not designed to determine why students transfer with either the 42-hour

block or the A.A. degree to obtain a four-year degree, nor was it designed to determine

why students complete the 42-hour block and continue taking courses without completing

the A.A. degree before transferring. However, the reason 42-hour block students

accumulate more than the minimally required hours at the community colleges could be

the lack of a clear academic plan or be an indication that advising processes at the

community college are not working effectively, validating one of Tinto's five

institutional factors.

Cejda and Kaylor (2001) found that the reasons students transfer early include

fear of falling behind the four-year students in given programs and a perceived lack of

value of the associate's degree. The data from this study would call into question the first

of these findings as it applies to those transferring with the 42-hour block. They complete

a sufficient number of hours at the community college to indicate that they are not

concerned about falling behind their university counterparts. They apparently do not,

however, value the completion of the AA degree. If students are assured their courses

will articulate and will not have to be repeated, they would be at no disadvantage. The

fact that studies indicate that more than 70% of students moving from the community

college to a four-year institution repeat coursework indicates, however, that there may be

some justification for nervousness about the integrity of articulation agreements (Fincher,

2002). Even with the 42-hour block transfer and the A.A. degree transfer established by

the state, it appears students are taking more hours than required to obtain a four-year

degree, whether the additional hours are accumulated at the community college or at the

university. This would indicate more effective advisement and stronger collaboration are

needed between the two involved institutions in order to prevent the unnecessary

accumulation of college credits.

As a final set of descriptive statistics, total number of full-time and part-time

terms was determined for the part-time participants. The minimum number of full-time

terms accumulated was 4 and the maximum was 13. The minimum number of part-time

terms accumulated was 1 and the maximum was 7. The mean number of full-time terms

and the standard deviation for the 42-hour transfer students were $M = 8.26$, $SD = 1.44$, for

the A.A. degree transfer students were $M = 8.57$, $SD = 1.37$, and for the native students

were $M = 7.80$, $SD = 1.18$. For the part-time participants, the mean for the number of

part-time terms and the standard deviation for the 42-hour transfer students were $M =$

3.75, $SD = 2.10$, for the A.A. degree students $M = 3.62$, $SD = 1.81$, and for the native

students $M = 3.32$, $SD = 1.92$. In comparing the means for full-time terms versus part-

time terms, all three subgroups accumulated approximately 70% full-time and 30% part-

time semesters. The reasons students attend part-time varies. Whether it is due to job and

family commitments or financial constraints, or the challenges of the academic program, meeting the needs of these students may require a different approach than would be used for the traditional full-time student.

The very high number of students who attended part-time for at least a portion of their academic career, even at the universities, was a surprise, even to an educator who has been engaged with community college students for 20 years. The researcher would surmise that it may be even more surprising to university faculty who are accustom to the traditional student attendance patterns of their own college careers. Studies suggest the attendance pattern that was common at the university 20 years ago is no longer the norm (LeBard, 1999; Townsend & Dever, 1999). This research suggests that universities would benefit from examining data on their own enrollment patterns and conveying this information to faculty and staff, letting them know that the "non-traditional" student of the past may be the new "traditional" student of the present. Student engagement is an important component of student success; however, keeping part-time students engaged is certainly more of a challenge.

The following two sections provide a summary of the results of the statistical analyses of the two populations. For clarity, the major findings for each are presented separately in order to thoroughly summarize and discuss the outcomes of each hypothesis. First a summary and discussion of the results for the full-time population is provided, followed by the data for part-time population.

Major Findings for the Full-Time Participants

As a brief review, the full-time population consisted of 465 students with 20 students selected for each of the three subgroups: 42-hour block transfer students, A.A.

degree transfer students, and native students that began their college career at the

university. The data revealed that there are differences in the number of terms and the

number of hours accumulated to the completion of a four-year degree for the three

subgroups. Full-time native students completed a degree in fewer semesters and with

fewer hours than either of the two transfer groups. While the differences between the two

transfer groups were less pronounced, there was a difference. To determine if the

differences were significant, a series of statistical analyses was conducted. The major

findings for each hypothesis are presented below. The hypotheses are presented in pairs

with hypothesis 1 and 2 combined, followed by hypothesis 3 and 5, and finally

hypothesis 4 and 6. While null hypotheses were used for the statistical analysis in

Chapter Four, the directional hypotheses as stated in Chapter One are used here for

greater clarity.

Hypothesis 1 and Hypothesis 2

The first hypothesis anticipated that there would be significant differences in

time-to-degree completion based on transfer status for Missouri full-time transfer

students in comparison to full-time native students after adjusting for ethnicity, gender,

university attended, and community college attended. Hypothesis 2 anticipated that there

would be significant differences in the number of college credits earned based on transfer

status for Missouri full-time transfer students in comparison to full-time native students

after adjusting for ethnicity, gender, university attended, and community college

attended. Both hypotheses are looking at the effects of transfer status or no transfer on the

time-to-degree completion in terms accumulated for the first hypothesis and hours

accumulated for the second. Both hypotheses 1 and 2 were supported, since the statistical

analysis found a significant difference associated with the mode of transfer (42-hour

block or A.A. degree) or no transfer (native students) for total terms and total hours.

MANCOVA was conducted to determine the effect of the mode of transfer or no

transfer on time-to-degree completion as measured by the number of terms and the

number of hours accumulated to completion of a four year-degree while controlling for

gender, ethnicity, university attended, and community attended. The results revealed

significant differences among the three subgroups of students on the combined dependent

variable, Wilks' Λ = .698, F(4, 104.000) = 5.11, p = .001, multivariate η^2 = .164.

Furthermore, the MANCOVA results also revealed the covariate, community college

attended by transfer students, significantly influenced the combined dependent variables,

Wilks' Λ = .849, F(2, 52.000) = 4.62, p = .014, multivariate η^2 = .151.

In addition, ANCOVA was conducted on each dependent variable as a follow-up

test. The differences between four-year degree completers were significant for terms

accumulated with F(2, 53) = 10.74, p < .001, partial η^2 = .288 and significant for hours

accumulated with F(2, 53) = 8.53, p = .001, partial η^2 = .243 supporting both of these

hypotheses. Furthermore, the ANCOVA follow-up test indicated the covariate,

community college attended, had a significant effect on the total terms accumulated to a

four-year degree with F(1, 53) = 8.92, p = .004, partial η^2 = .144, and a significant effect

on the total hours accumulated to a four-year degree yielding F(1, 53) = 6.88, p = .011,

partial η^2 = .115. These findings are of particular importance because they reveal that at

least up to the point of this study, the state has not been successful in equaling time-to-

degree completion for transfer students and native university students. The data further

indicate that students are accumulating extra hours both before and after transferring,

indicating that academic planning and advising can be improved on both sides of the

transfer equation.

Hypothesis 3 and Hypothesis 5

Hypothesis 3 predicted that full-time native students will complete a four-year

degree program in fewer semesters than both full-time A.A. degree transfer students and

full-time 42-hour block transfer students. Hypothesis 5 predicted that full-time native

students will complete a degree program with fewer college credit hours than full-time

A.A. degree transfer student and full-time 42-hour block transfer students. In this case,

the native students are being compared to the two transfer groups in terms accumulated

for hypothesis 3 and in hours accumulated for hypothesis 5 to the completion of a four-

year degree. Both hypotheses 3 and 5 were supported as a result of the findings generated

through the process of statistical analysis.

A comparison of adjusted means revealed native students completed a four-year

degree in both fewer terms and fewer hours than either group of transfer students. A

Bonferroni post hoc test using a significant level of .017 was conducted to compare all

group combinations and identify any significantly different pairs. This test revealed a

significant difference of $p = .002$ with a mean difference of 1.35 in total terms

accumulated between native students and 42-hour block students; however, there was no

significant difference in the time-to-degree completion between native students and A.A.

degree students ($p = .028$). The Bonferroni results also conveyed a significant difference

of $p = .005$ with a mean difference of 9.80 in the total hours accumulated to a four-year

degree between the native students and the 42-hour block transfer students, but no

significant difference between the native students and the A.A. degree transfer students (p

= .059). These findings indicate there is a significant difference in terms accumulated and

hours accumulated between the native students and the 42-hour block students but not

between the native students and the A.A. degree students. These findings have

implications for the state and suggest again students who are transferring to the four-year

institutions with the 42-hour block are not moving through the system to complete a four-

year degree as efficiently as the native students and the A.A. degree students when in fact

the policy from the Department of Higher Education that created the 42-hour block

option stated that its purpose was to encourage degree completion in the shortest time

possible.

These data reveal that there is no advantage to the student in transferring before

completing an associate's degree, and there may in fact be a modest disadvantage. The

expressed purpose of creating the 42 hour block of shortening time to degree completion

has not been realized. Instead, this path may extend the time needed to complete the

degree slightly. There may be an inference here as well that the ability to transfer a

specific block of courses without completing a designated program of study may

discourage academic planning, resulting in repeated or additional hours as plans are later

firmed up.

Hypothesis 4 and Hypothesis 6

Hypothesis 4 stated, full-time A.A. degree transfer students will complete a

degree program in fewer semesters than full-time 42-hour block transfer students, and

hypothesis 6 stated, full-time A.A. degree transfer students will complete a degree

program with fewer college credit hours than full-time 42-hour block transfer students. In

the case of these two hypotheses, a comparison is made between the two transfer groups

in terms accumulated for hypotheses 4 and hours accumulated for hypothesis 6 to the

completion of a four-year degree. In both cases, the hypothesis could not be supported

since the data indicated that no significant difference existed in the total terms and total

hours accumulated to a four-year degree between the two groups of transfer students.

This conclusion was based on the results generated from the Bonferroni post hoc test

which yielded a significance of $p = 1.000$ and a mean difference of .35 between the two

transfer subgroups for terms accumulated indicating no significant difference. Moreover,

the Bonferroni results for hours accumulated indicated $p = 1.000$ with a mean difference

of 2.70 between the two transfer student subgroups also indicating no significant

difference.

These data suggest that neither of the transfer paths provides a significant

advantage in terms of semesters or hours to degree completion. That being the case,

policy makers might rely on the additional research that suggests that the longer the

student stays at the community college, the greater the likelihood of successful

baccalaureate degree completion (Keeley & House, 1993; Laanan, 2001). There seems

little sound academic basis for the existence of a policy that encourages some students to

transfer early.

Additional Research for Full-Time Participants

In addition to the hypotheses proposed for the full-time population, an additional

question emerged from the data: does the community college attended have a significant

influence on the time-to-degree completion and in the number of college credits

accumulated for full-time transfer students? As described earlier, the results of the

MANCOVA and the follow-up ANCOVA indicated the covariate, community college

attended, had an effect on both the terms and hours accumulated to a four-year degree for

transfer students. To further investigate this finding, descriptive statistics were conducted

for the transfer students from the community colleges for the purpose of comparing the

mean and standard deviation for the terms and the hours accumulated to the completion

of a four-year degree among the community colleges involved. When comparing means

generated through the descriptive statistic process, a difference was indicated. To

determine if the difference was significant, a Gabriel post hoc test was performed using

an adjusted significant level of .01 (0.05/5) for the 42-hour block students and a

significant level of .017 (0.05/3) for the A.A. degree students. The results indicated no

significant difference occurred in total terms accumulated and total hours accumulated to

a four-year degree for either group of transfer students attending the different community

colleges. Based on these findings, there is no difference in time-to-degree completion or

in hours accumulated for transfer students attending different community colleges in

Missouri.

Major Findings for the Part-Time Participants

As with the previous section, the hypotheses for the part-time participants will be

presented in pairs for clarity: hypotheses 7 and 8 are combined, followed by hypothesis 9

and 11, and ending with hypothesis 10 and 12. As described earlier, the part-time

population consisted of 1,947 students with 120 students randomly selected for each of

the three subgroups. The results of the descriptive analysis revealed a difference in the

terms and hours accumulated to the completion of a four-year degree for the three

subgroups of part-time students. As seen before, these results indicated part-time native

students completed a degree more efficiently than either group of transfer student.

Differences also existed between the two transfer groups; however, the differences were not as great. A series of statistical analyses were conducted to determine if the differences were significant. The major findings, summary, and discussion for each are presented below.

Hypothesis 7 and Hypothesis 8

Hypothesis 7 predicted that there would be a significant difference in time-to-degree completion based on transfer status for Missouri part-time transfer students in comparison to part-time native students after adjusting for ethnicity, gender, university attended, and community college attended. Hypothesis 8 predicted that there would be a significant difference in the number of college credits earned based on transfer status for Missouri part-time transfer students in comparison to part-time native students after adjusting for the same covariates. Both hypotheses are examining the effects of transfer status or no transfer on the time-to-degree completion in terms accumulated for hypothesis 7 and hours accumulated for hypothesis 8. As a result of the findings generated through statistical analyses, hypothesis 7 could not be supported because the data revealed no significant difference in the number of terms to completion between the three subgroups of students; however, hypothesis 8 was supported since the data revealed a significant difference in the number of hours accumulated. The following provides the details for these decisions.

As with the full-time students, a MANCOVA was conducted to determine the effect of the mode of transfer or no transfer on time-to-degree completion as measured by the number of terms and the number of hours accumulated to completion of a four-year degree while controlling for the covariates. The results generated from MANCOVA

revealed significant differences among the three subgroups of students on the combined dependent variables, Wilks' Λ .951, $F(4, 704.000) = 4.45$, $p = .001$, multivariate $\eta^2 =$ .025. The MANCOVA results also revealed the covariate, university attended by students, significantly influences the combined dependent variables, Wilks' $\Lambda = .883$, $F(2, 352.000) = 23.33$, $p < .001$, multivariate $\eta^2 = .117$.

Moreover, the ANCOVA follow-up test to MANCOVA conducted on each dependent variable revealed the difference among four-year degree completers was not significant for terms accumulated, $F(2,353) = 2.84$, $p = .060$, partial $\eta^2 = .016$ but was significant for hours accumulated $F(2, 353) = 8.72$, $p < .001$, partial $\eta^2 = .047$. Because of these findings, hypothesis 7 was not supported and hypothesis 8 was. Additionally, the ANCOVA follow-up test indicated the covariate, university attended, had a significant effect on the total terms accumulated to a four-year degree for the three subgroups of students with $F(1, 353) = 8.96$, $p = .003$, partial $\eta^2 = .025$, and a significant effect on the total hours accumulated to a four-year degree for the three subgroups of students, $F(1, 353) = 46.60$, $p < .001$, partial $\eta^2 = .117$.

This data indicates attending part-time does not affect time-to-degree completion for native students as opposed to transfer students. In the data generated through descriptive statistics, all three subgroups of student had approximately 70% full-time semesters and 30% part-time. However, transfer part-time students are taking more hours to complete their degree in approximately the same amount of time as part-time native students. Again this could be due to a lack of academic planning and effective advising at both the two-year and four-year institutions. However, it could also be attributed to differences in the personal attributes of community college students as described by

Tinto. More effective student advising could serve to eliminate some of this problem as described by Tinto's five institutional conditions.

Hypotheses 9 and Hypothesis 11

Hypothesis 9 anticipated that part-time native students will complete a four-year degree program in fewer semesters than both part-time A.A. degree transfer students and part-time 42-hour block transfer students. Hypothesis 11 anticipated part-time native students will complete a degree program with fewer college credit hours than part-time A.A. degree transfer student and part-time 42-hour block transfer students. In this case, the native students are being compared to the two transfer groups in terms accumulated for hypothesis 9 and in hours accumulated for hypothesis 11 to the completion of a four-year degree. Hypothesis 9 was not supported because the statistical analysis did not reveal a significant difference in total terms accumulated between native students as compared to A.A. degree students and 42-hour block students; however, the results of the data analysis supported hypothesis 11.

Because the ANCOVA follow-up test to MANCOVA indicated no significant difference for terms accumulated between the three subgroups $F(2,353) = 2.84$, $p = .060$, partial $\eta^2 = .016$, no further testing was in order for hypothesis 9. A comparison of adjusted means revealed native students completed a four-year degree in fewer hours that either group of transfer students. A Bonferroni post hoc test using a significant level of .017 was conducted to compare all group combinations and identify any significantly different pairs for hours accumulated. This test revealed a significant difference of $p <$ .000 with a mean difference of 6.48 in the total hours accumulated to a four-year degree between the native students and the 42-hour block transfer students. Furthermore, the

results revealed a significant difference ($p < .000$ with a mean difference of 6.94) in the total hours accumulated between native and A.A. degree students. Because of these results, hypothesis 11 was supported.

As with the full-time students, this data revealed there is no advantage in completing the 42-hour block and transferring early over continuing at the community college to complete the A.A. degree. As stated in the *Guidelines for Student Transfer and Articulation among Missouri Colleges and Universities* (2000), the purpose of creating the 42-hour block transfer was to provide a means by which students could complete a degree in the shortest time possible (p. 1). According to the data generated from this research, this is not taking place. Also, students transferring with the 42-hour block are accumulating more hours than those who transfer with the A.A. degree, creating further financial burden on the students as well as added expense at the institutions. This should be of great concern to institutions especially at a time when state and federal funding is being reduced.

Hypotheses 10 and Hypothesis 12

Hypothesis 10 stated, part-time A.A. degree transfer students will complete a degree program in fewer semesters than part-time 42-hour block transfer students, and hypothesis 12 stated part-time A.A. degree transfer students will complete a degree program with fewer college credit hours than part-time 42-hour block transfer students. These two hypotheses are comparing the two transfer groups in terms accumulated for hypothesis 10 and hours accumulated for hypothesis 12 to the completion of a four-year degree. In both cases, the hypotheses were not supported because the data indicated that

no significant difference existed in the total terms and total hours accumulated to a four-year degree between the two groups of transfer students.

The results generated from MANCOVA yielded Wilks' Λ .951, $F(4, 704.000) =$ 4.45, $p = .001$, multivariate $\eta^2 = .025$ indicating a significant difference on combined dependent variables; however, the between-subjects effects for degree students $F(2,353)$ $= 2.84$, $p = .060$, partial $\eta^2 = .016$ indicated no significant difference for terms accumulated resulting in no support for hypothesis 10. For hypothesis 12, the Bonferroni results indicated $p = 1.000$ with a mean difference of .46 between the two subgroups of transfer students for hours accumulated also resulting in no support for this hypothesis.

Again the data revealed no advantage is provided when students transfer with the 42-hour block as opposed to the A.A. degree in time-to-degree completion and hours accumulated. However, as discussed earlier, the 42-hour block students are accumulating more hours, resulting in higher cost during a time when economic state of affairs are not in the best of conditions.

Additional Research Question for Part-Time Participants

In addition to the hypotheses proposed for the part-time population, an additional question emerged from the data: Does the specific university attended have a significant influence on the time-to-degree completion and in the number of college credits accumulated for part-time transfer and native students? The results of the MANCOVA and the follow-up ANCOVA indicated the covariate, university attended, had an effect on both the total terms and total hours accumulated to the completion of a four-year degree for the three student subgroups. To further investigate this finding, descriptive statistics were conducted for the three subgroups of students from the two universities to determine

if the mean and standard deviation for the terms accumulated and the hours accumulated

to the completion of a four-year degree differed. The data indicated total terms and total

hours accumulated for the three student subgroups were lower for UMSL than for MSU

for the three student subgroups. To determine if the difference was significant, an

independent-samples *t*-test was conducted for each subgroup of students for both total

terms and total hours. The results indicated a significant difference in terms accumulated

between UMSL and MSU for the A.A. degree students, $t(118) = -2.79$, $p = .006$ with a

small–sized effect of $r = .25$. In addition, no significant difference was found for the 42-

hour block students and native students. A significant difference did occur, however, for

the three student subgroups in terms of hours accumulated with $t(118) = -4.17$, $p < .001$,

having a medium-sized effect of $r = .35$ for the 42-hour block students, $t(118) = -4.10$, p

$< .001$, having a large-sized effect of $r = .50$ for the A.A. degree students, and $t(118) = -$

3.40, $p = .001$, with a medium-sized effect of $r = .30$ for the native students. Based on

these findings, the university has a significant effect on the successful completion of a

four-year degree in hours accumulated, regardless of mode of transfer or no transfer for

students completing a four-year degree.

This is a particularly important finding in that it affirms Tinto's observation that

institutional policies and practices can affect student success, positively or negatively.

UMSL has a much higher transfer population and appears to have adjusted its internal

policies and practices to better accommodate this group. At MSU where the transfer

numbers are smaller, but still significant, there appears to have been less accommodation.

Conclusions

Based on the findings of this study, the two Missouri transfer options—the 42-hour block transfer established in 2000 and the A.A. degree transfer established in 1987—may not be as efficient and effective as the state anticipated. The *Guidelines for Student Transfer and Articulation among Missouri Colleges and Universities* were designed to address problems students' experience when moving from one institution to another, such as course acceptance at the four-year institution (Missouri Coordinating Board of Higher Education, 2000). These guidelines established the 42-hour transfer which was designed to assist students in completing a degree program at the four-year institution in the shortest time possible (Missouri Coordinating Board of Higher Education, 2000).

The data indicated students are accumulating additional terms and college credit beyond what is required to complete a four-year degree when beginning their college career at a two-year institution. The problem of accumulating additional terms and hours begins at the community college where students are accumulating more semesters and hours than minimally required transferring. Even though students enter the four-year institution with an excess of terms and hours, they then take more credits than minimally required at the university to complete their degree. This is not restricted to part-time students, but also occurs for full-time students and referring again to Tinto's work, is undoubtedly in part a reflection of the nature of the community college student. However, there are also clear indications of inadequate advisement processes and the lack of a clear understanding of transfer options on the part of both institutions.

If the state is to continue with the two transfer options, as students enter the community college, those who indicate a desire to transfer to a four-year institution for the purpose of completing a four-year degree should be clearly advised of the two programs. In doing so, students need to know what courses transfer as equivalent courses at the four-year institution. Even though the A.A. degree transfers as a unit to the two universities in this study, it is possible students are taking elective courses for the A.A. degree that do not transfer to the four-year institution as equivalent courses or that do not apply to a four-year degree. If the community colleges are offering courses that do not transfer as equivalent courses, students may be accumulating unnecessary credits that will not apply to a four-year degree once they are at the university. Moreover, students who desire to transfer with the 42-hour block should be advised to take the general education transfer block courses and avoid taking additional courses since at the present, this seems to extend the time to degree completion.

The mode by which community colleges inform receiving institutions that a student has completed the 42-hour transfer block is not consistent across the state. This could have an effect on the number of hours accumulated at the university. Both STLCC and SCC have an electronic process in place that automatically indicates on a transfer students' transcript if they have completed the 42-hour transfer block. This service helps to ensure the hours are accepted by UMSL when students transfer. If students at OTC complete the 42-hour transfer block, they must request through the registrar that it be stamped on her transcript. Without this stamp, MSU will evaluate the transfer course-by-course instead of accepting the 42-hour block transfer which could ultimately result in additional courses being taken for the transfer student (Missouri Department of Higher

Education, 2010). This could be a possible reason MSU students accumulate more terms and hours than UMSL students.

At first glance, the differences in the number of hours taken by the three groups to complete a degree may appear negligible. The transferring students in this study are averaging only two to three additional courses to complete their degrees. These numbers take on greater significance, however, when one considers that these hours are costing the student or the financial aid system an additional $1200 to $1800 dollars for the degree, if figured at a university tuition rate of $200 a credit hour. This particular study examined only a small cohort of students transferring to two of the thousands of universities in the country. But if even this cohort of 777 transfer students were multiplied by the lower of the tuition figures above ($1200), the students involved in this study spent over $1,000,000 more on their educations than the minimum number of hours would have required—than did their university counterparts, if calculated at the same tuition rate. On a national scale, hundreds of millions of dollars are being expended on repeated courses, or classes that students may not have taken had they received appropriate academic advice, and experienced smooth and coordinated transfer assistance.

The *Joint Leadership Statement on Commitment to Transfer* established in 2007 was designed to address this issue by strengthening the commitment for collaboration among Missouri institutions, directing both receiving and sending institutions to work together to improve transfer processes, minimize the duplication of courses, and participate in best transfer practices (Missouri Department of Higher Education, 2007). This commitment is a step in the right direction in forming better collaborative efforts to

benefit the obtainment of a four-year degree for all students entering the higher education arena, but as of the date of this study, the statement has not achieved its objectives.

Summarizing the findings as they pertain to the research questions and hypotheses of this study:

1. The mode of transfer (42-hour block or A.A. degree) or no transfer (native) results in a significant difference in time-to-degree completion and in college credits earned for full-time students.

2. The mode of transfer (42-hour block or A.A. degree) or no transfer (native) does not result in a significant difference in time-to-degree completion for part-time students; however, it does result in a significant difference in college credits earned for part-time students.

3. There is a significant difference in the time-to-degree completion and number of hours accumulated between full-time native students and full-time 42-hour block students with native students accumulating fewer terms and hours. However, there is not a significant difference in terms and hours accumulated between full-time native and full-time A.A. degree students.

4. There is no significant difference between part-time native students and part-time 42-hour block or A.A. degree students in terms accumulated to the completion of a four-year degree. There is a significant difference in hours accumulated between part-time native students and both part-time 42-hour block and A.A. degree students with native students accumulating fewer hours.

5. There is no significant difference between full-time A.A. degree students and full-time 42-hour block students in terms and hours accumulated to the completion of a four-year degree.

6. There is no significant difference between part-time A.A. degree students and part-time 42-hour block students in terms and hours accumulated to the completion of a four-year degree.

7. The community college attended does not influence the time-to-degree completion or the hours accumulated for full-time transfer students.

8. The university attended has a significant influence in the time-to-degree completion for A.A. degree students with students attending UMSL accumulating fewer terms than those attending MSU. The university attended has no significant influence in the time-to-degree completion for part-time native or 42-hour block students.

9. The university attended has a significant influence in the hours accumulated to a four-year degree for part-time native students, 42-hour block students, and A.A. degree students with students attending UMSL accumulating fewer hours than those attending MSU.

Theoretical Implications

As discussed earlier, this study was guided by Tinto's theoretical Student Integration Model (SIM) that describes internal and external student attributes and institutional conditions that contribute to the persistence of students in the pursuit of degree attainment. The findings of this study suggest that student attributes and institutional contributing factors as well as financial constraints proposed by Tinto have

an effect on time-to-degree completion (Tinto, 1993). While higher education institutions have no control over internal and external student attributes such as abilities, family background, former academic background, intentions, commitments, ethnicity, gender, and social class, the institutions need to acknowledge these attributes when advising and supporting students in their endeavor to complete a four-year degree. Even though this study did not take into account student attributes, the large number of part-time students discovered in the original population suggests they are important in student choices and can affect time-to-degree completion.

This study suggest the five institutional conditions—high expectation, advising, support, involvement, and learning—within the control of institutions may need to be evaluated and modified if necessary to facilitate degree attainment regardless of whether students transfer or begin at the four-year institution. When modifying institutional conditions, it is imperative institutions keep in mind the attributes students bring with them that are likely to influence their choices. Because institutional conditions affect both transfer and native students, the process of evaluation and modification is equally important at both two-year and four-year institutions as suggested by Tinto's model. In addition, to promote smooth transfer it is imperative these two institutions types communicate and collaborate as suggested by the *Joint Leadership Statement on Commitment to Transfer* proposed by the state (Missouri Department of Higher Education, 2007). Tinto also recognizes the importance of financial constraints some students experience as they strive to complete a degree (Tinto, 1993). Extending the time-to-degree completion due to the increased number of college credits students are accumulating, as this study suggest, further amplifies the effect of financial burdens

students encounter and must overcome. At a time of economic strain students as well as local, state, and federal government levels are being burdened with the additional expense involved in completing a degree. This could help to explain students' decision to attend part-time rather than full-time. Because of this, the state and federal government needs to ensure financial support is available for all students, whether full-time or part-time, pursuing a degree for the purpose of increasing their economic livelihood. Furthermore, with the emphasis state and federal government are putting on degree completion in order to better the economy, institutions need to be investigating current policies to determine were improvements can be incorporated to better serve students.

Because students transferring with the 42-hour block are most at risk to take additional college credits, critical evaluation of this transfer option by the state needs to be a priority. Because these five conditions of Tinto's model are under institutional control, institutions can make the changes necessary if they are serious in their pursuit of promoting student success. As institutions modify policies to improve the ability of students to obtain a degree, focus should be placed on social and academic conditions that serve to integrate individuals into the institution.

When considering theoretical implications, high expectations and learning were not factors in this study only to the degree that they might contribute to transfer shock, or to hours repeated. The scope of this research did not determine the level of expectation conveyed to students attending the community colleges or the two universities involved in this study. Nor did this study include a determination of the quality of instruction offered at the community colleges that could impact future success of students. It assumed that this factor balanced out across all the combined community colleges.

Furthermore, this study did not take into account the quality of lower-division instruction at either university, which may affect persistence, performance, and time-to-completion of native students.

With full-time and part-time transfer students accumulating additional terms and college credits beyond what are required to complete a four-year degree, the advising practices currently implemented at the two-year and four-year institutions are questionable. In addition, this may suggest there is a lack of a clear understanding of the transfer option on the part of students at both institutions. Students intending to transfer to a four-year institution for the purpose of completing a degree should be clearly advised at the community college on the transfer options available between two-year and four-year institutions. If students desire to transfer the 42-hour block, the community college should encourage students to complete the general education requirements and avoid taking additional courses, assuming they will transfer and apply to a four-year degree. The community college should assist students completing the A.A. degree in selection of electives to help ensure students are not merely accumulating hours, but accumulating hours that will apply to a four-year degree once they transfer. Determining course-by-course equivalents between the two institutions will allow students to select electives that will apply to a four-year degree and benefit them after transferring.

Sending institutions need to be aware of programs offered by four-year institutions that have a positive effect on student persistence and success. Hossler, Ziskin, Moore and Wakhungu (2008) noted that the success of students within institutions is a reflection of policies, programs, and practices occurring on campus. The community college needs to not only be aware of these types of programs at the receiving institution

but also need to ensure they promote them to students that will be transferring. Eggleston

and Laanan (2001) claimed support programs offered at four-year institutions that

promote success of native students would also be effective in promoting the success of

transfer students. There are numerous examples of programs that have been implemented

in institutions across the nation that promote successful transfer processes. Examples of

these programs include Summer Scholars Transfer Institute, College Transfer Days,

Transfer Centers, Transfer Clubs, Summer Bridge Program, Exploring Transfer Program,

and Scholars Program (Eggleston & Laanan, 2001; Helm & Cohen, 2001; Zamani, 2001).

These programs serve to bring staff, faculty, and students together on the receiving

campus to promote integration into the academic and social life of the institution. They

serve as collaborative efforts between institutions and are examples of institutional

conditions that can be implemented to promote successful transfer. Student progression

and successful transfer should not lie solely with the two-year sector. Both institutions

must be responsive and aggressive in addressing the role of transfer in the production of

upward mobility (Zamani, 2001).

Astin (1999) found students who interact frequently with faculty members are

more likely to express satisfaction with all aspects of their institutional experience.

Academic integration becomes an important component of persistence and can serve as

an avenue to social integration. The process of integrating in the academic and social life

of an institution is usually easier for residential students. Commuting students are

commonly found at the community college, and the number of part-time students

attending the two universities also suggests many at these institutions are commuting

rather than residential. Because of the increasing number of commuting students,

institutions need to determine how the involvement experienced by residential students

can be made more readily available to those who do not live on campus (Terenzini &

Parcarella, 1994).

Research has shown academic and social integration at two-year institutions is as

important as at four-year institutions in promoting persistence and occurs through contact

with faculty rather than through participation in extracurricular activities. In a study

conducted by Karp, Hughes and O'Gara (2008), findings indicated 90% of students at

two-year institutions who were actively integrated into college life during their first year

persisted to the second year. Even though integration occurs at two-year institutions, the

integration process may occur differently than in four-year institutions. Faculty members

at the community college need to be aware of the importance of their involvement with

students in promoting integration and success.

If institutions are serious in promoting retention for the purpose of degree

completion, effective advising practices, support for students, collaboration between

institutions, and student integration need to be evaluated and modified if necessary to

promote student success.

Contributions to Existing Knowledge

The purpose of this study was to compare the number of hours accumulated and

the time required to successfully complete a degree at a Missouri university, defined by

the number of semesters accumulated for native students who began at the university, for

those who transferred with an A.A. degree, and for those who transferred with the 42-

hour block. Successful completion was evaluated based upon the number of semesters

required and the number of credit hours required to complete a four-year degree.

The data generated from this study provided insight into how effective the higher education system is in Missouri in terms of transfer student success and to whether or not it was wise it was to enact the 42-hour transfer option, if "time-to-completion" is a state concern. Past research has shown the number of hours transferred to the four-year institution may have an effect on the degree of adjustment that occurs and the timely successful completion of a four-year degree (Fincher, 2002). Furthermore, studies have indicated that more than 70% of students moving from the community college to a four-year institution repeat coursework (Fincher, 2002). If articulation agreements are promoting ease of movement through the higher education system, the total number of hours accumulated in the pursuit of a four-year degree should not vary significantly, regardless of whether a student transfers to a four-year institution or begins as a native student. The evidence generated from this study revealed a significant difference in time-to-degree completion and in the number of hours accumulated for 42-hour block transfer students, A.A. degree transfer students, and native students supporting the findings of Fincher. Native students completed a degree with fewer terms and hours than transfer students. In addition, the number of hours accumulated by transfer students was significantly greater than those accumulated by native students indicating students may be repeating course work at the university.

Townsend (2001) noted that community college students display a wide variety of patterns other than the traditional one of transferring to a four-year institution after the completion of an associate's degree. She identified variations such as transferring before completing a two-year transfer degree, transferring with a non-transfer degree, transferring back and forth among two-year and four-year colleges, and transferring

community college courses after enrolling at the university. As described by Townsend and Dever (1999), students moving from high school to a community college and then to a four-year institution or from high school to a four-year institution make up the traditional view of degree attainment. When considering transfer as a reflection of student 'flow', the community college is generally thought of as a component of vertical flow. However, when taking into account the variations as described by Townsend, the flow is not necessarily vertical, but is rather a swirling pattern. According to LeBard (1999), the reasons student display a swirling pattern varies and ranges from financial reasons, academic difficulty, career change, family commitments, and inability to decide on career goals. This swirling pattern is not only displayed among community college students but is also prevalent among native students attending four-year institutions. This study found swirling is prominent in Missouri institutions. When screening the original data, a large number of students did not fit the criteria for the study and had to be eliminated due to movement back and forth from institution types as well as movement between states. In addition, it was common for students enrolled at the university to transfer in credits from a two-year institution or other four-year institutions.

For a number of reasons, students may not complete an associate's degree before transferring to a four-year institution. In the past, it was more common for transfer students to complete their first two years of higher education at the community college and then transfer to the four-year institution for the completion of a degree (Cejda & Kaylor, 2001). The 2+2 transfer pattern is no longer the norm. Cejda and Kaylor (2001) found that the reasons students transfer early include fear of falling behind the four-year students in given programs and a perceived lack of value of the associate's degree. The

data from this study supports the findings of Cejda and Kaylor showing students will transfer before completing the A.A. degree, resulting in a substantial number of hours for the 42-hour block. Proper advising at the community college could eliminate the fear of falling behind native students at the four-year institutions.

Parcarella (1999) concluded students entering the community college with plans to complete a four-year degree will require a longer time to complete their degree than will those who beginning at the four-year institution. Research conducted by Glass and Harrington (2002) compared the persistence to graduation for transfer students and native students and found the time-to-degree completion for the transfer students was longer than that of the native students. This study clearly supports these findings. Working articulation agreements between two-and four-year institutions can serve to reduce the time-to-completion for transfer students resulting in completion patterns similar to native students (Townsend, 2001). The results of this study revealed transfer students accumulate more terms and hours than native students extending the time-to-degree completion. This study did not support Townsend's statement concerning articulation agreements. The two articulation agreements utilized in the study have not reduced the time-to-completion for transfer students resulting in completion patterns similar to native students. Instead, students choosing these pathways are taking longer to complete their degree.

As evidenced through this study, the 42-hour block transfer and the A.A. degree transfer are not promoting an effective and efficient process for the attainment of a four-year degree for transfer students. The students' ability to obtain their desired level of education should not be hindered due to the inability or unwillingness of institutions to

work together due to institutional habit, convenience, competition, or territoriality

(Missouri Department of Higher Education, 2007). This study provides necessary

information for both institutional types that could be utilized to design a collaborative

effort to promote successful transfers. Three factors important in promoting collaboration

among two-year and four-year institutions are student centeredness, familiarity between

the people of both institutions, and positive and cooperative leadership (Glover, 2008). In

Missouri, the CBHE strives to ensure that effective transfer and articulation becomes a

priority for higher education institutions. The CBHE established the *Joint Leadership*

Statement on Commitment to Transfer in 2007 to strengthen the commitment for

collaboration among Missouri institutions previously established in the 2000 student

transfer and articulation agreement. Through this agreement, the leaders of Missouri

institutions of higher education are committed to work collaboratively, provide academic

and financial support for transfer students, develop efficient transfer policies, and identify

and share best transfer practices (Missouri Department of Higher Education, 2007). This

renewed commitment to transfer success for Missouri students could result in a higher

success rate for both 42-hour block transfers and A.A. degree transfers. However, at this

point, the evidence does not indicate this is being accomplished. The data produced from

this study further supports the need to renew commitments between two-year and four-

year institutions.

This study also contributed to the determination of the effectiveness of the

established 42-hour block articulation agreement and the A.A. degree transfer between

community colleges and universities. This research provided insight into whether the 42-

hour transfer block facilitates a faster and more efficient completion of a degree program

at Missouri universities for community college transferring students than the A.A. degree transfer. The data from this study revealed transfer students require significantly more terms and hours to complete a degree than native students. In addition, 42-hour block transfer students require more terms and hours than A.A. degree students.

The research presented here provides evidence that can be used by both the two-year and four-year institutions to justify the strengthening of collaborative efforts in order to facilitate the ease of transfer. Missouri students completing the A.A. degree or the 42-hour block who desire to transfer for the purpose of completing a university degree should not be penalized for having pursued this educational path by taking additional courses or accumulating additional hours. This study contributes to the body of research that supports the need to facilitate the ease of transfer between the two-year institutions and the four-year institutions.

The data generated from this research should serve as a catalyst to promote cooperation and collaboration between two-year and four-year institutions. The role of community colleges in preparing students for transfer to a four-year institution is two-fold. The first is to promote the successful completion of an associate's degree or completion of the appropriate transfer credits. The second is to prepare students for success at a four-year institution once the transfer has occurred. This study provides evidence that effort is needed to strengthen the advisement process at the community college to ensure students that desire to transfer to a four-year institution are being properly advised on transfer options and course choices. The four-year institution is not an idle participant in this process. This study supports the need for four-year institutions to provide transfer students with a means to properly adjust to their new environment

both academically and socially. The results of the study will be useful to students, faculty

members, advisors, college administrators, and the general public in making more

informed decisions about desired paths to baccalaureate degree completion.

The ability of institutions to work together collaboratively allows both institutions

to be more successful (Fincher, 2002). This collaboration should include the willingness

of the four-year institutions to accommodate the non-traditional student. The

nontraditional student is becoming more common at all levels of higher education, and

these students require flexible course scheduling due to jobs and family commitments

(Fincher, 2002). Once students transfer, the four-year institution should be willing to

facilitate their adjustment to this new environment. This study found many more students

attended part-time than full-time at both two-year and four-year institutions supporting

the findings of Flincher.

To support economic growth and stability within the state of Missouri, it is vital

for students to complete a degree, allowing them the opportunity to earn higher salaries

and have a positive impact on the economy. The results of this study imply that the two

transfer articulation agreements are not being followed as prescribed by the CBHE at the

community colleges and/or universities; indicating a stronger effort is needed to ensure

the guidelines are properly followed. The evidence provided by this research indicates the

need to reexamine the 42-hour transfer block and determine if it should be continued as

an optional transfer choice for community college students. This study makes a

significant contribution to evidence needed by state policymakers and education leaders

in order to make informed decisions concerning transfer and articulation.

Because many students begin their educational career at the community college

level, it is important to promote a process that allows them to move from the community

college to a four-year institution efficiently and quickly. Simply providing access to

higher education is not enough, the state needs to ensure students complete their desired

degree in the shortest time possible thus becoming productive contributors to the local,

state, and national economy.

Recommendation for Further Research

Information from this study provided an insight into how effective the higher

education system is in terms of transfer student success and how transfer issues affect

time-to-completion, based on transfer preparation at the two-year college. This study also

provided necessary information for both institutional types that could be utilized to

design a collaborative effort to promote success of transfer students at the four-year

institution. To gain a more comprehensive understanding of the effectiveness of the 42-

hour transfer block and the A.A. transfer degree, the following areas would be worthy of

further research to advance knowledge and provide additional insight and understanding.

1. This study focused on only two universities in the state of Missouri. Because

    significant differences occurred between these two universities in terms and

    hours accumulated, it is possible that other universities would yield different

    results. It would be beneficial if this study were replicated using additional

    four-year institutions within the state and elsewhere. This would also result in

    additional data from a greater number of community colleges.

2. This study focused only on the terms and hours accumulated for 42-hour

    block and the A.A. degree transfer students. Further research is needed to

determine the effects of early transfer on retention, the time-to-degree

completion, and the number of hours accumulated when comparing transfer

students to native students.

3. This study did not consider students with hours transferred from out-of-state

    or hours transferred from other two-year and four-year institutions prior to

    enrolling at the two universities. When looking at total terms and total hours

    accumulated to the completion of a four-year degree, this could have a

    significant effect. Further research is needed to determine the effects of

    swirling on time-to-degree completion and hours accumulated for transfer and

    native students.

4. This study did not take into account transfers from four-year institutions to

    four-year institutions. It is possible that students who transfer from four-year

    to four-year may take longer and require more hours to complete a degree

    than is minimally required. Further research is needed to determine if there is

    possibly a transfer affect whether students transfer from a two-year institution

    or a four-year institution to complete a four-year degree.

5. This study did not take into account internal and external student attributes

    such as abilities, family background, former academic background, intentions,

    commitments, and socioeconomic status that might influence the rate at which

    a student progresses through postsecondary level institutions. Nor did it

    determine if the students worked or had family commitments. Further research

    conducted to determine these factors could provide possible reasons why

transfer students accumulate more terms and hours than necessary to complete a four-year degree.

6. This study did not determine the effects of transfer shock on the 42-hour block students and the A.A. degree students. Further research could be used to determine the effects of transfer shock on GPA differences and retention for students that transfer in fewer hours than the 42-hour block, those that transfer with the 42-hour block, and those that transfer with the A.A. degree. If, in fact, students who transfer with the 42 hour block do not persist to graduation at rates equivalent to those with the AA degree, the state should consider eliminating this transfer option.

7. Because students are accumulating additional terms and hours at the community college, further research is needed to investigate the advisement process and the process utilized to prepare transfer students for the four-year institutions that occurs at community colleges.

8. Because students are accumulating additional terms and hours after they transfer to the university beyond what is needed for a degree, the advisement process and programs designed to integrate transfer students into the university environment should be further researched.

9. The results of this study revealed an excess of hours accumulated by transfer students. Further research is needed to determine what courses are transferred from the community college to the university and how many if any are being repeated at the university.

10. Further research is needed to determine if community colleges are offering courses that do not transfer on a course-by-course bases to the university and if transfer students are taking these courses as electives for the A.A. degree and then possibly losing them after transfer.

11. The results of this study indicated 42-hour block transfer students are taking substantially more than 42 hours before transferring to the university. Further research is needed to determine what additional courses are taken and why students chose to continue take courses at the community college before transferring without completing the A.A. degree.

12. The study found that African American students transferring to UMSL did not take advantage of the 42-hour block option at nearly the rate of Caucasian students. This may indicate that this particular student group chooses to stay at the community college as long as possible, a possibility that disserves further investigation.

Concluding Remarks

The premise of this research has been to determine if state articulation agreements are promoting ease of movement through the higher education system for students pursuing a four-year degree whether the student transfers with the 42-hour block, the A.A. degree, or begin as a native student at the four-year institution. Due to the lack of evidence generated over the years, the effectiveness of the 42-hour transfer block and the A.A. transfer degree in promoting an efficient and effective means by which to obtain a four-year degree has not been known. This study has provided needed evidence that is useful to individual students, faculty, advisors, and administrators of two-year and four-

year institutions, state higher education agencies, and local and state level government. Based on the data generated from this research, the two transfer options may not be working as effectively and efficiently to promote the completion of a four-year degree as previously perceived by the state.

For this study, it was important to determine whether the articulation agreements established in Missouri are working in terms of number of college courses taken to complete a four-year degree and the time required to complete the degree regardless of the mode of transfer or no transfer. This study attempted to generate the data necessary to provide insight into how effective the higher education system in Missouri is in terms of transfer student success and how wise it was to enact the 42-hour transfer option, if "time-to-completion" is a state concern. Furthermore, it attempted to provide data that could be used by both two-year and four-year institutions to establish collaborative efforts designed to promote successful transfer graduates.

Evidence from this study revealed the mode of transfer (42-hour block or A.A. degree) or no transfer (native) has a significant effect on time-to-degree completion and in the number of college credits earned for students in Missouri. Students choosing to begin their college career at the community college are at a disadvantage in terms of time-to-degree completion, though it must be recognized that the advantages community colleges offer in other respects may outweigh this reality. Native students complete a four-year degree in significantly fewer terms and fewer hours than either 42-hour block students or A.A. degree students. The data also revealed a large number of students in Missouri attend college part-time indicating both two-year and four-year institutions need to consider this fact when working with students to promote the completion of a degree.

It is advantageous for four-year institutions to admit transfer students who are adequately prepared for junior-level work and who will graduate on time. It is up to the community college to provide the necessary curriculum that promotes student success after transfer.

The data generated indicates there should be renewed efforts in establishing more effective collaboration between community colleges and universities in Missouri to promote student success. Transfer-approved curricula have been established through the state articulation agreements between the two institutional types. According to the Missouri CBHE, "Harmonious and equitable consideration of any problem which a student may encounter in moving from one institution to another is an ultimate objective of these transfer guidelines" (Coordinating Board for Higher Education, 2000).

There are many areas of further research that should be conducted to determine why community college transfer students are not progressing through the higher education arena as efficiently as native students. Students begin their college careers at the community college for a variety of reasons. Many community college students do not choose to start at the community college because it is a choice, but because they have no choice due to personal internal and external attributes as described by Tinto. This means that when institutional practice and state policy penalize this group, we are essentially punishing them unnecessarily for being victims of circumstances beyond their control, creating an unjust system. If we are not going to provide the means for every student to begin where he or she wishes, we need to insure that institutional practice and state policy does not punish them for having to begin were they are forced to begin.

The findings of this study provide critical information needed by the state at a time when degree obtainment is being promoted as a means to improve local, state, and national economy.

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Appendix A

Coordinating Board of Higher Education Policy on Transfer and Articulation

C. TRANSFER/ARTICULATION ISSUES
1. Credit Transfer Guidelines
**(Adopted by the board June 8, 2000;
revised October 13, 2005)**

I. INTRODUCTION

The Coordinating Board for Higher Education (CBHE) fosters a public policy framework that is committed to the values of access, quality, and efficiency for the state's higher education system. As Missouri continues to increase aspiration and performance levels for all students, it will require an educational system that is responsive to the needs of students for easy mobility across institutions. Missouri 's commitment to have institutions with distinctive missions, including differential admission standards, underscores the importance of an effective transfer and articulation system. These credit transfer guidelines are intended to ensure that high school graduates with clear educational objectives may complete a degree program offered by colleges and universities in the shortest possible time, whether the student remains in one institution or transfers to another.

The CBHE recognizes that each Missouri college and university is responsible for establishing and maintaining standards of expectations for all students completing its courses, programs, certificates, or degrees. It also recognizes that for effective and efficient transfer of credits between and among these colleges and universities, it is necessary to exercise this responsibility within the context of a statewide "system" of higher education. Effective transfer and articulation is based upon inter- and intra-institutional communication, a mutual respect for institutional integrity, a high degree of flexibility, procedures for identifying problems, a mechanism for implementing appropriate solutions, regular and systematic review of policies, and a timely and orderly process for change. Harmonious and equitable consideration of any problem that a student may encounter in moving from one institution to another is an ultimate objective of these transfer guidelines.

A. STATUTORY RESPONSIBILITY

Section 173.005(6), RSMo, requires the CBHE to "establish guidelines to promote and facilitate the transfer of students between institutions of higher education within the state."

This responsibility is discharged through the implementation of the CBHE's credit transfer policy.

B. APPLICABILITY OF GUIDELINES

These transfer guidelines are applicable to course credits and related matters for undergraduate students who wish to transfer between Missouri public colleges and universities that have regional accreditation or that have been advanced to candidacy status by the North Central Association. The CBHE also recommends these guidelines to Missouri independent institutions that meet the same accreditation standards. In addition, the development of program-to-program articulation agreements is encouraged between Missouri 's public and/or independent institutions of higher education and postsecondary institutions, such as proprietary institutions, with national accreditation recognized by the U.S. Department of Education and certification by the CBHE.

C. GUIDING PRINCIPLES

Neither transfer nor native students should be advantaged or disadvantaged as a consequence of the transfer process.

The delivery of lower-division courses should not be the sole province of a single institution, but should be subject to articulation between sending and receiving institutions.

Separate credit-hour limitations should not be imposed on transfer students based on the type of sending institution.

Variations in baccalaureate degree programs that reflect institutional missions should be respected and accommodated. The faculty role in the design of curricula and the establishment of degree requirements must be respected.

Program-to-program institutionally articulated degrees for the associate of science (AS) and associate of applied science (AAS) should be encouraged.

A workable transfer system requires predictability of transfer decisions and responsiveness to student needs. Demonstrating the effectiveness of transfer and articulation systems, including institutional and statewide agreements, requires analyses that employ common data elements and definitions that are collected and shared among institutions and with the CBHE.

Prior to full implementation, any curricular changes that affect existing transfer and articulation agreements should involve timely mutual consultation by both receiving and sending institutions and notification to all affected parties once new agreements are reached.

Presidents and chancellors should ensure that effective transfer and articulation are a priority at their institutions and that all members of the academic community--including faculty and department chairpersons--must honor all transfer agreements agreed to by their institutions.

In order to facilitate student success and to reinforce the respective missions of associate and baccalaureate institutions, students who begin an associate degree program and who aspire to pursue a baccalaureate degree should be encouraged by both the sending and receiving institutions to complete the associate degree program, to transfer immediately upon associate degree completion, and to complete the baccalaureate degree in a timely manner.

II. STATEWIDE GENERAL EDUCATION POLICY

The state has high expectations for all Missouri college graduates and has promulgated a statewide general education policy that establishes a rationale for general education; defines the responsibilities of institutions, faculties, and students for general education; and promotes broad curricular goals and student competencies that should result from institutional general education programs.

A. RATIONALE FOR GENERAL EDUCATION

General education is the curricular foundation of the American academy. It encourages students to acquire and use the intellectual tools, knowledge, and creative capabilities necessary to study the world as it is, as it has been understood, and as it might be imagined. It also furnishes them with skills that enable them to deepen that understanding and to communicate it to others. Through general education, the academy equips students for success in their specialized areas of study and for fulfilled lives as educated persons, as active citizens, and as effective contributors to their own prosperity and to the general welfare.

As the academy's knowledge of the world is structured, so must general education be constructed to introduce students to the traditional disciplines of the arts and sciences. As that knowledge is ever changing, so must general education alert students to connections between the traditional disciplines

and to the potential for interaction among all branches of knowing, ordering, and imagining the real world. As the real world is diverse, so must general education inform students that the world is understood in different ways and provide them with the means to come to terms, intelligently and humanely, with that diversity. As diversities of knowing and understanding must be made open and accessible, so students must acquire appropriate investigative, interpretative, and communicative competencies.

B. RESPONSIBILITIES

While the academy is not the only place where these high aims can be imagined and achieved, more than any other place it receives public and private support for just these ends. General education is thus a core responsibility of the academy as well as a foundation curriculum for students.

To discharge this trust, academic institutions must deliver appropriate resources to their faculties, and faculties must design and transmit to students effective means and persuasive rationales for achieving general education aims. Both institutions and faculties must satisfy their constituents that these ends are being achieved satisfactorily and in ways that are consistent with each institution's mission.

While students have a right to expect their academic institutions and faculties to fulfill these responsibilities, students also incur the obligation to act as partners in learning in order to become agents in, not merely receivers of, their own general education.

In the state of Missouri, all public institutions of higher education and each independent or proprietary institution that is signatory to the statewide credit transfer policy must agree that the general education achievements of students who succeed in discharging their obligations are wholly transferable in terms both of graduation credit and of real competencies.

C.   TRANSFERABILITY   OF   GENERAL EDUCATION CREDIT

In order to facilitate the transfer of students among institutions of higher education in the state, the CBHE has supported the development of a statewide general education policy that is intended to ensure the portability of general education credit among Missouri 's colleges and universities.

Each institution of higher education in Missouri fosters a program of general education. General education programs

vary from institution to institution as each represents a statement reflective of the institution's ethos and mission. General education programs are developed by the faculty and validated by the institution's administration and governing board. Each institution expresses, through its general education program, the high expectations for the academic skills and knowledge that all students who complete degrees offered by that institution should master.

Consistent with its mission, each public institution of higher education in Missouri and each independent or proprietary signatory to this policy shall offer a general education program that is designed to enable students to achieve the following general education goals. In order to ensure transferability of general education credit among these institutions, each shall specify and publish a 42 semester-hour block of general education credit that will be considered equivalent to corresponding blocks of credit at other public and signatory institutions in enabling students to achieve these general education goals.

D.   GENERAL   EDUCATION   GOALS   AND COMPETENCIES

Two terms describe the aims of general education in the state of Missouri , *goals* and *competencies* . The term g*oals* refers to the curricular intent of state policy regarding the academic skills and knowledge content of general education. The term c*ompetencies* denotes illustrative state-level expectations for student performance in general education. Faculty at each institution design a general education program that fits the ethos and mission of each institution and meets state-level curricular goals. Each general education program must also specify institution-level student competencies that will follow from achieving these curricular goals and which are in alignment with the suggested competencies listed in the following sections. These general education aims and outcomes may be achieved in various ways, including through traditional courses, through interdisciplinary teaching, or through competencies embedded across the curriculum. State-level curricular goals and institution-level student competencies for general education fall into two categories: academic skills and knowledge.

1. Skills Areas

a. Communicating

State-Level Goal: To develop students' effective use of the English language and quantitative and other symbolic systems essential to their success in school and in the world. Students should be able to read and listen critically and to write and speak with thoughtfulness, clarity, coherence, and persuasiveness.

Suggested Competencies: Students will demonstrate the ability to...

- Analyze and evaluate their own and others' speaking and writing. conceive of writing as a recursive process that involves many strategies, including generating material, evaluating sources when used, drafting, revising, and editing.

- Make formal written and oral presentations employing correct diction, syntax, usage, grammar, and mechanics.

- Focus on a purpose (e.g., explaining, problem solving, argument) and vary approaches to writing and speaking based on that purpose.

- Respond to the needs of different venues and audiences and choose words for appropriateness and effect.

- Communicate effectively in groups by listening, reflecting, and responding appropriately and in context.

- Use mathematical and statistical models, standard quantitative symbols, and various graphical tactics to present information with clarity, accuracy, and precision.

b. Higher-Order Thinking

State-Level Goal: To develop students' ability to distinguish among opinions, facts, and inferences; to identify underlying or implicit assumptions; to make informed judgments; and to solve problems by applying evaluative standards.

Suggested Competencies: Students will demonstrate the ability to...

- Recognize the problematic elements of presentations of information and argument and to formulate diagnostic questions for resolving issues and solving problems.

- Use linguistic, mathematical or other symbolic approaches to describe problems, identify alternative solutions, and make reasoned choices among those solutions.

- Analyze and synthesize information from a variety of sources and apply the results to resolving complex situations and problems.

- Defend conclusions using relevant evidence and reasoned argument.

- Reflect on and evaluate their critical-thinking processes.

c. Managing Information

State-Level Goal: To develop students' abilities to locate, organize, store, retrieve, evaluate, synthesize, and annotate information from print, electronic, and other sources in preparation for solving problems and making informed decisions.

Suggested Competencies: Students will demonstrate the ability to...

- Access and/or generate information from a variety of sources, including the most contemporary technological information services.

- Evaluate information for its currency, usefulness, truthfulness, and accuracy.

- Organize, store, and retrieve information efficiently.

- Reorganize information for an intended purpose, such as research projects.

- Present information clearly and concisely, using traditional and contemporary technologies.

d. Valuing

State-Level Goal: To develop students' abilities to understand the moral and ethical values of a diverse society and to understand that many courses of action are guided by value judgments about the way things ought to be. Students should be able to make informed decisions through identifying personal values and the values of others and through understanding how such values develop. They should be able to analyze the ethical implications of choices made on the basis of these values.

Suggested Competencies: Students will demonstrate the ability to...

- Compare and contrast historical and cultural ethical perspectives and belief systems.

- Utilize cultural, behavioral, and historical knowledge to clarify and articulate a personal value system.

- Recognize the ramifications of one's value decisions on self and others.

- Recognize conflicts within and between value systems and recognize and analyze ethical issues as they arise in a variety of contexts.

- Consider multiple perspectives, recognize biases, deal with ambiguity, and take a reasonable position.

2. Knowledge Areas

a. Social and Behavioral Sciences

State-Level Goal: To develop students' understanding of themselves and the world around them through study of content and the processes used by historians and social and behavioral scientists to discover, describe, explain, and predict human behavior and social systems. Students must understand the diversities and complexities of the cultural and social world, past and present, and come to an informed sense of self and others. (Students must fulfill the state statute requirements for the United States and Missouri constitutions.)

Suggested Competencies: Students will demonstrate the ability to...

- Explain social institutions, structures, and processes across a range of historical periods and cultures.

- Develop and communicate hypothetical explanations for individual human behavior within the large-scale historical and social context.

- Draw on history and the social sciences to evaluate contemporary problems.

- Describe and analytically compare social, cultural, and historical settings and processes other than one's own.

- Articulate the interconnectedness of people and places around the globe.

- Describe and explain the constitutions of the United States and Missouri.

b. Humanities and Fine Arts

State-Level Goal: To develop students' understanding of the ways in which humans have addressed their condition through imaginative work in the humanities and fine arts; to deepen their understanding of how that imaginative process is informed and limited by social,

cultural, linguistic, and historical circumstances; and to appreciate the world of the creative imagination as a form of knowledge.

Suggested Competencies: Students will demonstrate the ability to...

- Describe the scope and variety of works in the humanities and fine arts (e.g., fine and performing arts, literature, speculative thought).

- Explain the historical, cultural, and social contexts of the humanities and fine arts.

- Identify the aesthetic standards used to make critical judgments in various artistic fields.

- Develop a plausible understanding of the differences and relationships between formal and popular culture.

- Articulate a response based upon aesthetic standards to observance of works in the humanities and fine arts.

c. Mathematics

State-Level Goal: To develop students' understanding of fundamental mathematical concepts and their applications. Students should develop a level of quantitative literacy that would enable them to make decisions and solve problems and which could serve as a basis for continued learning. (The mathematics requirement for general education should have the same prerequisite(s) and level of rigor as college algebra.)

Suggested Competencies: Students will demonstrate the ability to...

- Describe contributions to society from the discipline of mathematics.

- Recognize and use connections within mathematics and between mathematics and other disciplines.

- Read, interpret, analyze, and synthesize quantitative data (e.g., graphs, tables, statistics, survey data) and make reasoned estimates.

- Formulate and use generalizations based upon pattern recognition.

- Apply and use mathematical models (e.g., algebraic, geometric, statistical) to solve problems.

d. Life and Physical Sciences

State-Level Goal: To develop students' understanding of the principles and laboratory procedures of life and physical sciences and to cultivate their abilities to apply the empirical methods of scientific inquiry. Students should understand how scientific discovery changes theoretical views of the world, informs our imaginations, and shapes human history. Students should also understand that science is shaped by historical and social contexts.

Suggested Competencies: Students will demonstrate the ability to...

- Explain how to use the scientific method and how to develop and test hypotheses in order to draw defensible conclusions.

- Evaluate scientific evidence and argument.

- Describe the basic principles of the physical universe.

- Describe concepts of the nature, organization, and evolution of living systems.

- Explain how human choices affect the earth and living systems.

E. STRUCTURE OF GENERAL EDUCATION CURRICULA

The statewide general education policy requires institutions to design and offer a general education program that includes a minimum of 42 semester-hours of credit distributed across the academic skills and knowledge areas of the previous sections. These credit hours should be distributed in such a way that students who complete the 42 semester-hour block of general education credit from any institution of higher education in the state will have had the opportunity to achieve the high expectations embodied in the state-level goals and suggested competencies set forth in the previous section.

All Missouri public institutions of higher education and each independent or proprietary signatory institution have the privilege and responsibility to exercise their academic and institutional autonomy to design and promulgate a general education program that supports their respective institutional mission and assists students to meet these high expectations. Institutional programs may be designed in various ways to achieve these state-level goals and institution-level competencies, and the role of institutional faculty in designing institutional general education curricula and establishing general education requirements for their degrees will be respected.

Each institution will document how the design of its 42 semester-hour block of general education credit meets the state-level curricular goals and ensures that its students achieve institution-level competencies that are aligned with these goals. Each institution will also document how it implements this design, how it assesses and certifies student skills and knowledge, and how it uses assessment results to improve its general education program.

Institutions may design and promulgate general education programs that exceed the expectations of the 42 semester-hour block of credit. In this case, institutions may require transfer students to complete general education and other institutional requirements in addition to the 42 semester-hour block of credit only when these additional requirements are also required of native students. Students assume full responsibility for meeting specified degree and/or major requirements, specifically those related to course prerequisites.

Each public and signatory institution will define a 42 semester-hour general education block of credit that achieves state-level curricular goals. All of these 42 semester-hour blocks of general education credit will be considered equivalent for transfer purposes. Typically, these blocks will be composed primarily of lower-division courses and

requirements. However, institutions may define their 42 semester-hour blocks of general education credit as being composed of both lower- and upper-division courses and requirements. In such cases, receiving institutions must accept, as equivalent, other institutions' blocks of general education credit–even when these are composed solely of lower-division courses.

Baccalaureate professional schools or programs may specify exceptions to the credit-hour minimum established in this section by promulgating these exceptions and by establishing specialized articulation programs related to AS and AAS degrees, as detailed in the following sections. Transfer students completing AS and AAS degrees from institutions that do not have program-to-program institutionally articulated agreements are not exempt from satisfying the requirements of departments or divisions of the institution into which the student transfers.

F. GENERAL EDUCATION PROGRAM REVIEW AND NOTIFICATION PROCESS

The purpose of the review and notification process for general education programs is to ensure that all public institutions and each independent or proprietary signatory institution have general education programs in place that meet the statewide policy. This review process is intended to be collegial, professional, and helpful to institutions in developing general education programs that meet policy guidelines. The program review and notification process is intended to focus on strengthening general education, to be reflective of the state's commitment to institutional autonomy, and to be protective of each student's right to the fair application of this statewide credit transfer policy.

Initial Review and Approval.

All Missouri public institutions of higher education and each independent or proprietary institution that is signatory to the statewide credit transfer policy will develop and post, both on the MDHE web site and their own institution's web site, a curricular design and an assessment plan indicating how that institution plans to implement and assess general education. The institution's program will remain on the MDHE web site for a period to be determined by the CBHE's Committee on Transfer and Articulation (COTA).

All public and signatory institutions will be invited to comment on each institution's plan through the designated transfer and articulation officer. The institution whose program has been posted for comments will be responsible

for forwarding comments to the CBHE for posting, evaluating the feedback, responding to the commenting institution, and determining which suggestions it will incorporate into its curriculum design. When an institution is ready to implement its program, the president will notify COTA. Once COTA acknowledges receipt of the notice, that institution is then eligible to certify its students for transfer under the statewide general education policy standards. The institution has the further responsibility to post its general education program on its web site and to maintain its currency and accuracy. COTA will notify all public and signatory institutions when an institution is eligible to certify students for transfer.

Any concerns that individual institutions have about another's general education program will be handled via the Appeals Process that is part of this credit transfer policy.

Ongoing Dialogue and State-Level Policy Review.

The annual statewide transfer and articulation conference will be used as a vehicle to encourage communication and collaboration about institutional approaches to general education. Sessions will be scheduled to discuss concerns about the state credit transfer policy and to promote good practices in general education teaching, transfer, and assessment.

III. TRANSFER

A. TRANSFER DEGREES

Transfer degrees are prescribed lower-division programs that are designed to facilitate the transfer of students into a four-year baccalaureate degree program upon completion of a lower-division program at another institution of higher education. Associate degrees, especially the associate of arts (AA) degree, are the most common lower-division transfer degrees.

Determination of course requirements of the major for a baccalaureate degree, including introductory and related courses, is the prerogative of the baccalaureate degree-granting institution. The catalog of each four-year institution will state clearly the requirements for each baccalaureate degree program. When specific prerequisites are required, they will be designated and noted in conjunction with the course description. Transfer students who have completed prerequisites will not be required to duplicate study in the area. The catalog will specify any restrictions or additional requirements for each major.

Addendum: Institutional policies that distinguish between upper- and lower-division courses vary among baccalaureate degree-granting institutions. The variation results in similar courses being identified as upper or lower division at different institutions. This can create redundancy in the curriculum of a transfer student (i.e., repeating an upper division course at the receiving institution when the student had completed a course with the same content and learning objectives but labeled as lower division by the sending institution). Receiving institutions should avoid duplication of learning and effort by transfer students by requiring the completion of a related but non-duplicative upper-division course that would enrich the curriculum of the student. The analysis of possible duplication of learning and effort in identification of upper- and lower-division courses is best addressed in the context of articulation agreements between sending and receiving institutions.

A baccalaureate degree program, or major, consists of a general education program and a coherent grouping of courses or subject-area requirements in a specific discipline or program field. Generally, the number of credit hours required for a major ranges from thirty (30) to forty-eight (48) semester credit hours. There may be exceptions to this rule in the case of highly specialized professions or disciplines, interdisciplinary studies, or majors in general liberal arts studies.

1. Statewide Transfer Associate of Arts Degree

The associate of arts (AA) degree is designed as the statewide general studies transfer degree. This degree is structured for entry into the general range of baccalaureate degree programs offered by four-year colleges or universities. Students completing the AA degree will have completed a general education program that is consistent with the statewide general education policy, consisting of a minimum of 42 semester-hours of credit. Courses taken as part of an AA degree outside the general education program should be carefully chosen to ensure applicability to the baccalaureate graduation requirements for the program of study which the student intends to pursue at a four-year college or university. Consequently, the transfer student has the responsibility to become familiar with the specific major and graduation requirements of the four-year institution to which transfer is intended. Institutions are also encouraged to develop articulation agreements to ensure the transfer of credit outside of the 42 semester-hour general education block of credit.

A student's AA degree curriculum may include introductory courses and other courses that permit the student to explore areas of specialization that can be pursued at a later time at the upper-division level. For AA students who continue in a particular field, the courses should be adequate in content to be counted fully toward the baccalaureate degree.

2. Program-to-Program Institutionally Articulated Degrees

This policy encourages both two-year and four-year institutions to develop voluntary, supplemental articulation agreements for the AS and AAS degrees in addition to the AA state transfer degree. These agreements will facilitate transfer and consider all factors surrounding a student's achieved program competencies, successes, and professional career aspirations.

a. Associate of Science Degree

An associate of science (AS) degree is a specialized transfer degree that is intended for students interested in transferring into professional programs that have a greater emphasis on science and math. This is an articulated degree program that results from careful planning and agreement between institutions. These programs will be developed by consultation between sending and receiving institutions on a program-by-program basis. This process may involve changes in general education requirements. Students completing articulated AS degrees will be accepted as having completed lower-division general education and prerequisite courses equivalent to the lower-division general education requirements completed by native students in the same degree program over a similar time period.

b. Associate of Applied Science Degree

An associate of applied science (AAS) degree is oriented toward career and professional preparation. The primary purpose of this associate degree is to prepare a student for entry into a particular occupation. While the AAS degree has not historically been intended as a transfer degree into a baccalaureate program, Missouri's initiatives to develop and expand its workforce development and training system demand that education and training career paths extend beyond the associate degree. When used for transfer, this degree requires careful planning and agreement between institutions on a program-by-program basis. This process may involve changes in general education requirements. In order for students to be adequately prepared for the workforce and to facilitate articulation agreements, a

minimum of twenty-five percent of the AAS degree requirements shall consist of college-level transferable general education. The AAS transfer student should be able to pursue upper-division advanced coursework in appropriate baccalaureate degree programs. (These may include the same degree area or related degree areas.) Institutions are encouraged to explore opportunities for multiple articulation agreements.

c. Other Associate Degrees

All other associate degrees not addressed by either the statewide transfer AA degree or program-to-program institutionally articulated AS or AAS degrees will be evaluated on a course-by-course basis until such time that an articulated agreement exists.

B. TRANSFER WITHOUT A DEGREE

1. General Education Curricula

Students at both two- and four-year institutions of higher education should be encouraged to pursue and complete coherent programs of study, including associate and baccalaureate degree programs and coherent general education programs. The statewide general education policy is designed to assist students to transfer a block of 42 semester-hours of general education credit by ensuring that all institutions of higher education in the state have comparable expectations regarding what students know and can do as a result of completing these blocks of general education credit and by ensuring that all public and signatory institutions define and publish 42 semester-hour blocks of general education credit that will be considered equivalent for the purposes of transfer.

All Missouri public institutions of higher education and independent or proprietary institutions that are signatory to this statewide credit transfer policy shall recognize the validity of other institutions' general education programs. Once an institution of higher education in Missouri has defined and published its 42 semester-hour block of general education credit and has notified COTA that its general education program meets the statewide general education policy's requirements, the integrity of its general education program and block of credit will be recognized by the other institutions of higher education in Missouri.

Students who are certified by their sending institutions as having completed a 42 semester-hour block of general education credit will not be required to complete any

additional general education requirements that are part of the corresponding general education block of the institutions to which the students transfer. Students assume full responsibility for meeting the specified degree and/or major requirements, specifically those related to prerequisites. General education and other institutional requirements in addition to the 42 semester-hour block of credit may be required of transfer students by receiving institutions only when native students are obligated to satisfy the same requirements.

2. Transfer Prior to Degree or General Education Program Completion

Students enrolled in associate degree programs should be encouraged to complete their degrees. Students pursuing AA degrees should be encouraged to complete a 42 semester-hour general education block of credit that meets statewide general education policy prior to transfer. Students who transfer before completing either an AA degree or a 42 semester-hour general education block of credit will have their transcripts evaluated by receiving institutions. Both receiving and sending institutions are encouraged to maintain articulation agreements to assist students and institutions in evaluating student academic accomplishments consistently and accurately.

3. Role of Sending Institutions

Sending institutions have the responsibility to certify and document on student transcripts that students have completed associate degree programs. Similarly, sending institutions have the responsibility to certify and document on student transcripts that students have completed a 42 semester-hour general education block of credit that is consistent with statewide general education policy and is considered equivalent for the purposes of transfer with other institutions' 42 semester-hour general education blocks.

Further, sending institutions should encourage students to complete coherent programs of study. They should collaborate with receiving institutions to develop articulation agreements and share information with each other and with students that assist students in transferring from one institution to the other without loss of credit.

4. Role of Receiving Institutions

Receiving institutions have the responsibility to attempt to match students' academic accomplishments with the requirements of the degrees to which the students aspire.

Specifically, receiving institutions are obligated to accept completion of a 42 semester-hour general education block of credit at any public institution or any independent or proprietary signatory institution as equivalent to, and as completing, the receiving institution's 42 semester-hour general education block of credit. Receiving institutions may only impose additional general education or other institutional requirements when these are also required of native students.

Further, receiving institutions should encourage students to complete coherent programs of study. They should collaborate with sending institutions to develop articulation agreements and share information, with each other and with students, that assists students in transferring from one institution to the other without loss of credit.

*(**Clarifying Comment:** Once a student completes an associate degree and completes the 42-hour general education core, all lower division requirements for general education is deemed to be complete. Any additional lower division requirements must be considered distinct degree requirements or prerequisites for upper division courses in the major. These lower division courses should not add to the total number of hours required for graduation unless stipulated differently for the purposes of program accreditation.)*

C. TRANSFER OF LOWER-DIVISION CREDIT HOURS BEYOND THE ASSOCIATE DEGREE REQUIREMENTS

The number of hours required for baccalaureate-level graduation of transfer students that meet the guidelines in this document should be equivalent to the number of hours required of native students (assuming all lower-division prerequisites for courses in the student's baccalaureate program have been met). Transfer students must meet the minimum residency, upper-division course, and graduation requirements established by the baccalaureate institution. Students with AA degrees will typically transfer sixty-four (64) credit hours, which is approximately the first two years of the baccalaureate educational experience. Lower-division credit hours completed beyond the AA degree will be evaluated for transfer on a course-by-course basis. Within the constraints of these minimal requirements, and assuming program-to-program articulation for these additional hours, AA, AS, and AAS transfer students may choose to complete additional lower-division requirements at two-year institutions to meet the lower-division prerequisites and/or

lower-division graduation requirements established by the baccalaureate institution.

(*Clarifying Comment: Students may transfer more than 64 credit hours for lower division courses from either Missouri associate degree-granting or baccalaureate degree-granting institutions. Any additional lower division course credits above 64 credit hours will be accepted in transfer if the credits are applicable to the baccalaureate degree or are prerequisites for an upper division course in the major.*)

D. OTHER TRANSFER-RELATED MATTERS

1. Junior-Level Status

While students completing associate degree programs have traditionally been accepted at the junior level by receiving institutions, it is important to note that baccalaureate programs vary in the number of hours required for graduation. In addition, all students are subject to prerequisite-course requirements, residency and upper-division credit-hour requirements, a minimum grade point average--both cumulative and in the major--and, in some instances, upper-division general education requirements. At some baccalaureate institutions, this collection of requirements varies by college and/or major. Consequently, while junior level has meaning in the context of having completed the first two years of higher education, it may be misleading to assume that completion of a baccalaureate degree can be accomplished in four years. Transfer students who have completed the AA degree from a signatory institution that is in compliance with this policy shall be received as having completed the statewide 42 semester-hour general education block of credit.

2. Curriculum Changes

All parties agree to be consultative when proposing curriculum changes that are likely to impact existing transfer and articulation agreements. The integrity of articulated degree programs requires agreements about process and procedure on implementing changes to existing agreements. Changes affecting either the statewide AA transfer degree or a program-to-program institutionally articulated AS or AAS degree should be made after appropriate consultation and with enough lead - time to provide an orderly and timely change in the nature of these articulated agreements. In instances of concern by any institution involved in this statewide credit transfer policy or in program-to-program institutionally articulated degrees, the affected institution

may initiate an appeal, as provided in the Appeals Process section of this policy.

3. Admission of Transfer Students

a. Institutional Admission

The core of any orderly transfer process is the mutual acceptance of the nature and purpose of the statewide transfer AA degree and the program-by-program institutionally articulated AS and AAS degrees. If any institution of higher education finds it necessary to be selective in its admission of qualified transfer students, its criteria for admission of transfer students must be consistent with its mission and shall be stated in its official publications. Such publications shall be on file with the CBHE. Students transferring with the AA statewide transfer degree or the AS or AAS program-by-program institutionally articulated degree, must meet the published admission requirements of the receiving institution for transfer study by students with these degrees. Transfer of the AA degree shall be predicated upon the following minimum statewide expectations:

- Completion of a minimum of 60 semester hours of college-level work oriented toward a baccalaureate degree

- Completion of an institutionally approved general education program, as defined in Section A of this document

- Achievement of a cumulative grade point average of not less than 2.0 (A=4.0, B=3.0, C=2.0, D=1.0, F=0.0), provided that only the final grade received in courses repeated by the student shall be used in computing this average

Students who earn an AA degree meeting these minimum statewide criteria, as validated by a regionally accredited associate degree-granting institution, are eligible for admission to a baccalaureate degree-granting institution (subject to the provisions outlined in this section), but not necessarily to a particular baccalaureate degree program major. Prospective transfer students should consult the catalogs of receiving institutions to determine specialized programmatic admission requirements, if any, for particular degree programs. The enrollment status of transfer students with the AS or AAS program-by-program institutionally articulated degree shall be defined as part of each transfer agreement.

b. Program Admission

Transfer students will be admitted to programs based on the same criteria as those established for the native students of the receiving institution. Admission to a specific baccalaureate degree program may result in a different computation of the grade point average (GPA). The number of hours and junior-level standing will be evaluated in accordance with the Transfer of Lower-Division Credit Hours Beyond the Associate Degree Requirements section.

4. Catalog

Transfer students shall be subject to the same regulations regarding applicability of catalog requirements as native students. This implies that transfer students may choose the operative catalog of the receiving institution at point of initial enrollment at the sending institution, assuming they meet all the conditions required of native students, e.g., continuous enrollment. Conditions that restrict a student's options, e.g., non-continuous enrollment, changes of major, or admission to program, should be invoked only if they are also applied to native students.

5. Change in Major

When students initiate changes in their stated major or degree objectives, those students assume full responsibility for meeting the specified new degree and/or major requirements. In particular, students who have earned an AS or AAS program-by-program institutionally articulated degree and who change majors or who change the institution they plan to attend should anticipate potentially significant changes in baccalaureate degree program-completion requirements. All students, regardless of the associate degree in which they are enrolled, who plan to transfer into a different field of study have the responsibility to seek pre-transfer counsel from the sending or receiving institution regarding required courses in the program which they plan to pursue and the evaluation of credits already earned as the credits apply to the particular baccalaureate program to be pursued.

6. Transfer of Grades

The academic record at a given institution will include all courses attempted. Grades of "D" or better earned in college-level work at institutions of higher education to which the transfer articulation agreement applies shall be transferred as full credit to another college or university; however, the

receiving institution will treat all grades on courses attempted on the same basis as that of the native student. For example, if a native student is required to repeat a "D" grade in a specified course, a transfer student will also be required to repeat the "D" grade in the same course.

7. Credit by Examination, Dual Credit, Experiential Learning, and Pass/Fail Credit

Pass/fail credit will be transferred and treated by the receiving institution in the same way pass/fail credit is treated for native students. Advanced placement, credit by examination, dual credit, and credit for experiential learning will be transcripted and clearly defined. Course equivalency for credit by examination may be listed as desired. The receiving institution shall transfer and treat credit earned through advanced placement, credit by examination, dual credit, and credit for experiential learning in the same manner as it would for native students, except that the integrity of the associate degree or the 42-hour general education block will not be invalidated.

The policies for awarding credit by examination and nontraditional learning vary from one institution to another. Each institution will publish information about its policies for awarding credit by nontraditional modes, including the names of tests that are used to assess credit, cut-off scores, deadline dates for submission of scores to the receiving institution, and restrictions on the time interval permitted to receive current credit for a course taken some years previously.

8. State Certification or Statutory Requirements

In the process of earning a degree, students must complete requirements for that degree and, sometimes, as in the case of teacher education, dental hygiene, allied health, or engineering programs, they must also meet state certification requirements. If certification or statutory requirements change and additional requirements become effective during the time a student is enrolled in a program, the new requirements take precedence over previously existing degree or certification standards.

IV. PROCEDURES FOR REVIEW OF CREDIT TRANSFER POLICY AND COMPLIANCE

A. COMMITTEE ON TRANSFER AND ARTICULATION

The CBHE has established a Committee on Transfer and Articulation, consisting of eight members, with responsibility to oversee the implementation of the guidelines as set forth in this policy statement.

The Committee on Transfer and Articulation will be composed of eight members appointed by the Commissioner of Higher Education, one of which shall serve as chairperson of the committee. Members shall consist of three representatives from public two-year colleges; three representatives from the public four-year colleges and universities, one of which must be from the University of Missouri and one of which must be from the other public four-year institutions; one representative from independent two-year colleges or two-year proprietary institutions; and one representative from independent four-year colleges and universities. In addition, the Commissioner, or a designated representative, will sit as an *ex-officio* voting member of the committee. The Committee on Transfer and Articulation is encouraged to seek the counsel of faculty and other institutional representatives in the performance of its functions. Those functions shall include the following:

Conducting a bi-annual review of the provisions of the college transfer guidelines and recommending such revisions as are needed to promote the success and general well-being of the transfer student;

Reviewing and making recommendations concerning transfer issues brought before it by institutions;

Recommending modifications of institutional policies and procedures that, in the committee's judgment, would enhance and facilitate the transfer of students;

Studying nontraditional credits and developing transfer guidelines for them;

Systematically soliciting suggestions and data from administrators, faculty, and students concerning matters of transfer;

Developing a job description for an articulation officer's position that defines duties and is an acknowledgement of common expectations among the institutions;

Maintaining an annually updated list of institutional articulation officers who have been appointed by the president or CEO of each institution;

Reviewing and making recommendations for change concerning the CBHE brochure, "Transfer Guidelines: Students' Rights and Responsibilities";

Monitoring both the sending and receiving institutions to determine whether they are informing transfer students of their rights and responsibilities;

Reviewing and recommending resolution of individual cases of appeal from institutions and/or students per Section B.

Preparing and submitting to the CBHE, for such action and distribution as the CBHE deems appropriate, an annual report of committee meetings, as well as actions and recommendations, including a report of student and institutional appeals cases. The chairperson must convene the committee at least once a year; and

Establishing committee rules of procedure and meeting, on the call of the chairperson, as is necessary to perform its functions.

B. APPEALS PROCESS

Each receiving institution of higher education shall have an internal process of appeal available to transfer students for purposes of challenging institutional decisions on the acceptance of the students' credits toward graduation at the receiving institution. Since receiving institutions may vary in the nature of the appeals procedures, all receiving institutions must publish in their respective catalogs or student handbooks a statement of each student's right to appeal and the procedures that should be followed. Furthermore, all incoming transfer students should receive a copy of the institution's most recent statement on rights of appeal and procedures. Responses to a student's appeal should proceed in a timely manner.

Each transfer student who believes that there has been unfair treatment must give the receiving institution an opportunity to resolve potential conflicts through the formal internal appeals procedures of the campus. The student, however, is also encouraged to involve, at any point, the articulation officer of the sending institution in reviewing the situation and giving advice on the merits of an appeal. Upon completion of at least one level of appeal at the receiving institution, the Chief Academic Officer (CAO) or designated officer of the sending institution may choose to initiate an appeal to the CAO or designated officer of the receiving institution on behalf of the student.

Appeals involving institutions as advocates for students shall be resolved in a timely manner. Written decisions should normally be issued within fifteen (15) calendar days of receipt of a petition for an institution-to-institution appeal. In cases of urgency, the presidents/chancellors of both institutions will exercise good faith attempts to resolve the issue within five (5) working days. If the issue is not resolved to the satisfaction of all parties, a further appeal may be made to the CBHE Committee on Transfer and Articulation. When either a receiving or sending institution believes that a transfer practice, procedure, requirement, or policy is not in accord with the principles or spirit of the CBHE Transfer and Articulation Guide, that institution may initiate an appeal in writing to the receiving institution's articulation officer, with a copy to the CEO. If the appeal is not resolved to the satisfaction of the appealing institution, it may then appeal to the CBHE Committee on Transfer and Articulation. Appeal to the CBHE Committee on Transfer and Articulation shall be by the following procedures.

Appeal(s) to the Committee on Transfer and Articulation may be initiated by the affected student or institution only after all other remedies have been exhausted without resolution of the issue at the sending or the receiving institution. The appeals process is initiated when the CBHE Committee on Transfer and Articulation receives a written appeal.

The committee chairperson shall promptly notify the CAOs of the relevant institutions of higher education of the appeal and invite the institution(s) to submit documentation for the decision being appealed. Documentation shall normally be submitted by the relevant institutions within fifteen (15) calendar days of notification by the committee.

The chairperson of the committee shall convene the Committee on Transfer and Articulation within thirty (30) calendar days, if possible, but in no event later than ninety (90) calendar days, of the receipt of an appeal for the purpose of considering the information presented by the student and the institutions. All parties involved in the appeal shall be notified of the committee's meeting time and location. All parties involved in the appeal will have the opportunity to make an oral presentation to the appeals committee if any desires to do so.

In the event an appeal is filed involving a campus represented on the Committee on Transfer and Articulation, the Commissioner shall, for the purpose of considering the appeal, appoint an interim member of the committee from the same sector.

The committee's consideration of the appeal shall include, but shall not be limited to, the compliance of the institution(s) with the guidelines set forth in this policy, the student's compliance with the guidelines set forth in this policy, and the student's rights and responsibilities statement.

The committee chairperson shall inform the CAOs of the relevant institutions and the student, when involved, of the committee's determination and shall recommend that the CAO of the institution(s) implement the committee's recommendation.

The CAOs of the institutions shall inform the chairperson of the appeals committee within thirty (30) calendar days of the action taken in regard to the committee's recommendation.

The committee's recommendation and the action taken by the institutions shall be reported to the CBHE by the Commissioner of Higher Education.

2. Principles of Good Practice

Adopted by the board June 11, 1998

I. All policies and procedures relating to transfer and articulation should be easily understood, readily available, and widely distributed among students, faculty, and staff.

- The CBHE should adopt and maintain a clear and concise Credit Transfer Policy in consultation with institutional presidents and chancellors, who shall assure the institution's commitment to the implementation of the written accords.
- A well-functioning system of transfer and articulation depends upon meaningful collaboration as educational partners between sending and receiving institutions in the development of agreements. This collaboration should include the exchange of pertinent information, such as catalogs, course syllabi, course outlines, learning outcomes, and/or curriculum guides in an open and timely fashion.
- Transfer and articulation agreements may apply to whole programs or to a course-by-course arrangement. To the extent possible, institutions are encouraged to address transfer, articulation, and course-equivalency issues, as well as program or degree requirements, on the basis of learning outcomes or competencies.
- Transfer and articulation agreements between institutions will bear institutional identification and will be signed and dated by the institutional/system chief executive officer. Such agreements

shall specify any provisions relating to time limits on the duration of the agreement or arrangements for periodic review.

- Articulation agreements must include information on how to obtain copies of the agreement. Institutions are responsible to provide additional copies of articulation agreements, either through hard copy or via electronic distribution.

II. The transfer process should be efficient, predictable, and sensitive to student needs.

Interpretation and application of transfer and articulation agreements should emphasize the importance of a student-centered approach by all institutions.

Each institution's articulation officer has the responsibility to facilitate all correspondence concerning transfer and articulation. All correspondence should normally be acknowledged within five (5) working days after receipt of a request.

On occasion, good-faith efforts require institutions to make prompt decisions so students can continue to pursue their educational objectives.

Institutions should develop agreements with any institution from which it receives a substantial number of students in transfer. The institution may first wish to seek accords with those institutions sending the largest numbers of transfer students and then to work with those institutions generating less transfer activity.

As the amount of time for degree completion varies based upon personal circumstances, student aspirations, and academic requirements, transfer articulation agreements should specify if there are any time limits for degree completion for students after initial entry into the program.

Once developed and agreed to by institutions, existing transfer and articulation agreements are binding on all parties until they are formally modified through an appropriate, consultative process.

III. The transfer process should treat both native and transfer students equitably.

The catalog of record of each institution forms the basis of any transfer and articulation agreement. Transfer students shall be subject to the same regulations regarding applicability of catalog requirements as are native students and shall be expected to complete comparable requirements consistent with the CBHE's Credit Transfer policies.

Every student, either native or transfer, must, upon entering an institution, meet all institutional requirements to continue as a "student in good standing." An institution's requirements to maintain the status of "student in good standing" may vary in such things as continuous enrollment, change of major, or admission to programs.

In the event that an articulation agreement is modified during a student's enrollment period and that student has met appropriate enrollment and performance expectations, graduation should be permitted under the program articulation agreement designated by the student.

IV. The faculty role in developing and maintaining curricula must be respected; revisions to existing articulation agreements should occur in a timely fashion, using consultative and collegial processes.

- In the process of developing transfer and articulation agreements, faculty within the respective disciplines must be involved in consultative and collegial processes as early as possible. Furthermore, when establishing new agreements and/or revising existing agreements, institutions must exchange information essential for informed timely decision-making by the faculty from both sending and receiving institutions.
- Colleges and universities are seeking constantly to improve the curriculum to benefit the student; therefore, orderly review, revision, and renewal in consultation with partner institutions are to be expected with such a "learning" process.
- Early disclosure of anticipated course or program changes which could lead to revisions of transfer and articulation agreements is essential in order to facilitate consultation among all parties affected by the anticipated changes. Disclosure of possible changes must be in written form and must be addressed to the articulation officer of all sending or receiving institutions that may be affected by the anticipated change.

V. Transfer and articulation agreements should reinforce the respective missions of associate and baccalaureate institutions.

- Sending and receiving institutions will maintain a written rationale for the designation of courses as upper- and/or lower-division and will provide detailed explanations when requested.
- Each institution participating in the CBHE's transfer and articulation agreement will clearly publicize and widely disseminate its course-numbering system. Distinctive numbering ranges should be identified for remedial courses and freshman-, sophomore-, junior-, and senior-level courses. A high level of commonality in course-numbering procedures will be sought to facilitate the interpretation of transcripts.

VI. The transfer process should provide for the resolution of any disagreements regarding the application or interpretation of articulation agreements or practices as expeditiously as possible, and the resolution should avoid placing an undue burden on students.

- Institutions should make good-faith efforts to resolve disagreements, when possible, at the department or discipline level.
- Issues un-resolvable at the institutional level that are related to the renewal or revision of existing articulation agreements as defined in the CBHE Credit Transfer Policy or to the application of these agreements should follow the Coordinating Board's prescribed appeals process.
- Either sending or receiving institutions may request a review at the institutional level of an institution's transfer policy or, if that approach is not successful, may initiate a state-level appeal for review by the CBHE Committee on Transfer and Articulation. Such reviews may be undertaken on behalf of a particular student or may be initiated directly by an institution without the involvement of a student, as provided by the CBHE's prescribed appeals process.

Appendix B

Data Elements

	FIELD		**DATA ELEMENTS**
	Name	**Format**	**Description**
A	recnum	Numeric	Record number.
B	other recnum	Numeric	MSU and OTC recnum
C	ccfirsterm	Character	1st term enrolled at community college
D	unfirsterm	Character	First term enrolled at UMSL/MSU.
E	enrcat	Numeric	Original enrollment category. (Transfer=1, University freshman=2)
F	undegterm	Character	UMSL/MSU graduation date.
G	total ntterms	Numeric	Total number of terms transferred after high school before UMSL/MSU.
H	total F-T ntterms	Numeric	Number of full-time terms transferred after high school before UMSL/MSU.
I	total P-T ntterms	Numeric	Number of part time terms transferred after high school before UMSL/MSU.
J	tftterms	Numeric	Number of full-time terms (F/W) transferred after high school before UMSL/MSU. (12 credit hours in the fall and winter are considered full-time)
K	tptterms	Numeric	Number of part-time terms (F/W) transferred after high school before UMSL/MSU.
L	thrst	Numeric	Attempted hours transferred after high school before UMSL/MSU.
M	nsfterms	Numeric	Number of full-time summer terms transferred after high school before UMSL/MSU. (6 hours in the summer is considered full-time)
N	nspterms	Numeric	Number of part-time summer terms transferred after high school before UMSL/MSU.
O	total nttermsa	Numeric	Total number of terms transferred after enrolling at UMSL/MSU.
P	total F-T nttermsa	Numeric	Number of full-time terms transferred after enrolling at UMSL/MSU.
Q	total P-Tnttermsa	Numeric	Number of part-time terms transferred after enrolling at UMSL/MSU.
R	tftttermsa	Numeric	Number of full-time terms (F/W) transferred after enrolling at UMSL/MSU.
S	tptttermsa	Numeric	Number of part-time terms (F/W) transferred after enrolling at UMSL/MSU.
T	thrsta	Numeric	Attempted hours transferred after enrolling at UMSL/MSU.
U	nsftermsa	Numeric	Number of full-time summer terms transferred after enrolling at UMSL/MSU.
V	nsptermsa	Numeric	Number of part-time summer terms transferred after enrolling at UMSL/MSU.
W	total nuterms	Numeric	Total number of terms taken at UMSL/MSU.
X	total F-Tnuterms	Numeric	Number of full-time terms taken at UMSL/MSU.
Y	total P-Tnuterms	Numeric	Number of part time terms taken at UMSL/MSU.
Z	uftterms	Numeric	Number of full-time terms (F/W) taken at UMSL/MSU.

AA	uptterms	Numeric	Number of part-time terms (F/W) taken at UMSL/MSU.
AB	uhrst	Numeric	Number of hours attempted at UMSL/MSU.
AC	usfterms	Numeric	Number of full-time summer terms taken at UMSL/MSU.
AD	uspterms	Numeric	Number of part-time summer terms taken at UMSL/MSU.
AE	prev	Numeric	Total number of institutions attended prior to enrolling at UMSL/MSU.
AF	mo2	Numeric	Number of Missouri two-year institutions attended prior to UMSL/MSU.
AG	mo4	Numeric	Number of Missouri four-year institutions attended prior to UMSL/MSU.
AH	p2	Numeric	Number of other two-year institutions attended prior to UMSL/MSU.
AI	p4	Numeric	Number of other four-year institutions attended prior to UMSL/MSU.
AJ	po	Numeric	Number of other institutions attended prior to UMSL/MSU.
AK	42hrblock	Numeric	Completed 42-hr block gened requirements at MO 2-yr institution.
AL	aadeg	Numeric	Awarded an AA degree from a Missouri two-year institution. (0=No, 1=Yes)
AM	native	Numeric	Awarded a four-year degree from UMSL/MSU (0=No, 1=Yes)
AN	degree_studs	Numeric	42-hrblock, AA, and native degree students
AO	gender	Numeric	Male=0 Female=1
AP	ethnicity	Numeric	Caucasin=1, African American=2, Asian-3, Hispanic=4, Other=5
AQ	univeratt	Numeric	University attended (UMSL=0 MSU=1)
AR	cccollatt	Numeric	Community College attended (See college codes below)
AS	tothrs	Numeric	Total hours to 4-yr degree = thrst +thrsta + uhrst
AT	totterms	Numeric	Total terms = total ntterms + total nuterms (before and taken at UMSL/MSU)
AU	totftterms	Numeric	# of total F-T terms = terms transferred before UMSL/MSU and terms taken at UMSL/MSU
AV	totptterms	Numeric	# of total P-T terns = terms transferred before UMSL/MSU and taken at UMSL/MSU
AW	major	Character	Name of major acquired
AX	reqmajorhrs	Numeric	Number of credit hours required for acquired major
AY	ccfirstermnum	Numeric	1st term at community college
AZ	unfirstermnum	Numeric	1st term at UMSL/MSU
BA	undegtermnum	Numeric	UMSL/MSU graduation date.
			COMMUNITY COLLEGE CODES
			1= Crowder
			2= East Central
			3= Jefferson
			4= Metropolitan (Blue River, Business & Technology, Longview, Maple Woods, Penn Valley)
			5= Mineral Area
			6= Moberly
			7= North Central
			8= Ozarks Technical Community College

		9= St Louis (Florissant Valley, Forest Park, Meramec, Wildwood)
		10 = St Charles
		11= State Fair
		12= Three Rivers
		13= 4 year
		14= Out-of-state
		15=None
		TERM CODES
		ccfirstermnum
		1=WS2002
		2=FS2002
		3=WS2003
		4=FS2003
		5-WS2004
		6=FS2004
		0=N/A
		unfirstermnum
		1=FS2002
		2=WS2003
		3-SS2003
		4=FS2003
		5=WS2004
		6=SS2004
		7=FS2004
		8=WS2005
		9=SS2005
		10=FS2005
		11=WS2006
		12=SS2006
		13-FS2006
		undegtermnum
		1=WS2006
		2=SS2006
		3=FS2006
		4=WS2007
		5=SS2007
		6=FS2007
		7=WS2008
		8=SS2008
		9=FS2008