

COMMUNITY COLLEGE STUDENT RETENTION: AN EXAMINATION OF
STUDENT PRE-ENTRY ATTRIBUTES, ACADEMIC EXPERIENCES, AND SOCIAL
EXPERIENCES AND THE RELATIONSHIP TO FIRST-YEAR PERSISTENCE

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by:
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The undersigned, appointed by the dean of the Graduate School, have examined the dissertation entitled

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Presented by Cynthia Adamson, a candidate for the degree of doctor of education, and hereby certify that, in their opinion, it is worthy of acceptance.

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CHAPTER ONE
INTRODUCTION TO DISSERTATION

Introduction to the Background of the Study

In 2009, President Barack Obama established the need for more college graduates as a national policy goal during an address to a joint session of Congress when he stated “by 2020, America will once again have the highest proportion of college graduates in the world” (White House, 2009, para. 66). The President and many other political leaders were concerned about 2008 data indicating the United States’ low “rank of sixth among developed nations in the percentage of 25- to 64-year-old adults with an associate degree or higher” (Handel, 2013, p. 5). Since that time, the United States’ ranking among other countries has continued to decline. In fact, several other countries are significantly increasing educational attainment rates while the U.S. has seen only a slight increase (Organization for Economic Co-operation and Development [OECD], 2014). President Obama’s national goal to increase the number of college graduates has resulted in unprecedented numbers of students coming to college (Kuh, Kinzie, Schuh, & Whitt, 2010). Despite the increase in access to college, “we have not yet been successful in translating the opportunity access provides into college completion” (Tinto, 2012, p. 4).

Due to their open-admissions policies, community colleges provide access to college for many students from diverse backgrounds and low-income households who need a college credential or degree to gain employment (American Association of Community Colleges [AACC], 2014). “In comparison to a student attending a 4-year institution, the typical community college student is likely to be female, less academically prepared, less economically secure, and a member of a minority group” (Crews & Aragon, 2007, p. 638). Unfortunately, gaps in educational attainment based on race and ethnicity as well as income level continue. “While 82.4 percent of potential students in

the top third of the income scale enroll in college, only 53.5 percent of those in the bottom third do so” (Lumina Foundation for Education, 2014, p. 3).

In addition, many students who attend community colleges are not academically prepared to be successful in college. As many as 60-75% of incoming freshmen at most community colleges are referred into at least one developmental course (Zeidenberg, Cho, & Jenkins, 2010). Research indicates that students who are academically underprepared for college-level work are at risk of not completing a college degree (Bailey & Alfonso, 2005; Kuh et al., 2010). Community colleges have addressed the college-readiness issue with extensive developmental education systems in reading, English, and mathematics, which are designed to prepare students for college level coursework. Nevertheless, Bailey and Cho (2010) reviewed remedial student data from community colleges participating in the Achieving the Dream consortium and found that "less than one quarter of students who enroll in developmental education graduate with a degree or certificate” (p. 1).

Although community colleges face challenges of college-readiness and serving students from lower socio-economic backgrounds, they must find ways to help more students attain their educational goals. In 2011, the graduation rate for Missouri community colleges was 21%; in contrast, the graduation rate for universities was 62% (Missouri Department of Higher Education, 2014). According to Complete College America (2011), “for too many students the path through college ends with no degree – and often lots of debt” (p. 1). Community colleges have invested significant time and resources into the development and implementation of retention efforts, yet very few

have been able to improve the retention and graduation rates of their students (AACC, 2014; Tinto, 2012).

Statement of the Problem

Open access to community colleges allows students from all education levels and backgrounds to attend college. Increasing access to college, specifically to those who are low-income and first-generation students, has been the focus across our nation (AACC, 2014) as well as at Crowder College (CC). Permission to use the Crowder College name is included in the final Appendix A. Unfortunately, access does not always translate to student success and completion of a college degree. Many institutions have provided access to education for students of diverse backgrounds, but have not been successful in retaining and graduating these students. Tinto (2012) described, “as access has more than doubled from nearly 9 million students in 1980 to almost 20 million in 2011, overall college completion rates have increased only slightly, if at all” (p. 2).

Clearly, there is a need to study ways to improve student success and completion at the community college level. Many of the fundamental studies of retention have been based on the four-year university setting, ignoring the unique population of community college students. Bailey and Alfonso’s (2005) analysis of effective institutional practices for improving retention and completion indicated a need for more research specific to community colleges. “The majority of retention research published in mainstream education journals is written by university-based academics, and these researchers have so far largely overlooked the community college sector” (Bailey & Alfonso, 2005, p. 26).

CC is an example of an institution that has increased student access but has not been successful at increasing retention. From fall 2009 to fall 2013, student enrollment

increased 23% from 4,495 total students to 5,845 total students. During this same five year time period, CC's fall-to-fall first year retention rate has remained steady ranging from 42%-44%, despite the development and implementation of retention programs. Of the 5,845 students enrolled for the fall 2013, 3,377 students did not re-enroll at CC for the next fall semester.

Examining ways to increase student retention at a community college is critically important for many reasons. Funding in the state of Missouri is shifting toward more accountability for student outcomes, such as course completion and graduation (Complete College America, 2011). Even though only 7% of the total revenue at CC for the 2014-2015 budget year came from the state, this money is still relied upon to help support the institution. In comparison, tuition comprises 30% of CC's revenue. Loss of tuition revenue from over 3,000 students each year is extremely costly to the college.

Even more important, retaining students to graduation is critical for the economic stability of the region served by CC. "By 2018, nearly two-thirds of all American jobs will require a postsecondary certificate or degree" (AACC, 2014, p. 4). Community colleges are in an excellent position to help rebuild the U.S. workforce by providing education for individuals from diverse backgrounds and income levels, but they need to increase the percentage of students who finish their degree. Existing research has failed to adequately explore how the fundamental theories of student success and retention apply to the community college setting (Astin 1993; Pascarella & Terenzini, 2005; Tinto 1993). Additional research specific to the community college setting is needed to help practitioners discover ways to improve retention and graduation rates of students. Increased graduation rates at community colleges will help provide a more educated and

highly skilled workforce, and allow for future economic growth in the region served by the community college.

Purpose of the Study

The purpose of this study is to increase understanding of the extent that both the attributes of incoming students, and their subsequent academic and social interactions at the institution are related to community college student retention (Tinto, 1993). This study proposes to examine a broad range and combination of factors that can affect student success at an institution. Additionally, this study seeks to learn if one attribute or student experience diminishes or enhances the effects of another student experience or attribute. What are the ideal combinations that lead to the highest retention of students and what are those combinations of factors that lead to the highest risk for students to drop out of college?

The focus for CC over the last several years has been to implement specific retention programs that research indicates help to retain students. Some of the larger retention efforts that have been implemented include a freshman college orientation course, tutoring programs, and developmental education sequences in reading, English, and math. CC has not conducted an evaluation of the impact of these interventions on student success and retention. An examination of factors that differentiate retention between student groups centered on the unique student sample at CC can more effectively identify which of these programs have the greatest impact on student success.

Research Questions

The research questions guiding this study are:

1. To what extent are student pre-entry attributes related to differences in student retention at CC?
2. To what extent are student academic experiences at CC related to differences in student retention?
3. To what extent are student social experiences at CC related to differences in student retention?

Conceptual Framework

The conceptual framework for this study is Tinto's (1993) theory of student individual departure. The primary focus of Tinto's (1993) theory is that a student's academic and social integration within an institution increases the likelihood the student will persist. The theory acknowledges that students enter higher education with varying pre-entry attributes such as family background, skills and abilities, and prior schooling. Students also possess varying levels of commitment to an institution and external commitments such as work and family. The interaction of these incoming characteristics, and the academic and social experiences the student has with an institution are factors that determine whether a student will persist or not.

Tinto's (1993) longitudinal model depicts a process of interactions between students with varying pre-entry attributes that include financial resources, prior educational experiences, and family background. Research has suggested that students with college educated parents who are well-prepared and academically talented are more likely to succeed in college (Kuh et al., 2010). Community colleges are open-admission

institutions and cannot selectively admit those students with characteristics that more often lead to student success, nor is that the mission of community colleges.

Nevertheless, community colleges can enact policies and programs that enhance the positive academic and social experiences of students once they arrive at the institution.

The academic and social systems of a college are also important components of Astin's (1999) input-environment-outcome (I-E-O) model. Astin's model proposed the academic and social environment of an institution provides opportunities for students to become involved in their learning by exposing them to new ideas, people, and experiences. Pascarella and Terenzini (2005) also acknowledged the role of the institutional environment on student outcomes. Their general causal model indicated that changes in students' learning are influenced by five sets of variables that include (a) structural/organizational characteristics of an institution; (b) student background/precollege traits; (c) interactions with agents of socialization, i.e., faculty and peers; (d) institutional environment; and (e) quality of student effort. These models all recognize the impact of institutional policies, programs, and structures on student success.

Both Tinto (1993) and Astin (1999) indicated that students possess certain characteristics at the time of initial entry to higher education that can influence whether they persist in college. Astin (1999) proposed that a student's input characteristics affect their college outcomes or success. For example, a student's grade point average in college may be affected by their ACT entrance scores or high school grade point average. Pre-entry attributes outlined by Tinto (1993) include (a) family background (i.e., social status, parental education level, and size of the community), (b) skills and abilities (i.e.,

intellectual, financial resources, motivations), and (c) prior schooling (i.e., high school grade point average). Soria and Stebleton (2012) found that even after controlling for additional factors, students with the pre-entry attribute of being a first-generation college student had lower retention rates than those of their non-first-generation peers. Another pre-entry student characteristic that has been found to affect retention is whether a student needs developmental coursework. Students who are not college-ready are more likely to fail to succeed in one or more general education courses during their first year of college which is closely associated with failure to continue in college (Conley, 2007).

The academic experiences students have at an institution also play a role in whether they stay at the institution (Astin 1999; Pascarella & Terenzini, 2005; Tinto 1993). Student engagement in the academic life of the college is viewed by Tinto (1993, 1997, 2012) as critically important to the retention of students because the more students learn the more likely they are to persist. To increase students' academic integration into the institution, many colleges and universities have implemented freshman orientation courses (Kuh et al., 2010; Pascarella & Terenzini, 2005). Another academic experience that has received much attention at the community college level is developmental education. Many community colleges have developed developmental education programs in reading, English and math, designed to prepare students testing below college level for college-level coursework. Studies examining student success and retention in developmental education are mixed (Bailey & Alfonso, 2005). Some studies have shown positive impacts on retention (Bremer et al., 2013; Fike & Fike, 2008). In contrast, Noble and Sawyer (2013) found that "as a whole, developmental students

appear less successful overall than non-developmental students in terms of GPA/persistence over time and degree completion” (p. 57).

For community colleges, the impact of social experiences on retention tend to be less than for universities (Bailey & Alfonso, 2005; Pascarella & Terenzini, 2005). Many community college students are working adults with significant family obligations and are less likely to engage in social activities on campus. Instead of participating in campus events or activities offered by the institution, social interactions for community college students are more likely to occur inside the classroom by students assisting each other with academic information (Deil-Amen, 2011). More traditional types of social experiences for community college students are promoted and enhanced within federally funded student support programs that serve low-income and first-generation students such as TRIO and the College Assistance Migrant Program (CAMP) that assists migrant students (Bailey & Alfonso, 2005).

According to Tinto (1993), his theory of student individual student departure “is structured to allow institutional planners to identify those elements of the institutional environment, academic and social, which may interfere with degree completion” (p. 113). He indicated that the theory can be viewed as a longitudinal process of interactions between the student’s incoming attributes and the academic and social systems of the college. Tinto’s (1993) theory in addition to components of Astin’s (1999) input-environment-outcome model and Pascarella and Terenzini’s (2005) model will provide the guidance for this study of student retention in a community college setting.

Design of the Proposed Study

This quantitative, non-experimental study will utilize data collected from the CC institutional database system. The student data will be used to determine if there are differences in retention rates of students based on the defined pre-entry attributes and the students' academic and social experiences at CC. The dependent variable for the study, fall-to-fall retention rates, will be calculated as the percentage of first-time degree seeking students (both full- and part-time) who persisted from fall 2012 to fall 2013 at CC.

The independent variables for the study are based on Tinto's (1993) "longitudinal model of institutional departure" (p. 114) and will include pre-entry attributes of students, and their academic and social institutional experiences at CC. The pre-entry student attributes that will be used for this study include (a) whether the student is a first-generation college student or not, (b) whether the student is considered low-income or not, (c) high school grade point average, (d) ACT Compass® or ACT entrance scores, (e) high school graduate or high school equivalency, and (f) whether the student graduated from a public school, private school, or a home school. The set of academic experience variables that will be used for this study include (a) college orientation course completion and grade, (b) whether the student participated in tutoring services or not, (c) first semester college grade point average, (d) developmental course participation and/or completion, (e) enrollment in gateway courses, and (f) selected major upon entry to college. The set of social experience variables that will be used for this study include whether or not the student (a) lived in the residence halls, (b) was a student ambassador, (c) was a work study student, (d) was a resident assistant, (e) was an athlete, (f)

participated in Student Support Services (TRIO Program), and (g) participated in the CAMP program.

Setting

CC is a small, public, community college that serves a nine county region in southwest Missouri. The CC service region has a mostly rural population with educational attainment rates 10-20% below the state average (Lumina Foundation for Education, 2014). Eighty-four percent of CC's students are first-generation college students; more than 60% are low-income; and approximately 40% are non-traditional, returning students (C. Branscum, personal communication, April 1, 2013).

Students attending CC can pursue two-year associate degrees or certificate programs in a variety of disciplines including business, teacher education, nursing, emergency medical technician, and general studies. Students have the option to take classes at several different campus locations throughout the CC service region or complete an entire associate degree online. There are four branch campuses, all established within the last 15 years. Campus-wide enrollment for fall 2012 at CC was 5,590 students.

Participants

This study will utilize archival data from CC's institutional student database system. Student institutional records provide student demographic information including race, gender, and age as well as individual level information including high school grade point average and incoming assessment test scores. Participants in the study will include all first-time, degree-seeking students who enrolled at CC in the fall of 2012. Both full-time and part-time students will be utilized in the study to examine if there are

differences between the two groups and their retention rates based on the three research questions. The number of first-time, full-time, degree-seeking students in the fall of 2012 was 837. The total student sample for this study will be larger than 837 with the inclusion of part-time students.

Data Analysis

Several analysis strategies will be utilized to answer the research questions. Descriptive statistics will be used to examine both the full-time and part-time student groups in each of the three research question areas (a) pre-entry attributes, (b) academic experiences, and (c) social experiences. For categorical variables, the number and percent of each variable will be provided. For continuous variables, the mean and standard deviation will be provided.

Participant information will include data from each of the three research question areas. Pre-entry student attribute data for this study will include student final cumulative high school grade point average and whether the student graduated from high school or passed a state high school equivalency exam. Incoming students self-identify as a first-generation college student based on the following definition: an individual with parents who did not complete a four-year college degree; or an individual who resided primarily with only one parent and that parent did not have a four-year degree (Crowder College, 2015a). First-time students at CC must have an 18 on the English and reading sections of the ACT, and a 23 on the math portion of the ACT to be considered college ready. If students' ACT scores fall below these cut scores, or if they have never taken the ACT, they are required to take the ACT Compass® to assess and place them in the appropriate

level English, reading, and math courses at CC. The ACT and ACT Compass® scores will be considered pre-entry attributes for the purpose of the study.

Data related to student academic experiences at CC will also be utilized in this study. Students entering CC who do not test at the college level, based on their scores on the ACT Compass®, are required to enroll in and complete developmental coursework before taking the subsequent college-level course. For those participants required to take developmental coursework, data will be provided that indicates the course taken and whether the student received credit for the course during their first semester of enrollment. All first-time freshmen are required to enroll in college orientation their first semester at CC. Data for college orientation will include the letter grade the student received for the course and/or whether the student dropped the course. Both online tutoring and live peer tutoring services are provided to CC students free of charge. Data indicating which participants received tutoring services will also be provided for this study. Students' first semester grade point average and initial academic major selected will also be utilized. Courses considered gateway courses at CC include general psychology, college algebra, U.S. history, English composition, and general biology. Data that includes which participants enrolled in gateway courses their first academic year, the letter grade received for the gateway course(s), or whether the student dropped the course will be provided for the study.

Data indicating which participants lived in the college residence halls or not will be included within the social experience variables for the study. Several Missouri community colleges do not provide residence halls for students, but CC has a small residence hall complex that serves approximately 200 students. Participants who worked

in the residence halls as residence assistants will also be indicated within the data set. Residence assistants receive a college scholarship which covers all or a portion of their living expenses in the residence halls in exchange for the student working in the residence halls part-time. Students receiving a student ambassador scholarship generally work in the admissions office and provide campus tours to prospective students in addition to working at various campus events. The data set will include which participants were student ambassadors for CC. Data indicating whether students participated in two different federal grant programs, Student Support Services (SSS) and the College Assistance Migrant Program (CAMP) will also be provided. SSS is designed to provide support services for students who are low-income, first-generation college students. CAMP provides academic and support services for a student or a parent who is a migrant farm worker. Participants who work on campus within the federal work study program will be identified within the data set. CC has the following athletic teams (a) women's softball, (b) women's basketball, (c) men's baseball, (d) soccer, and (e) cheerleading. Data indicating which participants were athletes will be included. A summary of variables that will be utilized for each of the three research question areas is included in Table 1.

Table 1

Proposed Variables for the Three Research Question Areas

Variable	Data coding
Pre-entry attributes	
First-generation	0 = first-generation; 1 = not first-generation
Low-income	0 = low-income; 1 = not low-income
High school gpa	Continuous variable
Compass or ACT scores	Continuous variable
High school graduate	0 = high school graduate; 1 = high school equivalency
Type of high school	0 = public school; 1 = private school; 2 = homeschool
Academic experiences	
College orientation	0 = failed or dropped course; 1 = C or D; 2 = A or B
Participation in tutoring services	0 = participated; 1 = did not participate
First semester college gpa	Continuous variable
Developmental courses	
Reading	0 = not required to take course; 1 = passed course; 2 = did not pass course
English	0 = not required to take course; 1 = passed course; 2 = did not pass course
Math	0 = not required to take course; 1 = passed course; 2 = did not pass course
Gateway courses	
General psychology	0 = did not take course first semester; 1 = failed or dropped course; 2 = passed course
English composition	0 = did not take course first semester; 1 = failed or dropped course; 2 = passed course
College algebra	0 = did not take course first semester; 1 = failed or dropped course; 2 = passed course
General biology	0 = did not take course first semester; 1 = failed or dropped course; 2 = passed course
U.S. History	0 = did not take course first semester; 1 = failed or dropped course; 2 = passed course
Academic major selected	0 = Associate of arts; 1 = Associate of science; 2 = Associate of applied science; 3-28 = top 25 majors at CC
Social experiences	
Living in residence hall	0 = lived in residence hall; 1 = did not live in residence hall
Student ambassador (SA)	0 = received SA scholarship; 1 = did not receive SA scholarship
Work study	0 = participated in work study program; 1 = did not participate in work study program
Resident assistant (RA)	0 = was a RA; 1 = was not a RA
Athlete	0 = participated on an athletic team; 1 = did not participate on an athletic team
SSS participant	0 = participant in the SSS program; 1 = was not a participant in the SSS program
CAMP participant	0 = participant in the CAMP program; 1 = was not a participant in the CAMP program

To compare mean scores of participants who were retained or not, an independent samples *t*-test could be performed (Field, 2013). For example, an independent samples *t*-test could be used to examine the mean first semester college grade point average of those students who were retained and those students who were not retained to the next academic year. This test would be appropriate for the following continuous variables in the study: (a) high school grade point average, (b) ACT or ACT Compass® entrance scores, and (c) first semester college grade point average. Further regression analysis could also be performed to examine these variables.

According to Field (2013), a chi-square test can be used to measure the association between two categorical variables. For this study, the chi-square test could be used to examine whether there is a significant difference between the categorical variable of retained or not and another categorical variable related to the three research questions. For example, whether students are retained or not and whether they are first-generation college students or not.

Bailey and Alfonso (2005) expressed a need for research to report not only the effects of variables one at a time, but to further the research and examine added components. Based on the results of the initial independent samples *t*-tests and chi-square tests, new variables will be created by combining factors (i.e., first-generation and athlete, first-generation and low-income, or first-generation and participation in tutoring) to explore differences in retention for the new categories. This will provide an opportunity to examine the combinations of factors that can influence student persistence.

Limitations of the Study

This research will have a few important limitations. First, only certain relationships in Tinto's (1993) integration framework will be examined. Outside environmental variables that are outlined in Tinto's (1993) model will not be addressed in this study. This research will focus on variables within the framework that an institution can directly influence through student social and academic experiences at their college. The use of pre-entry attributes does help provide a link between students' past environmental experiences and motivation, and the current environment (Soria & Stebleton, 2012). At the same time, it means that many of the environmental influences including hours of outside employment and family responsibilities will not be considered.

This research will examine one cohort of students and their retention from the freshman to sophomore year at a community college. This will provide a snapshot of many variables that could affect retention at a single point in time instead of measuring the variables for an extended point of time, for example over a five year period. This limits the research as it will not assess how retention may change from a longitudinal perspective.

The generalizability of this study is limited because the research investigates first- to second-year retention of students at a single institution. This research will be conducted at a small, rural, public community college located in the Midwest. While single-institution studies limit the generalizability, it allows for control of "extraneous factors associated with context, geography, and student experiences" (Barnett, 2011, p. 203).

Definition of Key Terms

The terms used in this study are familiar terms utilized within higher education and retention research. Many are commonly understood terms. Nevertheless, to provide clarity in understanding the variables and other key terms used throughout this study the following definitions are provided.

Developmental coursework. Developmental courses typically do not provide students with college-level credit. The courses are designed to prepare students for college-level coursework by improving their content knowledge in specific areas. Developmental courses are prerequisite courses students complete before enrolling in college-level courses. Developmental education programs typically include reading, writing, and mathematics curriculum.

Underprepared student. Students who do not possess the required content knowledge and skills needed to be successful in credit-bearing, college-level courses upon entering college are considered underprepared (Conley, 2007).

First-generation college student. This study will use the first-generation college student definition utilized by CC on the admissions application. Students self-identify as a first-generation student when they apply to the college based on the following definition: a first-generation student is described as an individual with parents who did not complete a four-year college degree; or an individual who resided primarily with only one parent and that parent did not have a four-year degree (Crowder College, 2015a).

Low-income student. An individual whose family's taxable income for the preceding year did not exceed 150 percent of the poverty level amount is considered low-income.

For 2015, a family of four would be considered low-income if their family income was \$36,375 or less (United States Department of Education, 2015).

College orientation. College orientation activities are typically designed for first-time students and provide guidance with the transition to college. At CC, college orientation is a one-credit hour course that is required of all first-time freshman students. The course includes general information on college services provided such as tutoring and financial aid advising, as well as general knowledge needed to navigate the college environment. Students enrolled in college orientation develop a two-year plan of study for their major and select courses for the next semester.

Gateway courses. First-year college students are required to take several entry-level “gateway” courses to prepare them for upper division coursework. Academic administrators typically identify key gateway courses at their institution and monitor student success and completion in these courses. This study will utilize courses identified as gateway courses at CC including general psychology, college algebra, U.S. history, English composition, and general biology.

Significance of the Study

This study is significant to theory and practice for numerous reasons. Current college and university persistence rates are not sufficient to achieve the national goal to increase the number of college graduates in the United States (Complete College America, 2011). This national goal is important because an educated workforce is critical to our nation’s ability to remain competitive (AACC, 2014). Community colleges are a significant part of reaching this agenda due to their open admission status and the numbers of students they serve. This study will provide educational administrators with

research information that can be used to better structure and shape an institution and its policies to promote student success.

Pressures from accrediting bodies, as well as the state and federal government will continue to require increased accountability from community colleges for student outcomes (St. John, Daun-Barnett, & Moronski-Chapman, 2013). In the state of Missouri, any increases in future funding will be tied to student graduation and completion rates making the retention of students extremely critical. As the overall funding for higher education continues to decrease, access for students may be affected (Kuh et al., 2010). In recent years, some colleges and universities have been forced to eliminate programs and staffing which limits the numbers of students they can serve. Improving retention rates is one way to increase tuition revenue for community colleges so they can continue to provide access to the growing numbers of minority students who will need education in the future (AACC, 2014).

The accountability pressures from the state as well as other entities have forced community colleges to become more data-driven (Bailey & Alfonso, 2005). Nevertheless, many small colleges lack the resources to devote to institutional research. Workloads for community college faculty and staff are typically heavy, leaving them without the time necessary to conduct quality research studies. This research can provide useful retention data that CC and educational practitioners could use to better inform decision-making at their institution. The data and findings can also be used to engage faculty and staff in meaningful discussions of student success and retention. As Astin (2005) described, “the real question for educators then becomes: how do we facilitate and enhance student engagement and degree completion?” (p. 16). The findings from

this study can provide helpful answers for community college administrators desiring to answer these complicated retention and degree completion questions for their institutions.

Summary

For years, the United States led the world in the number of college educated adults (Complete College America, 2011). In recent years, several countries have surpassed the United States, and others are making excellent progress toward increasing their college educated population. To meet the emerging workforce needs, it is critically important for colleges and universities to find ways to promote student success and increase graduation rates. This study, which will examine the factors that differentiate retention in community college students, can provide valuable information that can be utilized to align policies and practices to enhance student persistence and graduation.

CHAPTER TWO
PRACTITIONER SETTING FOR THE STUDY

Introduction

Student retention continues to be a major concern for higher education institutions. Colleges and universities expend precious time and resources creating and implementing support programs in an attempt to retain and graduate more students. Unfortunately, graduation rates are still extremely low, particularly for community colleges. “Less than one-third of community college students earn an associate’s degree or certificate from the initial institution over a six-year period” (Tinto, 2012, p. 2). Discovering ways to retain more students to graduation is also important to the success of an institution.

The structure of an institution, the type of leadership that guides an institution, as well as national and state policy regulations can influence how an organization discovers and implements policies that promote student retention. According to Bolman and Gallos (2011), colleges and universities operate as open systems that have “permeable boundaries and are vulnerable to the continual pulls and pushes coming from many different directions and audiences” (p. 52). Coordination between college departments can be challenging due to large spans of control for department chairs and directors. Leaders must find ways to navigate these structural challenges to help their institution focus on improving and strengthening the policies and procedures that promote student success.

Institutions with a data driven culture encourage the collection and use of institutional data to improve decision making (Petrides, 2003). It has become increasingly important for two-year colleges to be able to effectively analyze the data collected to drive their strategic planning process (Bresciani, 2010). Effective use of data

can allow an institution to discover the most effective use of college resources toward improving persistence. Institutions with leadership support of the use of data to inform retention policies and practices are more likely to more effectively plan and forecast for the future (Petrides, 2003).

It is also important for college and university leadership to effectively analyze and implement federal and state policies. Increasing pressures on state budgets and criticism over the efficiency and productivity of higher education suggest a need for new thinking and approaches to institutional policy development (McLendon, Heller, & Young, 2005). Ensuring that legislators within the state and federal government are informed on policy issues that affect student success and retention is the responsibility of practitioners in higher education

A review and analysis of the organizational setting for this retention study will provide background and context for the environment in which the research will be conducted. Increased understanding of the organization and the environment in which it operates allows for more accurate interpretation of the research results. The following sections will explain the setting for the study by describing the history of the organization, an analysis of the organizational leadership, and implications for research in the practitioner setting.

Organizational History

Crowder College (CC) is a small, rural community college serving 5,800 students across a nine county service region in southwest Missouri (Crowder College, 2015b). The college was founded in 1963 by a group of local citizens who believed there was a need for access to higher education in their local community. CC is an open-admission

institution, offering two-year associate degrees as well as certificate programs in a variety of academic disciplines. Fifty eight percent of CC's fall 2015 student population is pursuing an associate of arts transfer degree, and 42% are pursuing a terminal technical degree (Crowder College, 2015c).

CC provides access to education for many students from small rural high schools of less than 100 students and a large number of returning adult students (Crowder College, 2015c). A majority of students attending CC are academically underprepared for college-level coursework. Of the incoming fall 2015 freshman cohort, 81% tested into at least one developmental course and will require some type of intervention to successfully complete their educational goals (Crowder College, 2015c).

Organizational Context

CC is accredited by the Higher Learning Commission (HLC) of the North Central Association of Colleges and Schools (Crowder College, 2015b). CC participates in the HLC Academic Quality Improvement Project (AQIP) accreditation process. Under the AQIP model of accreditation, the college must show evidence of a commitment to continuous improvement including improvement of key measures of organizational success.

CC has an elected Board of Trustees that oversees the institution. The president of the college is the chief executive and administrative officer for the Board of Trustees. There are three vice-presidents who are responsible for academic affairs, student affairs, and finance. According to the CC Employee Handbook, the "belief in the effectiveness of 'power-with' is central to the Crowder College approach to organization and governance" (Crowder College, 2015d, p. 9). As part of this participatory governance,

the institution utilizes both action teams and standing committees to solve problems and make recommendations to administration.

There are two administrative councils that review and approve policy recommendations and changes at CC (Crowder College, 2015d). Instructional council is chaired by the vice-president of academic affairs. This council reviews credit programs and curriculum, and makes recommendations on policy and procedures to the college council. The second administrative council, college council, serves as an advisory cabinet to the college president. This council serves as the principal body for final development of institutional goals and objectives, budget development, review and recommendations of operating procedures, and development of policy recommendations to the Board of Trustees.

Policy Influencers

Over the last several years, national and state higher education policy has shifted from a focus on college access toward student success and college completion (Bragg & Durham, 2012; St. John et al., 2013). Spurred by President Obama's American Graduation Initiative, states have begun to focus on student retention and graduation rates as the measures of success for higher education (White House, 2009). The policy shift to college completion is understandable given the low graduation rates at many higher education institutions. According to the National Community College Benchmark Project (2014), CC ranked in the lower 10th percentile nationally for the percentage of full-time, first-time students who complete a degree in three years, based on their fall 2012 freshman cohort. CC was also in the lowest 10th percentile in next-term persistence

rate and in the lowest 12th percentile for the percentage of part-time, first-time students who complete a degree or transfer in six years.

To more clearly understand the organizational context and the need for CC to increase retention rates, it is important to consider the influencers present within the internal and external environment of CC that impact retention policy (Mintzberg, 1983/2005). The major external influencers of policy at CC include state and federal regulations that govern the institution's funding. Some of the significant policy regulations influencing CC policy include state performance funding models and federal financial aid. Each of these funding mechanisms have requirements based on student success and college completion.

CC also receives local tax revenue from taxpayers in six local school districts from two of the counties it serves. This tax levy percentage was established when the college was founded in 1963 and has never been increased. CC faces external pressure from in-district community members to provide more programs and services to students residing in the in-district tax area than to students residing in other areas of the service region. This presents a challenge for CC because students residing out-of-district desire equitable program offerings and services as they pay a higher tuition rate than in-district students. Providing adequate support services and academic engagement is critical to student retention no matter where a student resides (Tinto, 1993).

Providing educational opportunities to diverse groups of students requires adequate funding to support faculty and programs. Revenue from the local in-district tax area accounted for only seven percent of the total budget for CC in fiscal year 2015. Whereas, federal funding, mostly from federal financial aid makes up 35% of total

institutional funding. Raising the tax levy for in-district residents would require a vote of the taxpayers and would be politically challenging for CC.

Changes in state and federal funding have a significant impact on resources available to CC and the college's ability to provide quality academic and social experiences needed for student success and college completion (St. John et al., 2013). Federal financial aid policies have begun limiting the amount of aid a student can receive based not only on their grades, but on credit hours they complete and their progress toward a degree (Federal Student Aid, 2015). The state of Missouri has enacted a policy that requires any new state funding opportunities for higher education to be based on performance funding measures (Missouri Department of Higher Education, 2015).

State and federal policy regulations not only have a financial impact on higher education, but also influence institutional policies that affect student success and retention (St. John et al., 2013). These institutional policies include those impacting developmental education, student assessment and placement, student financial aid processes, tuition rates, and curriculum and course delivery. The federal policy agenda to improve student success has resulted in CC examining many of their current internal policies. For example, CC developed a new college readiness committee, and has conducted faculty and staff focus groups to examine student success policies.

Organizational Structure

Organizations can be structured in many ways. Most colleges and universities still have academic and student affairs units that operate in silos which can limit collaboration and sharing of information (Bolman & Gallos, 2011). One structural challenge facing higher education leaders is determining how roles and job duties will be

distributed across departments and deciding how to integrate efforts of groups across campus. Each of the three divisions at CC, academic affairs, student affairs, and finance, meet monthly to discuss and review policies, and to suggest improvements to the institution. These recommendations are then funneled through the college council leadership group for review and approval.

Administrators in higher education are responsible for analyzing the structures of their divisions so they align with the mission and goals of the institution. According to Bolman and Gallos (2011), the way an institution aligns the rules, reporting relationships, and procedures is important because “when the structure is wrong, even bright and talented people find it hard to be productive” (p. 51). The alignment of reporting relationships and linkages between departments is critical when considering strategies that can improve student success and retention.

Student retention is impacted by a student’s involvement in the academic and social life at an institution which involves all three structural divisions at CC (Tinto, 1993). Crossing the boundaries of one department may be difficult, but crossing separate institutional divisions that typically have infrequent contact, such as faculty members and student admissions staff, can be even more complex and challenging. Navigating the college environment can be difficult for any student, but is often particularly challenging for the large numbers of first-generation and low-income students who attend community colleges (Conley, 2007).

Organizational Framing

Examining the organizational structure of an institution is one way to understand how the institution functions. Bolman and Deal (2008) indicated there are additional

lenses one can utilize to make sense of organizations. They developed four frames, or mental models, that provide a set of ideas and assumptions to help leaders view and understand complex situations. The frames include structural, human resource, political, and symbolic. These frames can be used to probe more deeply and examine what is really going on instead of looking at problems within an organization as superficial.

The structural frame focuses on how an organization is designed, and how the roles and responsibilities of the organization are distributed (Bolman & Deal, 2008). The human resource lens emphasizes the understanding of people within organizations. The political frame views organizations as coalitions of individuals and interest groups. Finally, the symbolic frame focuses on how activity and meaning are closely aligned with the use of symbols, rituals, stories, and ceremony. Each of the frames provides a way for practitioners to look at issues and generate strategies to solve problems. Examining problems from different lenses provides managers with new solutions they may not have tried in the past.

Each of the four frames has strengths and weaknesses. One frame may provide a better lens to view a particular problem or situation than another frame. Knowledge of all four frames allows for reframing and looking at an issue with a different lens (Bolman & Deal, 2008). Senge (1990/2005) suggested leaders utilize a multi-frame approach he identified as systems thinking or a “framework for seeing inter-relationships rather than things, for seeing patterns of change rather than static ‘snapshots’” to analyze problems (p. 441). He contended that systems thinking is needed when situations are dynamically complex.

The multifaceted issues and factors involved in student persistence are dynamically complex and require that practitioners utilize unconventional strategies to enhance student integration within their institution. According to Senge (1990/2005) dynamically complex problems are “situations where cause and effect are subtle; and where the effects over time of interventions are not obvious” (p. 442). The challenge for most community colleges is finding ways to retain and graduate underprepared students while keeping tuition costs low, and in addition, generating enough tuition revenue to support the institution.

Because community colleges provide college access to students from all socio-economic backgrounds and educational abilities, it can be difficult to provide the financial and academic supports students need to persist to graduation. Adequate funding is necessary to provide programs that promote academic success for students with varying abilities. Raising tuition to support student success programs could prevent many community college students from attending due to their lack of financial ability. Subtle changes in tuition rates or the services provided to students can result in significant changes in retention and graduation rates as well as affect the amount of revenue the institution receives. For these reasons, discovering ways to improve student retention require leaders to consider multiple lenses to frame and reframe the problem.

Aspects of the student access and student completion issue could be viewed from the political frame, due to factors related to state funding for community colleges. This situation could also be viewed from a structural frame because of the roles and responsibilities of faculty and staff for student success and graduation. Yet again, this problem could be examined from the symbolic frame to consider the meanings of

community college culture that supports access to higher education for students who are underprepared and from diverse backgrounds.

Organizational framing and systems thinking are important concepts for practitioners because they provide multiple ways of understanding challenging situations. According to Bolman and Deal (2008), “the key to dealing with these events (ambiguity and complexity) is developing better mental maps to anticipate complicated and unforeseeable problems” (p. 36). Utilizing multi-frame and systems thinking is necessary for the highly complex problem of student persistence because factors involved in retention involve many different divisions of the college and numerous student variables.

Organizational Teamwork

As institutions have become increasingly complex, many have adopted structures that are more flexible and participatory allowing for the use of teams to guide decision making (Bolman & Deal, 2008). Teams have been utilized in the field of education to help solve problems and to create a collective vision for the institution (Marsh, 2010; Nellis, 2012). According to Bolman and Deal (2008), “much of the work in large organizations of every sort is now done in groups or teams” (p. 101). The formation of teams within the structure of an institution can allow for more collaborative and effective decision making.

CC utilizes action teams to examine specific policies, solve complex problems, and make recommendations for policy implementation. One of the ongoing team structures utilized by CC includes their AQIP action teams. The teams are comprised of staff and faculty from a variety of departments and division across the campus. AQIP

action teams examine ways the college can improve in three or four action items identified by the college as areas of needed improvement.

Currently, there are six action teams at CC that meet once a month to review programs and develop improvement plans for their assigned action item (Crowder College, 2014). The six action committee teams are titled (a) helping students learn, (b) meeting student and other key stakeholder needs, (c) valuing employees, (d) planning and leading, (e) knowledge management and resource stewardship, and (f) quality overview. These action teams make recommendations to administration for new projects, plans, and policies they would like to see implemented to meet the goals and objectives of the action item.

The AQIP action team *helping students learn* “focuses on the design, deployment, and effectiveness of teaching-learning processes (and on the processes required to support them) that underlie the institution’s credit and non-credit programs and courses” (Crowder College, 2014, p. 2). Process five of the *helping students learn* category focuses specifically on academic support structures designed to help students be successful at CC. To promote the academic support action process, the *helping students learn* action team is responsible for determining goals for retention, persistence, and program completion.

Organizational Leadership

CC operates under the principals of servant leadership. The servant leadership approach suggests that leaders should demonstrate strong moral behavior and ensure the needs of followers are met before their own (Northouse, 2013). CC has been involved in the servant leadership movement since the college’s inception in 1963. One of the

founding members of CC who served as the president of the college Board of Trustees for 50 years was an associate of Robert K. Greenleaf. This CC Trustee was chair of the Greenleaf Center board from 1987-1994, and spent a considerable portion of his educational career studying ethics and leadership at the Greenleaf Center. The entire CC Board of Trustees has a strong commitment to the principals of servant leadership, and provides guidance and support for the institution to promote a culture of servant leadership (A. Wood, personal communication, November 9, 2015). CC provides servant leadership training for all new employees, and the Board of Trustees sends two employees to the Greenleaf Center's international servant leadership conference each year.

The CC Board of Trustees also adopted a set of *timeless values* that guide the leadership of the college (Crowder College, 2015d). The values include caring, the pursuit of learning, fostering creativity and innovation, ethical behavior, working collaboratively, and serving others. The timeless values are closely aligned with the core servant leadership behaviors of (a) conceptualizing, (b) emotional healing, (c) putting followers first, (d) helping followers grow and succeed, (e) behaving ethically, (f) empowering, and (g) creating value for the community (Northouse, 2013).

In addition to the Board of Trustees, the administrative leadership at CC has supported and promoted the ideals of servant leadership. It is typical for college leaders to reference servant leadership when speaking to faculty, students, staff, and community members. One college president established an ethics committee that was charged with investigating issues related to ethics, and providing students and employees with ethics training and guidance. The ethics committee members consisted of a diverse group of

individuals who were well received by students and their colleagues as individuals trusted to offer guidance regarding ethical decisions and dilemmas.

In 2010, the college implemented a service learning requirement within the freshman college orientation course named the *service seed* (Crowder College, 2015b). All first-time freshman students must complete at least two hours of volunteer work in their community and write an essay regarding their experience with volunteerism and servant leadership. The goal of the *service seed* is to promote and encourage the ideals of servant leadership within CC students. Many faculty members who teach the college orientation course schedule volunteer days in which they volunteer with students to support the service learning component of the course.

CC's senior leadership has changed in the last few years. In 2013, the president of the Board of Trustees retired after serving on the board for 50 years. Another long-term board member was promoted to president which allowed for stability within the Board of Trustees. Two years later, in 2015, CC hired its first female president. Shortly after the new president began her employment, one of the three vice-presidents resigned. Changes within CC leadership, in addition to financial challenges faced by the institution, have created a level of uncertainty among many of the faculty and staff members. The new president has recently started a new strategic planning process in an effort to reduce uncertainty and provide direction and guidance for the institution.

Servant Leadership

According to Northouse (2013), "servant leaders put followers first, empower them, and help them develop their full personal capacities" (p. 219). Servant leadership originated in the writings of Robert K. Greenleaf (1991), and emphasizes that leaders

must be attentive to concerns of followers, empathize with them, and help them develop their full personal capacity. Servant leaders have strong ethical standards, and are open and honest with followers.

Northouse (2013) explained that the context and culture of an organization, leader attributes, and follower receptivity are factors that influence the servant leadership process. The culture of CC supports servant leadership and the concern that Greenleaf (1991) had for the impact that leadership would have on the less privileged. Many of the students served by CC are low-income, first-generation college students who need support and guidance to be successful in college. Faculty and staff at CC interact with students on a daily basis, and are encouraged by leadership to offer support and guidance to students in need. The idea that servant leaders offer meaning and hope, and that “service makes a difference in the lives of both those who serve and those who are served” (Greenleaf, 1991, p. 5) is one that CC promotes to faculty and staff.

Northouse (2013) suggested that not all employees want to work with servant leaders. They may not be receptive to a leader’s attempts to help or guide them in their work because they view it as micromanaging. Follower receptivity to servant leadership can “influence the impact of servant leadership on outcomes such as personal and organizational job performance” (Northouse, 2013, p. 226). CC has not formally examined the follower receptivity of employees within the institution. Instead, the college has focused on promoting servant leadership as a form of leadership anyone can develop within themselves. The college leadership strives to promote a belief within the faculty and staff that all employees can become servant leaders (A. Wood, personal communication, November 9, 2015).

According to Northouse (2013), “the central goal of servant leadership is to create healthy organizations that nurture individual growth, strengthen organizational performance, and, in the end, produce a positive impact on society” (p. 230). Under this model, followers will realize their full capabilities and be more effective in their accomplishment of their jobs. Servant leadership can also lead to enhanced team effectiveness because group members feel supported by the leadership of the organization. The long-term outcomes of servant leadership can also include a positive impact on society. The philosophy of putting others first can help society because a healthy organization provides jobs for the community and positive interactions with members of the community.

Implications for Research in Context

This study of student retention will have several implications for CC leadership to consider. The research will investigate multiple factors that influence student retention at CC, including the extent to which student pre-entry attributes, student academic experiences, and student social experiences at CC are related to differences in student retention. The accountability pressures of state and federal regulations make it important for CC administration and leaders to understand these factors related to student success and completion so they can purposefully align strategies and institutional policies to support student persistence.

This study utilizing data from CC is valuable because the population of students CC serves is different than those served by universities (Pascarella & Terenzini, 2005). Students attending a community college are more diverse in age, socio-economic status, and academic preparedness than students attending a four-year university (Kuh et al.,

2010). As a result, community college students may integrate within an institution quite differently than those attending a university. Unfortunately, many of the fundamental studies of student retention specifically related to academic and social integration have been conducted utilizing data from four-year institutions (Bailey & Alfonso, 2005). The following sections will identify the implications of the research in context for CC in relation to the three areas of the study including (a) implications for student pre-entry attribute variables, (b) implications for student academic experience variables, and (c) implications for student social experience variables.

Pre-entry Attributes

One set of factors this research will examine are student pre-entry attributes and the extent to which they are related to retention. The results of this study can assist CC academic and student affairs leaders in the selection of appropriate placement strategies for incoming students. Currently, students at many community colleges across the United States, including students attending CC, are placed into entry-level courses based on one standardized entry exam (Sullivan & Nielsen, 2013). Some educational leaders and researchers have expressed concern that using standardized placement testing as the only measure of college readiness is a high stakes way to determine whether a student should take remedial coursework (Conley, 2007; Sullivan & Nielsen, 2013). As a result, the Missouri Department of Higher Education [MDHE] (2015) strongly encouraged that community colleges use multiple measures to assess incoming freshman students' readiness for college, rather than place students in semester-long, general remedial courses based upon a single cut-off score.

In addition, this study will utilize high school grade point average, income status, whether or not a student is a first-generation college student, and the type of high school a student graduated from as pre-entry student characteristics that may affect college retention. Research examining these pre-entry characteristics can be used by CC administrators to help determine if particular students may need early intervention and additional support to be successful within the college. The results of this study can be utilized by CC to provide guidance in determining new assessment models to identify student deficiencies which can allow the college to more efficiently deliver services directed to improve student success.

Some researchers contended that developmental education sequences increase a student's time to degree completion and a lack of persistence is related to these longer sequences (Bailey & Cho, 2010; Bettinger & Long, 2009). Therefore, it is important for CC leaders to critically examine the pre-entry characteristics of their students. Practitioners within the Missouri Department of Higher Education (2015) have noted this increased time to degree completion and a concern that students are being unnecessarily placed into developmental coursework as additional reasons for the suggested changes in the entry assessment models of community colleges. This proposed research can provide CC with the key pre-entry student characteristics related to student success and retention for their specific student population. These success variables can be utilized to more accurately place students into appropriate development sequences and interventions to promote student persistence.

Academic Experiences

Another set of variables this research will examine include those related to student academic experiences at CC including (a) whether or not students successfully complete gateway courses, (b) student completion of college orientation, (c) whether or not students utilize tutoring services, (d) first semester college grade point average, (e) whether or not students completed developmental coursework, and (f) academic major selected. The relationship between these academic experiences at CC and whether a student is retained to the next academic year has several implications for CC leadership. The outlined academic variables will provide information that will allow CC to determine if the existing academic experiences are successful, or if new strategies should be developed to more effectively retain students.

Developmental coursework, freshman orientation courses, and peer tutoring programs are designed to promote student academic performance and persistence (Pascarella & Terenzini, 2005). College administrators and faculty members at CC expend large amounts of time and energy developing these academic support programs to enhance the learning environment of their students. The implication of research in this area for CC is to determine if students benefit from the allocation of resources for these learning opportunities.

Investigation of student success within general education gateway courses can provide CC with valuable information they can utilize in the development of policies and practices within their institution. Typically, students are enrolled in general education gateway courses within their first year of college. These courses are considered the foundation of content knowledge acquisition and play a vital role in future student

academic success (Kuh et al., 2010). Identification of student success or lack of success in specific gateway courses can allow CC faculty and staff to focus academic support efforts where they are most needed by students.

Social Experiences

Few studies have utilized Tinto's (1993) integration framework in the examination of community college students' social integration within the institution. The assumption is that community college students lack the time to participate in social activities that facilitate social integration (Karp, Hughes, & O'Gara, 2010). However, there is some evidence that community college students can develop a sense of social belonging within their institution that is related to their retention from the freshman to sophomore year (Deil-Amen, 2011; Karp et al., 2010). This proposed research can provide CC leadership with answers to the relationship between social experiences of students at CC and their persistence.

Residence halls are not as common for community colleges as they are for universities. Information related to the social integration of students in residence halls within a community college setting may provide valuable data for educational administrators deciding whether or not to expand residence hall capacity at CC. The institution recently expanded their residence hall capacity by purchasing an apartment complex adjacent to campus. However, CC has not studied the effects on retention of students living on campus compared to those who commute.

Additional social experiences this research will examine include the retention of students participating in TRIO student support programs, athletes, and students working on campus through federal work study and ambassador scholarship programs. Data

indicating the relationship of these experiences on student retention at CC can help administrators determine how to best allocate resources for these programs. Overall, research of student social experiences at CC can allow the leadership to explore whether there are differences in the retention of students who participate in these programs and students who do not. This assessment of student performance and success based on social experiences can provide faculty and staff with feedback on whether these programs are related to student retention.

Summary

This research will utilize data from CC, which is a small, rural, public community college located in the Midwest. The organizational structure of CC is similar to many higher education institutions with academic affairs, student affairs, and business affairs divisions responding to both internal and external pressures from stakeholders (Bolman & Gallos, 2011). The accountability measures placed on CC from external sources forces the college to continually review policies related to student persistence to find ways to graduate more students. Like many other colleges and universities, CC has implemented several strategies to retain more students to graduation, but additional research is needed to determine if these efforts are effective ways to increase student retention. This review and analysis of the context and background of CC are important considerations for practitioners who review this research study.

CHAPTER THREE
SCHOLARLY REVIEW FOR THE STUDY

Introduction

Community colleges are in a unique position to assist in the revitalization of the national economy by increasing the number of college graduates within the United States. According to Carnevale and Rose (2011), America must produce another 20 million college educated workers by 2025 to expand the economy and reverse the growth of income inequality. President Obama has also indicated the need for more college graduates so the United States can remain globally competitive (White House, 2009). To meet the national goal of producing more college graduates, community colleges must find ways to significantly increase the number of students they retain and graduate.

Millions of low-income and minority students choose community colleges as a way to gain valuable education and access to employment leading to family-sustaining wages (American Association of Community Colleges, 2014). Unfortunately, many of these students do not complete their degree. The most recent data indicated that at two-year public colleges, only 20% of first-time, full-time undergraduate students complete a degree within three years (Institute of Education Sciences, 2015). This rate is significantly lower than the 58% six-year graduation rate for public four-year institutions. The lower graduation rates for community college students reflects the many challenges this population of students face when attempting to complete their degree, including being less academically prepared and less economically secure (Crews & Aragon, 2007; Kuh et al., 2010; Tinto, 2012).

Examining ways to increase student success and graduation at community colleges is critically important to the national economy and to the fiscal health of an institution. Overall, funding for higher education continues to decrease; therefore, tuition

revenue is becoming a key source of income for institutions. Improving retention rates will help institutions maintain tuition revenue that is much needed to support faculty and staff in their efforts to provide quality education for all students. In addition to declining federal and state funding, community colleges are being held more accountable for student success and graduation rates. There is a shift in state higher education funding toward performance budgeting initiatives that tie funding to demonstrated outcomes of the institution (McLendon et al., 2005).

There is a need to study ways to increase student success and retention at community colleges due to the large number of students attending community colleges and the relatively low student completion rates. The majority of the large fundamental studies of retention have been based on the four-year university setting (Kuh et al., 2010; Pascarella & Terenzini, 2005; Tinto, 1993). Pascarella and Terenzini (2005) explained their review of studies of the effects of college on students was "based largely on samples of 'traditional,' white undergraduate college students ages 18-22 who attended four-year institutions full-time, who lived on campus, who didn't work, and who had few, if any, family responsibilities" (p. 152). In addition, most research examining community college persistence is limited in scope and focuses on a single institution (Bailey & Alfonso, 2005). Many of the studies included in this review focus on a single variable or a single set of variables and fail to examine the complex relationships among variables that effect persistence.

The following sections provide an explanation of the conceptual framework that will guide the proposed community college retention study and a scholarly review of research as it pertains to factors that influence student success and persistence. The

conceptual framework is based on Tinto's (1993) theory of student individual departure. Components of Astin's (1999) input-environment-outcome (I-E-O) model and Pascarella and Terenzini's (2005) causal model will also be utilized. Many of the studies reviewed also utilized components of these fundamental retention theories to guide their research.

Conceptual Framework

This section discusses Tinto's (1993) theory of student individual departure, and aspects of Astin's (1999) I-E-O model and Pascarella and Terenzini's (2005) causal model to explain factors of student success and retention. Although these theories were largely developed based on experiences and characteristics of traditional students attending four-year universities, they have been expanded and utilized in many retention studies of community college students (Barnett, 2011; Deil-Amen, 2011; Fike & Fike, 2008; Karp et al., 2008; Tinto 1997). The three models emphasize student interactions and experiences within the social and academic environments of an institution. Integration and involvement are framed in different ways by the researchers but are viewed as key variables related to student persistence.

The main focus of Tinto's (1993) model is to explain why and how some students leave an institution prior to graduating. The longitudinal model describes a complex process of interactions between a student's incoming characteristics and their academic and social integration that influence whether a student will depart from college. The model acknowledges that students enter college with varying pre-entry attributes including family background, skills and abilities, and prior schooling.

In addition to pre-entry characteristics, individuals bring with them various intentions and goals, and external commitments such as work and family (Tinto, 1993).

The interactions between a student's incoming characteristics, and the social and intellectual communities of the college continually alter an individual's intentions and commitments to persist in college. Interactions that lead to a high level of student integration within the institution increase the likelihood a student will be retained.

Pre-entry Characteristics, Social Integration, and Academic Integration

Students arrive at an institution with several pre-entry characteristics that can affect their persistence in college. Individual student inputs, or pre-entry attributes, include variables such as high school grades, entry test scores, and gender. These input variables are key aspects to consider when examining student retention (Astin, 1999; Tinto, 1993). Astin's (2005) national study of degree completion rates for 56,818 students attending four-year institutions underscored the importance of these pre-entry characteristics. According to Astin (2005), the "longitudinal analyses show clearly that an institution's degree completion rate is primarily a reflection of its entering student characteristics" (p. 7). The findings of this study indicate that the level of academic preparation of the students who enter an institution should be considered when determining retention rates.

If institutions desire to support and promote student success and completion, they should focus on the input characteristics of their students prior to college, as well as how their social and academic experiences interrelate once a student is enrolled (Astin, 1993). Academic and social experiences are conceptually distinct processes within the Tinto (1993) framework. Academic integration occurs when students engage in positive experiences of the intellectual community of the college, while social integration occurs when students create positive relationships and connections outside the classroom. These

two concepts, though analytically distinct, interact with and enhance one another. Ideally, to promote continued persistence, students should feel a sense of integration with both the social and intellectual communities of the institution. Although, integration in one area does not imply there should be comparable integration in the other.

Tinto (1993) emphasized that institutions have the capacity to involve students with faculty, staff, and other students to promote both social and academic integration. Pascarella and Terenzini (2005) suggested “the content of students’ interactions with the major socializing agents on campus (the faculty and other students)” (p. 57) has an impact on whether students experience positive changes in their learning and cognitive development. Although there is a complex interplay between external factors and a student’s incoming characteristics, it is the experiences on campus that are paramount to student persistence (Astin, 1993; Tinto 1993). “Frequent and rewarding contact between faculty, staff and students in a variety of settings both inside and outside the formal confines of the classroom” (Tinto, 1993, p. 148) is particularly important for student success and persistence.

Similarly, Astin (1993) indicated there are several institutional environmental variables that can affect student retention and graduation. These environmental variables include the college’s structures, practices, and policies, as well as the faculty environment and peer culture of an institution. One of the environmental variables considered critical in Astin’s (1993) I-E-O model is the faculty environment. Faculty environmental variables, as explained by Astin (1999, 1993) are similar to what Tinto (2012, 1993) referred to as academic experiences. Faculty morale, teaching methods utilized, emphasis on diversity, and faculty concern for students are examples of faculty

environmental variables (Astin, 1993). The faculty environment is an important aspect of the I-E-O model as research has supported the indication that academic involvement with faculty is positively associated with student retention.

Tinto's (2012) more recent research has underscored the importance of academic integration to student retention. Academic experiences within the classroom and student-faculty contact outside the classroom are primary influencers of retention. An increasing number of studies have examined the effects of learning communities and service learning on student success and completion (Braxton & McClendon, 2001; Carini, Kuh, & Klein, 2006; Tinto, 1997; Vogelgesang & Astin, 2000). Their research has found that these learning strategies are effective ways to promote student integration and persistence in college.

Application of the Conceptual Framework in a Community College Setting

Several studies have suggested that persistence in community college students is more affected by external forces including family and work commitments than persistence of traditional four-year university students (Astin, 1999, Kuh et al., 2010; Pascarella & Terenzini, 2005). Many community college students have external obligations of work and caring for a family that influence their commitment to college (Kuh et al., 2010). Nevertheless, Tinto (1993) contended that "though the intentions and commitments with which individuals enter college matter, what goes on after entry matters more" (p. 136). This would suggest there is an opportunity for community colleges to more effectively retain adult students by providing supportive faculty, enriching academic experiences, and other social support systems.

Another challenge to applying traditional theoretical frameworks to the study of community college retention is the large number of diverse students who attend two-year institutions, many who are academically unprepared (Bailey & Alfonso, 2005; Kuh et al., 2010). In comparison to students attending a four-year university, the pre-entry attributes of community college students tend to include larger numbers of female students, students who are less academically prepared, low-income students, and minority students (Crews & Aragon, 2007). For many community colleges, as many as 60-75% of their incoming freshmen are referred into at least one developmental course (Zeidenberg et al., 2010). A review examining academic success rates of developmental students conducted by Noble & Sawyer (2013) found students who test below college level are “less successful overall than non-developmental students in terms of GPA/persistence over time and degree completion” (p. 57).

According to Pascarella and Terenzini (2005), research has revealed that academic integration may have a larger effect on persistence than social integration for two-year colleges. In addition, some researchers have questioned the relevance of social integration to community college students due to the diverse characteristics of students served by community colleges (Deil-Amen, 2011; Karp, 2011; Reason, 2009). Students attending two-year institutions do not typically engage in traditional forms of college social and academic activities due to the unique challenges they face attempting to balance academic life with outside family and work commitments. While Tinto's (1993) theory is based on traditional types of social interactions, the theory also considers social experiences that occur within the classroom setting when measuring student integration. Both Deil-Amen (2011) and Karp et al. (2008) found that although the experiences may

be more informal and classroom related than interactions at a four-year institution, social experiences were a factor in community college student involvement and integration.

The ways academic and social integration occur for community college students must be further explored. Community college student populations are becoming increasingly diverse in age, race, and socio-economic background (Kuh et al., 2010; Reason, 2009). Trends suggest the numbers of minority students, women, and those from lower socio-economic backgrounds attending two-year colleges will continue to grow as the numbers of traditional aged, white, male students will remain steady (Pascarella & Terenzini, 2005). As student demographic characteristics change, retention research must examine how these new student populations learn and persist. According to Reason (2009), "the breadth and depth of knowledge necessary for informed practice in an era of rapid changes in the demographics of higher education will require more of both scholars and practitioners" (p. 486).

Summary

Tinto (1993) and Astin's (1999) frameworks of student retention have been utilized in many studies. Nevertheless, there are gaps in the research specific to community college students as well as research that examines multiple variables of retention. The following sections will review research examining student incoming attributes, and the subsequent academic and social interactions students experience. The three areas will be addressed separately. This does not mean the variables should be considered independent of each other in regard to their effect on student persistence. They are presented separately for ease of understanding and to organize the research.

Pre-entry Student Characteristics and Student Retention

Students arrive at college with a range of demographic, personal, and academic characteristics. These characteristics influence students' engagement with various aspects of the college's academic and social communities (Astin, 1993; Tinto, 1993). Measures of input characteristics can include an individual's incoming assessment scores, high school grade point average, income status, parents' educational level, age, gender, and race. While there is evidence suggesting student incoming attributes can be significant predictors of retention, the majority of research is based on four-year college students (Astin, 2005; Astin & Lee, 2003; Tross, Harper, Osher, & Kneidinger, 2000).

As discussed previously, Astin's (2005) research indicated that an incoming student's academic preparation including high school grade point average and SAT scores were strong predictors of degree completion. High school grade point average was a stronger predictor than SAT scores. In fact, "SAT adds very little to the prediction of four-year completion" (Astin, 2005, p. 8). Bean's (1984) research revealed that a student's academic performance in high school had a stronger effect on college grade point average than academic integration.

Additionally, Adelman's (1999) multi-year study found that students' academic resources (high school curriculum, entrance test scores, and class rank) produce a stronger relationship to bachelor's degree completion than does a student's socioeconomic background. Interestingly, "students from the *lowest* two SES quintiles who are also in the highest Academic Resources quintile earn bachelor's degrees at a *higher* rate than a majority of students from the top SES quintile" (Adelman, 1999, p. 24). If these findings can be generalized to two-year colleges, it suggests that community colleges are at a

distinct disadvantage of retaining students compared to four-year institutions because their student populations are more academically underprepared.

Results of studies that examine the effect of race on persistence are mixed (Pascarella & Terenzini, 2005). In general, retention rates for students who are African American, Latino, and Native American are lower than White students and Asian American students (St. John et al., 2013). Fike and Fike (2008) examined several demographic attributes of community college students including race and ethnicity. Student age, gender, race, and ethnicity were not predictors of reenrollment from the first fall semester to the second fall semester. In contrast, Berger and Braxton (1998) found that race did have an effect on a student's intent to return. In their study of a highly selective university, nonwhite students had a higher rate of intent to enroll than the white students. Since only seven percent of the students were nonwhite, the sample size may have had an impact on the findings. The study also found that nonwhite students had stronger personal relations with faculty than their white peers. Berger and Braxton (1998) suggested that the strong relationships nonwhite students experienced with faculty members increased their intent to enroll.

Compared to students attending four-year institutions, a larger number of students attending community colleges are considered low-income students (St. John et al., 2013). Many low-income students rely on federal financial aid as a way to afford college. Several studies examining the effects of federal financial aid on retention have found that students who received financial aid were more likely to persist in college (Astin, 1999; Pascarella & Terenzini, 2005; Tinto, 2012). According to Pascarella and Terenzini (2005), the impact of financial aid on persistence is more evident among low-income

students and those attending two-year colleges. Fike and Fike (2008) explained that the use of financial aid as a variable was relevant to their research of community college retention "because many students from lower socioeconomic backgrounds attend community college" (p. 71). The findings of their study are consistent with previous research that found receiving financial aid was a positive predictor for retention (Pascarella & Terenzini, 2005). Federal aid may be a strong predictor of retention because it helps level the playing field for low-income students. Tinto (2012) indicated that students with less financial burden were more likely to have higher levels of integration than students coming from low-income households.

Astin (2005) and Astin and Lee (2003) make a strong case for the importance of considering student input characteristics when calculating an institution's retention rate. Astin developed a formula based on incoming freshman student data collected by the Cooperative Institutional Research Program (CIRP) and a student's six-year retention status. The formula allows institutions to calculate an "expected" degree completion rate. Comparisons can then be made between an institution's actual retention rate and their expected rate, to more effectively evaluate a university's ability to retain students to graduation. Astin (2005) explained that "when the two rates are close – say 0-5 percentage points of each other – the institution can be said to have a retention capability that is on par with other institutions nationally" (p. 11). While the formula was developed based on four-year university students, utilizing the formula could also be valuable for community colleges because it considers the input characteristics of students attending the college and the impact of those pre-entry characteristics on retention.

Astin (2005) advocated the use of this formula based on his longitudinal study that found “more than two-thirds of the variation among institutions in their degree completion rates is attributable to differences in their entering student bodies” (p. 7). Although Astin (2005) and Astin and Lee’s (2003) studies indicated the importance of pre-entry characteristics on student retention, Tinto (2012) suggested that “retention depends more heavily on what students experience after entering college than on what happened before” (p. 56). According to Tinto (2012) the assessment and consideration of students’ knowledge and skills prior to admission can be valuable, but should not take priority over what students experience once they enter college. These arguments suggest the need to examine student academic and social integration within an institution in addition to student pre-entry characteristics to obtain a more comprehensive understanding of the factors related to student retention.

Academic Experiences and Student Retention

A community college’s primary opportunity to integrate students into the intellectual community is within the classroom (Barnett, 2011). Many of the academic engagement activities that can promote academic success in college tend to occur inside the classroom. Academic experiences such as learning communities, developmental coursework, learning strategy courses, and faculty-student interaction regarding coursework are areas researchers have examined in relation to academic success and completion.

Self-regulated learning (SRL) courses can provide academically underprepared students with skills needed to be academically successful. Institutions offer these learning strategies courses by themselves or imbedded within a freshman orientation

course. Study related skills such as note taking and time management, self-regulation and management of learning, and motivation can be especially helpful to at-risk students often found at community colleges (Bail, Zhang, & Tachiyama, 2008). Bail et al. (2008) and Tuckman and Kennedy (2011) examined the effects of a learning strategies course on academic performance and graduation rates of students attending a four-year university. Bail et al. (2008) found that compared to a statistically similar group of students who had not taken the course, “students who had taken the SRL course showed significant gains in their cumulative GPAs four semesters after enrollment and showed a significantly higher rate of graduation” (p. 66). Similarly, Tuckman and Kennedy (2011) found that students who completed the learning strategies course maintained a higher grade point average their first and second years of college, were more likely to be retained, and had higher graduation rates than students who did not enroll in the course but were similar in demographic characteristics and academic ability.

Although Bail et al.’s (2008) and Tuckman and Kennedy’s (2011) research suggested that self-regulated learning courses help students persist at higher rates than those who did not take an SRL course, the positive effects on student grade point average and persistence may have resulted from the courses’ extensive classroom focus on student reflection and interaction. Neither of the studies considered the teaching methods utilized in the courses, and their possible influence on student grades and retention. Use of active and collaborative learning methods in these courses may have contributed to higher levels of academic and social involvement, and therefore, increased the integration of students. It is also important to consider that the researchers were responsible for teaching the

courses under investigation and, as a result, were heavily invested in the results of the study.

Positive faculty interactions with students play a key role in student academic integration (Astin, 1999; Kuh et al., 2010; Tinto, 2012, 1993). According to Carini et al. (2006), the ability of faculty to engage students in the classroom setting is positively linked to desirable learning outcomes such as critical thinking and grades. Their study used five measures of effective educational practice to examine if students with identical SAT scores (and other incoming student characteristics) but different levels of engagement experience different learning outcomes. The educational measures they utilized in their research included (a) level of academic challenge, (b) active and collaborative learning, (c) student-faculty interaction, (d) enriching educational experiences, and (e) supportive campus environment. The results indicated that students with the lowest SAT scores benefited the most from academic engagement activities described previously. Reason, Terenzini, and Domingo's (2007) review of fundamental retention research discovered "few experiences are more strongly linked to student learning and persistence than students' interactions with faculty members" (p. 274).

Barnett's (2011) study was also interested in student-faculty interactions, and their impact on student academic integration and subsequent persistence. The research was conducted at a Midwest urban community college and examined the "extent to which community college students' experiences with validation by faculty contributed to their sense of academic integration in college and whether such experiences contributed to their intent to persist in college" (p. 197). The study revealed that higher levels of faculty validation strongly predicted higher levels of academic integration among students. The

strongest predictors of academic integration were caring instruction, mentoring, students being known and valued, and appreciation for diversity. Students' sense of academic integration modestly predicted their intent to persist.

Most community colleges offer developmental education courses to promote academic success for students testing below the college level. Studies in the field of developmental education have provided mixed results. There is a lack of clear data on the effectiveness of remediation resulting from researchers examining different treatment and success variables, and the wide variation in remedial programs offered at institutions (Bailey & Alfonso, 2005).

Crews and Aragon (2007) examined students in the community college setting who tested developmental in writing. Their study did not find a higher rate of success for students who took the developmental writing course as opposed to those who decided not to take the course but tested developmental in writing. Fike and Fike's (2008) research found the strongest predictor of student retention from fall-to-fall semester was students passing a developmental reading course. Additional variables in their study that predicted college retention included a student testing college level and completion of a developmental math course. These studies highlight the need for further examination of developmental education and the effects on student success and persistence.

Soria and Stebleton (2012) examined academic integration and retention of first-generation students at a large public university. Their study found that first-generation students had lower retention rates than non-first-generation students. The first-generation students also reported having fewer interactions with faculty in the classroom, contributed less frequently to classroom discussions, and did not appear to integrate

course material as often as non-first-generation students. This study has implications for community colleges, as they serve a large number of first-generation college students.

Tinto (2012) stressed the importance of student academic experiences within the classroom as pivotal to retention. The ways an institution structures and involves students in the academic experiences within their developmental education programs, gateway courses, and college orientation programs can play an important role in student engagement and retention. Research studies in the area of academic integration support Tinto's (2012) assertion that engagement within the classroom and student connections with faculty are important student retention variables to consider (Barnett, 2011; Pascarella & Terenzini, 2005).

Social Experiences and Retention

The previously described research suggests the strong predictive power of academic experiences on student persistence. There are as many studies that stress the need for first-year students to become socially integrated (Berger & Braxton, 1998; Braxton & McClendon, 2001; Deil-Amen, 2011; Reason et al., 2007; Settle, 2011; Tinto, 1997). Again, many of the larger studies were conducted using four-year institution data. Some of the common areas of social integration research include examining the effects of freshman orientation programs, classroom social interactions, faculty-student interactions, and peer groups.

Student orientation programs are focused on promoting academic performance, providing opportunities for positive social interactions, persistence, and degree completion (Tinto, 2012). Studies of first- to second-year persistence indicate there is a positive and statistically significant advantage to students who take orientation courses

(Pascarella & Terenzini, 2005). According to Tinto (2012), first-year orientation programs promote social integration which has a positive effect on persistence. Most colleges and universities recognize the benefits of first-year programs and offer various program formats for students. The positive effects of orientation programs on persistence is similar for most categories of students including males and females, minority students, at-risk students, and students of most ages and academic major (Pascarella & Terenzini, 2005).

The success of orientation programs, in part, is a result of the multiple opportunities for student-student social interactions and student-faculty social interactions (Tinto, 1993). Astin (1999) indicated that peer groups and positive interactions with faculty members have a strong influence on a student's growth and development, and their subsequent integration. He suggested that two-year colleges, in particular, should find ways for students to form strong peer groups. Additionally, orientation programs focus on the critical first-year of college. Tinto (1997) explained that social experiences are more important during the first weeks of college when students are acclimating to the environment.

Social interactions for students in community college environments many times begin within the classroom instead of during traditional social activities (Deil-Amen, 2011; Tinto, 1997). Students in both Deil-Amen's (2011) and Karp et al.'s (2008) qualitative studies shared that they have extremely limited time to engage with other students or faculty while on campus. For these students, the social relationships formed at college started in the academic realm. Students participating in a learning community examined by Tinto (1997) reported the social experiences they had with other students in

their courses helped them develop supportive peer groups. The peer groups students formed allowed them to better manage the many struggles they faced in college.

Deil-Amen (2011) used the term "socio-academic integrative moments" (p. 72) to describe interactions of community college students occurring both within and outside the classroom. Most students in Deil-Amen's study offered examples of integrative moments where academic influence was joined with social exchanges to "provide needed support and enhance feelings of college belonging, college identity, and college competence" (Deil-Amen, 2011, p. 73). Interactions between students and faculty that included elements of social and academic integration combined, dominated the integration experiences of the students in this study.

Additionally, students in Karp et al.'s (2008) study expressed that information networks were important to their social integration. Having a faculty member, advisor, or other staff member they could go to for information related to academic work and degree completion was important to their sense of belonging at the institution. These information networks allowed students to learn how to navigate aspects of the college environment that are unfamiliar to many community college students. Students who had access to these networks described feeling more confident in their academic abilities and their capacity to make social ties with college faculty and staff.

The qualitative studies of Deil-Amen (2011), Karp et al. (2008), and Tinto (1997) provide additional insight into the types of effective faculty and student social interactions that lead to persistence. These studies are valuable because most of the existing research investigating social integration measure social interactions between faculty and students by frequency of contact. Measuring social integration by frequency

of contact does not provide educators with the specific ways social interactions between students and faculty emerge. The students in Deil-Amen's (2011) study explained that traditional types of social interactions in college such as attending sporting events, or joining a college organization, were not ways they experienced social integration. These types of traditional social interactions were not expected nor desired by the students. Instead, friendly student and faculty relationships in class that involved answering questions about academic work were rated as highly important to these community college students.

Summary

This scholarly review of student success and retention literature highlights the multiple variables that research studies have investigated including pre-entry attributes, and social and academic integration. Much of this research has utilized concepts from Astin (1999), Pascarella and Terenzini (2005), and Tinto (1993) as their conceptual framework. Although many of the large longitudinal studies have been based on traditional aged students attending four-year universities, there are several community college studies that offer insight into the application of the fundamental theories to two-year commuter students. The knowledge base and available research in the area of retention is vast, but there is still more to be learned about retaining community college students who work at least part-time and have significant family responsibilities. Pascarella and Terenzini (2005) stated "both academic and social integration appear to shape student persistence in the residential four-year setting, but evidence from two-year colleges is ambiguous" (p. 427). The lack of comprehensive studies of the effects of

incoming student attributes and student integration on the retention of community college students indicates a need for further examination.

Pascarella and Terenzini (2005) made several recommendations of ways institutions can improve student success and persistence based on research they reviewed. However, they acknowledged that although the recommendations are based on empirical research, the implementation and effect of programs may vary by institution. They indicated a need for colleges to conduct research specific to their population of students. Just as there are differences between four-year and two-year college students, there are also differences in the structural and organizational features of community colleges that can have an indirect effect on student retention (Astin, 1999; Pascarella & Terenzini, 2005).

The numerous and interrelated factors that influence academic success and student retention make the process of examining reasons why students do not persist highly complex. Studies that are specific to an institution can simplify the process and allow administrators to be intentional and proactive in their pursuit of student success. This type of institution focused research can more narrowly explore the variables that most effect student persistence and provide valuable information educators can use to assess their retention efforts and adjust them accordingly.

CHAPTER FOUR
CONTRIBUTION TO PRACTICE

Community College Student Retention:
An Examination of Student Pre-Entry Attributes, Academic Experiences, and Social
Experiences and the Relationship to First-Year Persistence

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EXECUTIVE SUMMARY

COMMUNITY COLLEGE STUDENT RETENTION

Examining ways to increase student success and graduation at community colleges is critically important to the national economy and to the fiscal health of an institution. Overall, funding for public higher education continues to decrease; therefore, tuition revenue is becoming a key source of income for institutions. Improving retention rates will help institutions maintain tuition revenue that is much needed to support faculty and staff in their efforts to provide quality education for all students. In addition to declining federal and state funding, community colleges are being held more accountable for student success and graduation rates. There has been a shift in state higher education funding toward performance budgeting initiatives that tie funding to demonstrated outcomes of the institution (McLendon, Heller, & Young, 2005).

PURPOSE OF THE STUDY

The purpose of this study was to increase understanding of the extent that both the attributes of incoming students, and their subsequent academic and social interactions at an institution are related to community college student retention (Tinto, 1993). Three research questions guided the study:

4. To what extent are student pre-entry attributes related to differences in student retention?
5. To what extent are student academic experiences related to differences in student retention?
6. To what extent are student social experiences related to differences in student retention?

CONCEPTUAL FRAMEWORK

The conceptual framework for this study was Tinto's (1993) theory of student individual departure. The primary focus of Tinto's theory is that a student's academic and social integration within an institution increases the likelihood the student will persist. The theory acknowledges that students enter higher education with varying pre-entry attributes such as family background, skills and abilities, and prior schooling. Students also possess varying levels of commitment to an institution and external commitments such as work and family. The interaction of these incoming characteristics, and the academic and social experiences the student has with an institution are factors that determine whether a student will persist or not.

DESIGN OF THE STUDY

This quantitative, non-experimental study utilized archival data collected from Crowder College's institutional database system. The dependent variable for the study, fall-to-fall retention rates, was calculated as the percentage of first-time, degree seeking students (both full- and part-time) who persisted from fall 2012 to fall 2013. The independent variables for the study were based on Tinto's (1993) "longitudinal model of institutional departure" (p. 114) and included pre-entry attributes of students, and their academic and social institutional experiences.

The pre-entry student attributes used for this study included (a) whether or not the student was a first-generation college student; (b) whether or not the student received a federal Pell grant; (c) high school grade point average (GPA); (d) ACT Compass entrance scores for math, writing, and reading; (e) ACT composite score, and math, English, and reading subscores; (f) high school graduate or high school equivalency; and (g) whether the student graduated from a home school program. The set of academic experience variables used for this study included (a) college orientation course completion and grade; (b) first semester college grade point average (GPA); (c) developmental course participation and/or completion; (d) enrollment and grades in gatekeeper courses (this study utilized institutionally identified gatekeeper courses including general psychology, college algebra, U.S. history, English composition, and general biology); and (e) selected degree program upon entry to college. The set of social experience variables used for this study include whether or not the student (a) lived in the residence halls; (b) was a work-study student; (c) was an athlete; (d) participated in Student Support Services (SSS TRIO Program); and (e) participated in the College Assistance Migrant Program (CAMP).

DATA ANALYSIS

Data was analyzed with the Statistical Package for the Social Sciences (SPSS). Descriptive statistics was used to examine both the full-time and part-time student groups in each of the three research question areas: (a) pre-entry attributes, (b) academic experiences, and (c) social experiences. Both chi-square tests of independence and independent samples *t*-tests were utilized to analyze the variables. Three logistic regression models were prepared to predict the odds of student retention in the three research question areas. Regression models were developed utilizing the variables that were found to be significant based on chi-square and independent samples *t*-tests. To test for multicollinearity, a linear regression analysis was performed to obtain the variance inflation factor (VIF) and tolerance statistics (Field, 2013). No problems were detected.

The overall sample of both full- and part-time students consisted primarily of white (79.7%) female students (54.4%). The majority of students (61.3%) were first-generation college students and 53.7% received a Pell grant. Of the students who were assessed based on the ACT Compass exam upon entry to the college ($N = 861$), 88.2% tested developmental in math, 47.3% tested developmental in writing, and 36.2%

tested developmental in reading. The fall-to-fall retention rate for the overall sample was 46.8%.

FINDINGS AND IMPLICATIONS

Pre-Entry Attribute Variables and Student Retention

This study found the student more likely to be retained has a significantly higher incoming high school GPA and ACT score. This evidence supports the wide range of studies that have examined student success in relation to high school GPA and ACT scores (Astin, 2005; Astin & Lee, 2003; Pascerella & Terenzini, 2005). ACT Compass math and writing scores were significantly higher in students who were more likely to be retained, but there was no significant difference in student incoming ACT Compass reading scores.

Students receiving financial aid, such as federal Pell grants, have also been shown to have higher rates of retention (Pascerella & Terenzini, 2005), which was supported in this study. In addition, this research revealed that part-time students were less likely to receive federal Pell assistance.

It is noteworthy that for this sample of students, there was no significant difference in first-year student retention between students who were first-generation college students and students who were not first-generation. Prior research studies have indicated that overall, first-generation students are less likely to be retained than students with parents who have college experience (Pascerella & Terenzini, 2005; Soria & Stebleton, 2012). Again, because most studies have been conducted at the university level, these results may indicate the community college environment has more academic and social support services available for first-generation students.

Academic Experiences and Student Retention

Consistent with several other studies examining the effects of freshman orientation classes on student success and retention, evidence from this study indicated students who successfully completed college orientation were more likely to be retained than students who failed or did not take college orientation. College orientation was also a strong predictor of student retention to the next fall semester.

Developmental education in the community college setting has been an area of research that continues to provide mixed results. Although the chi-square analysis from this research found that students completing the required developmental reading course were more likely to be retained than those who dropped or failed the course, none of the developmental education areas were found to predict student retention in first-year students. According to the regression model in this study, the positive academic predictors of student retention came from students successfully completing basic gatekeeper courses, successfully completing college orientation, and their first semester college GPA. Students who did not take U.S. history or English composition their first semester of college had reduced odds of being retained to the next fall.

Social Experiences and Student Retention

Sample sizes for each of the social experiences variables was small, ranging from 2.7% to 11.8% of the total student sample. The following findings should be considered in light of the small sample sizes for each variable. The social experience variables found to be predictors of student retention included students who were work-study recipients, participating in the SSS program, and athletes. Student support programs similar to SSS are difficult for community colleges to expand because of the costs associated with the wide array of services and low student-to-advisor ratio. Further research could examine the specific services within SSS programs that are most closely related to student retention, allowing community colleges to more effectively target resources for all students.

Consistent with prior research, participating in the federal work-study program is a predictor of student retention in this study. For community colleges this finding is important due to the large number of low-income students attending their institutions. Participation on an athletic team was a predictor of college retention in this study. Overall, student-athletes were more likely to be retained than students who were not participating on an athletic team.

Summary

The overall results of this research of first-time community college students found that receiving a federal Pell grant, passing college orientation in the first semester, passing general psychology in the first semester, passing general biology in the first semester, passing U.S. history in the first semester, participating in the SSS program, participating as a work-study student, and participating in athletics were predictors of first-year student retention (see Figure 1). Incoming high school GPA and first-semester college GPA were also positive predictors of student retention. Students who did not take English composition and U.S. History their first semester of college were less likely to persist to the next fall.

RECOMMENDATIONS

The following recommendations were developed grounded in the critical findings of the study. The recommendations focus specifically on gatekeeper courses, developmental education, federal Pell grants and work-study programs, and scholarship opportunities. Details for each of the recommendations are provided in the comprehensive report of research.

1. Provide additional student support for success in gatekeeper courses.
2. Accelerate the developmental education sequence.
3. Expand the Educational Opportunity Center grant program.
4. Expand scholarship opportunities for part-time students.
5. Increase recruitment of work-study students in their field of study.

Pre-Entry Attribute Factors that Differentiated Student Retention

Higher High School GPA*
Receiving Federal Pell Grant*
Higher ACT Scores
Higher ACT Compass Math and Writing Scores
Homeschooled Students^a

Academic Experience Factors that Differentiated Student Retention

Passed General Biology*
Passed U.S. History*
Passed College Orientation*
Passed General Psychology*
Higher First Semester College GPA*
Passed Developmental Reading

Reduced the Odds of Student Retention

Did Not Enroll in English – First College Semester*
Did Not Enroll in U.S. History – First College Semester*

Social Experience Factors that Differentiated Student Retention

SSS Participant*^a
Work-Study Student*^a
Student Athlete*^a

Figure 1. Factors that differentiated first-year student retention.

*Regression model predictors of first-year student retention, ordered strongest to weakest.

^aThese variables included small sample sizes ranging from 2.7% to 11.8% of the student sample.

CONCLUSION

Student retention is a highly complex and interrelated issue that encompasses all departments and divisions of an institution. For this reason, it is critical for leaders in higher education to strategically gather institutional data and merge that with broader research and trends within higher education (Bresciani, 2010). The recommendations derived from this research provide CC with specific areas of concentration that can help the institution further promote the retention of students.

Introduction

Open access to community colleges allows students from all education levels and backgrounds to attend college. Increasing access to college, specifically to those who are low-income and first-generation students, has been the focus across the United States (AACC, 2014). Unfortunately, access does not always translate to student success and completion of a college degree. Many institutions have provided access to education for students of diverse backgrounds, but have not been successful in retaining and graduating these students. Tinto (2012) described, “as access has more than doubled from nearly 9 million students in 1980 to almost 20 million in 2011, overall college completion rates have increased only slightly, if at all” (p. 2).

In an attempt to increase graduation rates, community colleges expend precious time and resources creating and implementing student support programs. Nevertheless, graduation rates are still extremely low, particularly for community colleges. According to the Institute of Education Sciences (2015), only 20% of first-time, full-time undergraduate students attending two-year public colleges complete a degree within three years. This rate is significantly lower than the 58% six-year graduation rate for public four-year institutions. The lower graduation rates for community college students reflects the many challenges this population of students face when attempting to complete their degree, including being less academically prepared and less economically secure (Crews & Aragon, 2007; Kuh, Kinzie, Schuh, & Whitt, 2010; Tinto, 2012).

Examining ways to increase student success and graduation at community colleges is critically important to the national economy and to the fiscal health of an institution. Overall, funding for public higher education continues to decrease; therefore,

tuition revenue is becoming a key source of income for institutions. Improving retention rates will help institutions maintain tuition revenue that is much needed to support faculty and staff in their efforts to provide quality education for all students. In addition to declining federal and state funding, community colleges are being held more accountable for student success and graduation rates. There has been a shift in state higher education funding toward performance budgeting initiatives that tie funding to demonstrated outcomes of the institution (McLendon, Heller, & Young, 2005).

The purpose of this study was to increase understanding of the extent that both the attributes of incoming students, and their subsequent academic and social interactions at an institution are related to community college student retention (Tinto, 1993). This study examined factors that can differentiate retention between student groups utilizing a student sample from Crowder College (CC), a public community college located in southwest Missouri. Permission to use the Crowder College name is provided in Appendix A. Three research questions guided the study:

1. To what extent are student pre-entry attributes related to differences in student retention?
2. To what extent are student academic experiences related to differences in student retention?
3. To what extent are student social experiences related to differences in student retention?

Conceptual Framework

The conceptual framework for this study was Tinto's (1993) theory of student individual departure. The primary focus of Tinto's theory is that a student's academic

and social integration within an institution increases the likelihood the student will persist. The theory acknowledges that students enter higher education with varying pre-entry attributes such as family background, skills and abilities, and prior schooling. Students also possess varying levels of commitment to an institution, and external commitments such as work and family. The interaction of these incoming characteristics, and the academic and social experiences the student has with an institution are factors that determine whether a student will persist or not.

Tinto's (1993) longitudinal model depicts a process of interactions between students with varying pre-entry attributes that include financial resources, prior educational experiences, and family background. Research has suggested that students with college-educated parents who are well-prepared and academically talented are more likely to succeed in college (Kuh et al., 2010). Community colleges are open-admission institutions and cannot selectively admit those students with characteristics that more often lead to student success, nor is that the mission of community colleges. Nevertheless, community colleges can enact policies and programs that enhance the positive academic and social experiences of students once they arrive at the institution.

The academic and social systems of a college are also important components of Astin's (1999) input-environment-outcome (I-E-O) model. Astin's model proposed the academic and social environment of an institution provides opportunities for students to become involved in their learning by exposing them to new ideas, people, and experiences. Pascarella and Terenzini (2005) also acknowledged the role of the institutional environment on student outcomes. Their general causal model indicated that changes in students' learning are influenced by five sets of variables that include (a)

structural/organizational characteristics of an institution; (b) student background/precollege traits; (c) interactions with agents of socialization, i.e., faculty and peers; (d) institutional environment; and (e) quality of student effort. These models all recognize the impact of institutional policies, programs, and structures on student success.

According to Tinto (1993), his theory of student individual student departure “is structured to allow institutional planners to identify those elements of the institutional environment, academic and social, which may interfere with degree completion” (p. 113). He indicated that the theory can be viewed as a longitudinal process of interactions between the student’s incoming attributes and the academic and social systems of the college. Tinto’s theory in addition to components of Astin’s (1999) input-environment-outcome model and Pascarella and Terenzini’s (2005) model provided guidance for this study of student retention in a community college setting.

Scholarly Context and Related Literature

This scholarly review of student success and retention literature highlights the multiple variables that research studies have investigated including pre-entry attributes, and social and academic integration. Much of this research has utilized concepts from Astin (1999), Pascarella and Terenzini (2005), and Tinto (1993) as their conceptual framework. Although many of the large longitudinal studies have been based on traditional aged students attending four-year universities, there are several community college studies that offer insight into the application of the fundamental theories to two-year commuter students. The knowledge base and available research in the area of retention is vast, but there is still more to be learned about retaining community college

students who work at least part-time and have significant family responsibilities.

Pascarella and Terenzini (2005) stated “both academic and social integration appear to shape student persistence in the residential four-year setting, but evidence from two-year colleges is ambiguous” (p. 427). The lack of comprehensive studies of the effects of incoming student attributes and student integration on the retention of community college students indicates a need for further examination.

Application of the Conceptual Framework in a Community College Setting

Several studies have suggested that persistence in community college students is more affected by external forces including family and work commitments than persistence of traditional four-year university students (Astin, 1999, Kuh et al., 2010; Pascarella & Terenzini, 2005). Many community college students have external obligations of work and caring for a family that influence their commitment to college (Kuh et al., 2010). Nevertheless, Tinto (1993) contended that “though the intentions and commitments with which individuals enter college matter, what goes on after entry matters more” (p. 136). This would suggest there is an opportunity for community colleges to more effectively retain adult students by providing supportive faculty, enriching academic experiences, and other social support systems.

Another challenge to applying traditional theoretical frameworks to the study of community college retention is the large number of diverse students who attend two-year institutions, many who are academically unprepared (Bailey & Alfonso, 2005; Kuh et al., 2010). In comparison to students attending a four-year university, the pre-entry attributes of community college students tend to include larger numbers of female students, students who are less academically prepared, low-income students, and minority students

(Crews & Aragon, 2007). For many community colleges, as many as 60-75% of their incoming freshmen are referred into at least one developmental course (Zeidenberg, Cho, & Jenkins, 2010). A review examining academic success rates of developmental students conducted by Noble and Sawyer (2013) found students who test below college level are “less successful overall than non-developmental students in terms of GPA/persistence over time and degree completion” (p. 57).

According to Pascarella and Terenzini (2005), research has revealed that academic integration may have a larger effect on persistence than social integration for two-year colleges. In addition, some researchers have questioned the relevance of social integration to community college students due to the diverse characteristics of students served by community colleges (Deil-Amen, 2011; Karp, 2011; Reason, 2009). Students attending two-year institutions do not typically engage in traditional forms of college social and academic activities due to the unique challenges they face attempting to balance academic life with outside family and work commitments. While Tinto's (1993) theory is based on traditional types of social interactions, the theory also considers social experiences that occur within the classroom setting when measuring student integration. Both Deil-Amen (2011) and Karp et al. (2008) found that although the experiences may be more informal and classroom related than interactions at a four-year institution, social experiences were a factor in community college student involvement and integration.

The ways academic and social integration occur for community college students must be further explored. Community college student populations are becoming increasingly diverse in age, race, and socio-economic background (Kuh et al., 2010; Reason, 2009). Trends suggest the numbers of minority students, women, and those from

lower socio-economic backgrounds attending two-year colleges will continue to grow as the numbers of traditional aged, white, male students will remain steady (Pascarella & Terenzini, 2005). As student demographic characteristics change, retention research must examine how these new student populations learn and persist. According to Reason (2009), "the breadth and depth of knowledge necessary for informed practice in an era of rapid changes in the demographics of higher education will require more of both scholars and practitioners" (p. 486).

Pascarella and Terenzini (2005) made several recommendations of ways institutions can improve student success and persistence based on research they reviewed. However, they acknowledged that although the recommendations are based on empirical research, the implementation and effect of programs may vary by institution. They indicated a need for colleges to conduct research specific to their population of students. Just as there are differences between four-year and two-year college students, there are also differences in the structural and organizational features of community colleges that can have an indirect effect on student retention (Astin, 1999; Pascarella & Terenzini, 2005).

The numerous and interrelated factors that influence academic success and student retention make the process of examining reasons why students do not persist highly complex. Studies that are specific to an institution can simplify the process and allow administrators to be intentional and proactive in their pursuit of student success. This type of institution-focused research can more narrowly explore the variables that most affect student persistence and provide valuable information educators can use to assess their retention efforts and adjust them accordingly.

Design of the Study

This quantitative, non-experimental study utilized archival data collected from CC's institutional database system. The dependent variable for the study, fall-to-fall retention rates, was calculated as the percentage of first-time, degree seeking students (both full- and part-time) who persisted from fall 2012 to fall 2013. The independent variables for the study were based on Tinto's (1993) "longitudinal model of institutional departure" (p. 114) and included pre-entry attributes of students, and their academic and social institutional experiences.

The pre-entry student attributes used for this study included (a) whether the student was a first-generation college student or not; (b) whether the student received a federal Pell grant or not; (c) high school grade point average (GPA); (d) ACT Compass entrance scores for math, writing, and reading; (e) ACT composite score, and math, English, and reading subscores; (f) high school graduate or high school equivalency; and (g) whether the student graduated from a home school program. The set of academic experience variables used for this study included (a) college orientation course completion and grade; (b) first semester college grade point average (GPA); (c) developmental course participation and/or completion; (d) enrollment and grades in gatekeeper courses (this study utilized institutionally identified gatekeeper courses including general psychology, college algebra, U.S. history, English composition, and general biology); and (e) selected degree program upon entry to college. The set of social experience variables used for this study include whether or not the student (a) lived in the residence halls, (b) was a work- study student, (c) was an athlete, (d) participated in

Student Support Services (SSS, TRIO Program), and (e) participated in the College Assistance Migrant Program (CAMP).

Sample and Data

This study utilized archival data provided by the Office of Institutional Research from the student database system. Student institutional records provided student demographic information including race and gender, as well as individual level information including high school grade point average and incoming assessment test scores. Participants ($N = 1,089$) in the study included all first-time, degree-seeking students enrolled at the college in the fall of 2012. Both full-time ($N = 837$) and part-time student samples ($N = 252$) were utilized in the study to examine whether differences existed between the two groups and their retention rates based on the three research questions.

Data Analysis

Several analysis strategies were utilized to answer the research questions. Data was analyzed with the Statistical Package for the Social Sciences (SPSS). Descriptive statistics was used to examine both the full-time and part-time student groups in each of the three research question areas (a) pre-entry attributes, (b) academic experiences, and (c) social experiences. Both chi-square tests of independence and independent samples t -tests were utilized to analyze the variables. Three logistic regression models were prepared to predict the odds of student retention in the three research question areas. Regression models were developed utilizing the variables that were found to be significant based on chi-square and independent samples t -tests. To test for

multicollinearity, a linear regression analysis was performed to obtain the variance inflation factor (VIF) and tolerance statistics (Field, 2013). No problems were detected.

For logistic regression analysis, categorical data within the academic experiences category were dummy coded. Each of the following variables were dummy coded into mutually exclusive dichotomous variables (a) college orientation, (b) developmental reading, (c) general psychology, (d) English composition, (e) general biology, and (f) U.S. History. For example, a student either did not enroll in college orientation, enrolled in college orientation and passed with an A, B, or C grade, or enrolled in college orientation and received a D, F, or W for the course. Each variable was coded 0 for yes and 1 for no.

Findings

Student data was collected from CC's student database system from a cohort of first-time students enrolled for fall of 2012. The three research questions related to student pre-entry attributes, academic experiences, and social experiences were used to guide the data analysis. The quantitative analysis included utilizing independent sample *t*-tests, chi-square tests of independence, and binary logistic regression.

Descriptive Summaries

Descriptive summaries of the student sample are included in Table 1. The overall sample of both full- and part-time students consisted primarily of white (79.7%) female students (54.4%). Of the students who were assessed based on the ACT Compass exam upon entry to the college ($N = 861$), 88.2% tested developmental in math, 47.3% tested developmental in writing, and 36.2% tested developmental in reading. The fall-to-fall retention rate for the overall sample was 46.8%.

Table 1

Descriptive Statistics of Fall 2012 First-Time, Full- and Part-Time, Degree-Seeking Students

Variable	Categorical Variables	
	<i>n</i>	Percent
Full-time/Part-time		
Full-time	837	76.9%
Part-time	252	23.1%
Gender		
Male	497	45.6%
Female	592	54.4%
Race		
American Indian or Alaska Native	25	2.3%
Asian	13	1.2%
African American	17	1.6%
Hispanics of any race	102	9.4%
Native Hawaiian or Other Pacific Islander	10	.9%
Nonresident Alien	10	.9%
Race and Ethnicity unknown	3	.3%
Two or more races	30	2.8%
White	868	79.7%
Unreported	11	1.0%
Retention to next fall		
Yes	510	46.8%
No	579	53.2%

Pre-entry Attributes

Chi-square tests of independence were calculated to compare the relationship between first-year student retention and student pre-entry characteristics that were categorical. Assumptions for acceptable cell counts were met for all chi-square analyses performed. Students who received Pell grants were 1.45 times more likely to be retained than students who did not receive a Pell grant. Homeschooled students were 1.37 times

more likely to be retained than regular high school graduates and 2.64 times more likely to be retained than students receiving a high school equivalency diploma. These findings should be considered in light of the relatively small number of homeschooled students ($N = 16$). No significant difference was found between students who were first-generation college students and students who were not first-generation, and their retention to the next fall semester.

Independent samples *t*-tests were conducted to compare the mean pre-entry assessment scores and incoming student high school GPA of students who were retained and students who were not retained to the next fall semester. The results are presented in Table 2. Students who were retained had significantly higher ACT composite scores, as well as significantly higher ACT sub-scores in math, reading, and English. Students who were retained also had significantly higher ACT Compass scores in math and writing. There was no significant difference between the ACT Compass reading scores of students who were retained and students who were not retained.

Overall, nine of the eleven pre-entry variables examined for this study were found to have significant relationships to first-year student retention. The significant variables included: (a) whether students received federal Pell grants, (b) the type of high school diploma the student received, (c) ACT composite scores, (d) ACT math sub-scores, (e) ACT reading sub-scores, (f) ACT English sub-scores, (g) ACT Compass math entrance scores, (h) ACT Compass writing entrance scores, and (i) the students' high school GPA. The pre-entry variables that did not have a significant relationship to student retention were whether the student was a first-generation college student and the ACT Compass

reading entrance score. Statistical summaries of students retained or not retained in each of the pre-entry attribute categories is provided in Appendix B.

Table 2

Independent Samples t-Test Analysis for First-Year Retention of All First-Time, Full- and Part-Time, Degree Seeking Students

Variable	Retained			Not Retained		
	<i>N</i>	<i>M</i>	SD	<i>N</i>	<i>M</i>	SD
Pre-entry attributes						
High school gpa**	430	3.23	0.52	418	2.76	0.59
Compass scores						
Math**	398	105.34	61.47	436	81.45	56.37
Reading	282	179.61	13.75	372	180.23	85.16
Writing*	312	160.58	30.64	381	155.03	35.17
ACT scores						
Composite**	346	20.06	3.71	245	18.84	3.80
Math**	352	19.48	3.69	245	18.08	3.82
Reading*	352	20.79	4.93	245	19.74	5.07
English*	352	19.52	4.93	245	18.26	4.73

Note. * $p < .05$, ** $p < .001$.

Pre-Entry Attributes Model Predicting Fall-to-Fall Retention. To predict first year retention of the student sample, a logistic regression model was developed utilizing pre-entry attribute independent variables and the binary dependent variable of retention. To initially assess the model and determine which independent variables were predictors of retention, the variables were analyzed hierarchically utilizing the enter block method (Field, 2013). ACT scores, ACT Compass scores, and the type of high school diploma a student received were not statistically significant after controlling for the effects of the covariates of high school GPA and receiving a federal Pell grant. A subsequent logistic regression model was developed excluding these variables and utilizing forward logistic regression. The results of the model are included in Table 3.

Regression results indicated that the overall model fit of the remaining predictors, high school GPA and Pell status, was questionable (-2 Log Likelihood = 778.786) but was statistically reliable in predicting student retention; ($\chi^2(1) = 113.888, p < .001$). The model correctly classified 67.7% of the cases. Around 22% of the variance in the dependent variable is explained by the model, Nagelkerke $R^2 = .216$. Incoming high school GPA and receiving a Pell grant were positive predictors of student first-year retention, as demonstrated in Table 3.

Table 3

Logistic Regression Model Utilizing Pre-Entry Attribute Variables to Predict Student Retention

	<i>B</i>	<i>SE</i>	Wald	<i>df</i>	<i>p</i>	Exp(<i>B</i>)	95% CI for Exp(<i>B</i>)	
							Lower	Upper
Pell	.512	.176	8.450	1	.004	.599	.424	.846
HS GPA	1.586	.169	88.446	1	< .001	4.883	3.509	6.796

Note. CI = Confidence Interval.

Academic Experiences

Several academic experience variables were analyzed using chi-square tests of independence to determine whether a relationship exists between student retention and the identified academic experience variables. Assumptions for acceptable cell counts were met for all chi-square analyses. Significant differences were found in six of the eleven areas. A summary outlining the results of chi-square tests performed in all three research question areas is included in Table 4.

Table 4

Chi-Square Analysis for First-Year Retention of All First-Time, Full- and Part-Time, Degree Seeking Students

Variable	Significant Relationship to Student Retention	Did Not Differentiate Retention in Students
Pre-entry attributes		
Student was first-generation		✓
Student received Pell grant	✓	
Student was homeschooled	✓	
Academic experiences		
College orientation course - student received a C or higher	✓	
Developmental courses		
Student passed reading course	✓	
Student passed English course		✓
Student passed math course		✓
Student who did not enroll in		
Reading course		✓
English course		✓
Math course		✓
Gatekeeper courses		
Student received a C or higher in general psychology course	✓	
Student received a C or higher in English composition	✓	
Student received a C or higher in college algebra		✓
Student received a C or higher in U.S. history	✓	
Students who did not enroll in		
General psychology	✓	
English composition	✓	
College algebra	✓	
General biology	✓	
U.S. history	✓	
Degree selected – AA, AS, AAS, or certificate		✓
Social experiences		
Lived in residence hall		✓
Work-study student	✓	
Participated on athletic team	✓	
SSS participant	✓	
CAMP participant		✓

All of the identified gatekeeper courses that were examined, except college algebra, had a significant relationship to student retention. Odd ratios for these gatekeeper courses further explain the differences. Students receiving a C or higher in their general psychology course were 6.74 times more likely to be retained than those who received a D, F, or W in the course. Students receiving a C or higher in their English composition course were 6.12 times more likely to be retained than students receiving a D, F, or W in the course. Students receiving a C or higher in their general biology course were 5.75 times more likely to be retained than students receiving a D, F, or W in the course. Finally, students receiving a C or higher in their U.S. History course were 7.04 times more likely to be retained than students receiving a D, F, or W in the course.

Chi-square analysis of the five identified gatekeeper courses also revealed that significantly fewer students than expected were retained to the next fall semester if they did not take the specific gatekeeper course their first semester. For example, when compared to students who did take general psychology their first semester, students who did not take the course were significantly less likely to be retained. These results were consistent for all five gatekeeper courses including general psychology, English composition, college algebra, general biology, and U.S. history.

Additional academic variables found to have significant associations to retention included information related to completion of college orientation and successful completion of developmental reading. Students receiving a C or higher in their college orientation course were 19.65 times more likely to be retained than those who received a D, F, or W in their college orientation course. Students who passed their developmental

reading course on their first attempt were 1.92 times more likely to be retained than those who dropped or failed their reading course. Statistical summaries of students retained or not retained in each of the academic experience categories is provided in Appendix C.

In contrast, chi-square tests revealed no significant differences in variables related to students' successful completion of developmental English or developmental math. No significant differences were found in retention of students who did not enroll in developmental reading, English, or math. There was also no significant difference in student retention related to the type of degree a student was pursuing. *T*-test analysis indicated that the mean first semester college GPA of students who were retained was significantly higher ($n = 510$, $M = 3.07$, $SE = 0.04$, $SD = 0.86$) than students who were not retained ($n = 579$, $M = 1.58$, $SE = 0.60$, $SD = 1.43$) to the following fall semester.

Academic Experiences Model Predicting Fall-to-Fall Retention. To predict first-year retention of the student sample based on student academic experiences variables, a logistic regression model was developed with the binary dependent variable of retention. To initially assess the model and determine which independent variables were predictors of retention, the variables were analyzed hierarchically utilizing the enter block method (Field, 2013). After controlling for the effects of each academic experience covariate examined with chi-square and *t*-test analysis, the following variables were excluded from the regression model, (a) students who did not complete college orientation, (b) students who did not complete general psychology, (c) students who passed English composition, (d) students who failed English composition, (e) students who did not complete general biology, (f) students who failed U.S. History, and (g) all dummy codes of developmental reading. A subsequent logistic regression model was

developed utilizing forward logistic regression. The results of the model are included in Table 5.

Table 5

Logistic Regression Model Utilizing Academic Experience Variables to Predict Student Retention

	<i>B</i>	<i>SE</i>	Wald	<i>df</i>	Exp(<i>B</i>)	95% CI for Exp(<i>B</i>)	
						Lower	Upper
First semester college GPA	.583	.088	43.870	1	1.792	1.508	2.130
Passed college orientation	.931	.257	13.166	1	2.538	1.535	4.198
Passed general psychology	.685	.194	12.412	1	1.984	1.355	2.904
Did not enroll in English	-.854	.213	16.131	1	.426	.281	.646
Passed general biology	1.180	.214	30.324	1	3.254	2.138	4.953
Did not enroll in U.S. History	-.506	.234	4.695	1	.603	.381	.953
Passed U.S. History	1.155	.262	19.510	1	3.176	1.902	5.303

Note. CI = Confidence Interval, $p < .001$ for all variables.

Regression results indicated that the overall model fit of the remaining predictors was questionable (-2 Log Likelihood = 851.757) but was statistically reliable in predicting student retention; ($X^2(1) = 653.543, p < .001$). The model correctly classified 82.5% of the cases. Around 60% of the variance in the dependent variable is explained by the model, Nagelkerke $R^2 = .602$. As demonstrated in Table 5, positive predictors of first-year student retention (ordered strongest to weakest) are passing general biology, passing U.S. history, passing college orientation, passing general psychology, and first semester college GPA.

Factors that reduce the odds of first-year student retention included not taking English composition and not taking U.S. History during the first college semester.

Students cannot enroll in English composition and U.S. History until they have tested college level for the specific course. To enroll in English composition, students must test college level in English or have completed the developmental English sequence. Students enrolling in U.S. History must have tested college level reading or have completed the developmental reading coursework. There are no pre-requisite requirements for college orientation, general biology, or general psychology. These findings highlight the lower odds of retaining students who test developmental when entering college.

Social Experiences

The sample size for each of the social experiences variables was small, ranging from 2.7% to 11.8% of the total student sample. The following findings should be considered in light of the small sample sizes for this category. A listing of each of the social experience variables and the number and percent of students retained or not retained in each category is provided in Appendix D.

All social experience variables utilized in this study were analyzed using chi-square tests of independence to determine whether a relationship exists between student retention and the identified variables. Assumptions for acceptable cell counts were met for all chi-square analyses. For the social experience variables, significant differences were found in whether a student was a work-study recipient, whether the student was an athlete, and whether the student participated in the SSS program.

Odds ratios were calculated and revealed the following effects. Students participating in the federal work-study program were 4.51 times more likely to be retained than students who did not participate in the federal work-study program.

Students who were members of an athletic team were 1.94 times more likely to be retained than students who were not athletes. Students who participated in the SSS TRIO program were 4.62 times more likely to be retained than students who did not participate in SSS. No significant differences in student retention were revealed in whether students lived in the residence halls and whether students participated in the CAMP TRIO program.

Social Experiences Model Predicting Fall-to-Fall Retention. To predict first year retention of the student sample, a logistic regression model was developed utilizing the significant social experience variables and the binary dependent variable of retention. To initially assess the model and determine which independent variables were predictors of retention, the variables were analyzed hierarchically utilizing the enter block method (Field, 2013). A subsequent logistic regression model was developed utilizing forward logistic regression. The results of the model are included in Table 6.

Regression results indicated that the overall model fit was questionable (-2 Log Likelihood = 1431.255) but was statistically reliable in predicting student retention ($\chi^2(1) = 74.045, p < .001$). The model correctly classified 61.4% of the cases. Around 9% of the variance in the dependent variable is explained by the model, Nagelkerke $R^2 = .088$. Participating in the SSS program, participating in the federal work-study program, and participating on an athletic team were positive predictors of student first-year retention, as demonstrated in Table 6.

Table 6

Logistic Regression Model Utilizing Social Experience Variables to Predict Student Retention

	<i>B</i>	<i>SE</i>	Wald	<i>df</i>	<i>p</i>	Exp(<i>B</i>)	95% CI for Exp(<i>B</i>)	
							Lower	Upper
SSS	1.545	.222	48.359	1	< .001	4.686	3.032	7.242
Work-study	1.367	.473	8.344	1	.004	3.924	1.552	9.923
Athlete	.787	.337	5.470	1	.019	2.198	1.136	4.251

Note. CI = Confidence Interval.

Conclusion

The overall results of this research of first-time community college students found that receiving a federal Pell grant, passing college orientation in the first semester, passing general psychology in the first semester, passing general biology in the first semester, passing U.S. History in the first semester, participating in the SSS program, participating as a work-study student, and participating in athletics were predictors of first-year student retention. Student incoming high school GPA and first-semester college GPA were also positive predictors of student retention. Students who did not take English composition and U.S. History their first semester of college were less likely to persist to the next fall.

Discussion and Implications

This research builds on the extensive literature examining student retention and the variables that influence persistence at a community college. It provides insight into the pre-entry attributes and academic and social experiences that relate to student

retention. The results provide educational leaders with an overview of the variables that affect student retention in a community college setting.

Pre-Entry Attribute Variables and Student Retention

This study found the student more likely to be retained has a significantly higher incoming high school GPA and ACT scores. This evidence supports the wide range of studies that have examined student success in relation to high school GPA and ACT scores (Astin, 2005; Astin & Lee, 2003; Pascarella & Terenzini, 2005). ACT Compass math and writing scores were significantly higher in students who were more likely to be retained, but there was no significant difference in student incoming ACT Compass reading scores. According to the ACT website, all ACT Compass products will be phased out by December 2016 because the placement test “is not contributing as effectively to student placement and success as it had in the past” (ACT, 2016). As a result, many community colleges are in the process of re-evaluating their assessment policies to determine which measures will be used to assess incoming students. Evidence from this study would suggest community colleges use high school GPA as one of the placement measures for incoming students. Statistical summaries of students retained or not retained in each of the pre-entry attribute categories is provided in Appendix B.

Students receiving financial aid, such as federal Pell grants, have also been shown to have higher rates of retention (Pascarella & Terenzini, 2005), which was supported in this study. In addition, this research revealed that part-time students were less likely to receive federal Pell assistance. Finding ways to enhance and promote financial aid opportunities for part-time students may be an important strategy for community colleges to consider as they serve a large number of part-time students.

Although the sample size of homeschooled students in this study was small, students graduating from a homeschool program were more likely to be retained than students receiving a traditional high school diploma or a high school equivalency. Gloeckner and Jones' (2013) review of research on the success of homeschooled students in higher education found sample size issues with not only small numbers of students, but how homeschool students are tracked by institutions. Their review also noted that the number of students being homeschooled in the United States is increasing 7-15% annually. Based on the results of this research, and other studies reviewed by Gloeckner and Jones (2013), community colleges should consider increasing recruitment efforts toward this growing population of students.

It is noteworthy that for this sample of students, there was no significant difference in first-year student retention between students who were first-generation college students and students who were not first-generation. Prior research studies indicated that overall, first-generation students are less likely to be retained than students with parents who have college experience (Pascarella & Terenzini, 2005; Soria & Stebleton, 2012). Again, because most studies have been conducted at the university level, these results may indicate the community college environment has more academic and social support services available for first-generation students.

Academic Experiences and Student Retention

Consistent with several other studies examining the effects of freshman orientation classes on student success and retention, evidence from this study indicated students who successfully completed college orientation were more likely to be retained than students who failed or did not take college orientation. College orientation was also

a strong predictor of student retention to the next fall semester. These findings underscore the importance of ensuring the faculty teaching freshman orientation courses are well trained in student support services and the need for early intervention for students who are not progressing in the course. Permzadian and Crede's (2016) research found that first-year seminars taught by trained instructors were more effective at increasing student retention than courses taught by instructors who did not receive training information.

Developmental education in the community college setting has been an area of research that continues to provide mixed results. Although the chi-square analysis from this research found that students completing the required developmental reading course were more likely to be retained than those who dropped or failed the course, none of the developmental education areas were found to predict student retention in first-year students. Some researchers have criticized developmental education at the community college level suggesting that lengthy developmental education sequences may harm student retention (Bailey & Cho, 2010). As a result, some community colleges have accelerated their developmental education sequences into a one-semester sequence instead of over two or more semesters. The community college that was the setting for this current study requires a two or three semester developmental sequence for students testing into the lowest level of developmental math, reading, and English. The findings from this study support the need for community colleges to re-examine traditional formats of developmental education, and consider accelerated sequences and other approaches to support students who are not academically prepared for college.

According to the regression model in this study, the positive academic predictors of student retention came from students successfully completing basic gatekeeper courses, successfully completing college orientation, and their first-semester college GPA. Successful completion of gatekeeper courses can be challenging for students who are academically underprepared for college (Tinto, 2012). Students who did not take general psychology, English composition, college algebra, general biology, and U.S. History their first semester of college had reduced odds of being retained to the next fall. As was previously noted, students testing below college level will most likely not enroll in the identified gatekeeper courses because they need to complete developmental coursework to help prepare them for college level courses.

This study's findings related to gatekeeper courses clearly demonstrate that students who are not college ready are less likely to be retained. Overall, this research supports the need for community colleges to consider new and innovative approaches to incoming student assessment, developmental education, and other academic supports to promote student success and retention, specifically for students who are academically underprepared. Statistical summaries of students retained or not retained in each of the academic experience categories is provided in Appendix C.

Social Experiences and Student Retention

The sample size for each of the social experiences variables was small, ranging from 2.7% to 11.8% of the total student sample. The following findings should be considered in light of the small sample sizes for this category. A listing of each of the social experience variables and the number and percent of students retained or not retained in each category is provided in Appendix D.

The social experience variables found to be predictors of student retention included students who were work-study students, students participating in the SSS program, and student athletes. Several studies have found that federal SSS programs have a positive effect on student retention (Pascarella & Terenzini, 2005). These programs provide support services that include academic supports such as tutoring, as well as mentoring, advising, workshops, and cultural trips. Student support programs similar to SSS are difficult for community colleges to expand on a large scale because of the costs associated with the wide array of services and low student to advisor ratio. Further research could examine the specific services within SSS programs that are most closely related to student retention, allowing community colleges to more effectively target resources for all students.

Consistent with prior research, participating in the federal work-study program is a predictor of student retention in this study. For community colleges, this finding is important due to the large number of low-income students attending their institution. The Center for Analysis of Postsecondary Education and Employment (2015) noted that lower income and lower SAT scoring work-study students were 5-7% more likely to complete a bachelor's degree after six years than students with similar characteristics who were not work-study students. For students who were higher income and higher SAT scoring, there was no academic benefit to being a work-study student. These findings provide a basis for institutions to promote and expand work-study participation, specifically for low-income students.

Participation on an athletic team was a predictor of college retention in this study. Overall, student-athletes were more likely to be retained than students who were not

participating on an athletic team. There is very little research related to the retention of student-athletes in a community college setting. Weiss and Robinson (2013) studied factors involved in retention of athletes at a university. Their research found that student relationships with the head coach and their teammates were important to retention. The social and cultural environment of the institution, and college factors such as advising and tutoring were not factors associated with retention of student-athletes. Further research is needed to examine the factors related to student success and retention of athletes attending a community college.

Conclusion

Although community colleges face challenges of college-readiness and serving students from lower socio-economic backgrounds, they must find ways to help more students attain their educational goals. Retaining students to graduation is critical for the economic stability of the United States. “By 2018, nearly two-thirds of all American jobs will require a postsecondary certificate or degree” (American Association of Community Colleges, 2014, p. 4). Community colleges are in an excellent position to help rebuild the U.S. workforce by providing education for individuals from diverse backgrounds and income levels. This research can help guide institutions to decisions that support student retention.

Astin (2005) explained that an institution’s degree completion rate is a reflection of their student incoming attributes. The results of this student retention study support Astin’s research of the predictors of college completion. Student success in gatekeeper courses was found to be a strong predictor of college retention at an institution. Students who are not college ready struggle to complete gatekeeper courses and lack the

appropriate test scores to begin some gatekeeper courses with their college-ready peers. These underprepared students must navigate through developmental course requirements increasing their time to completion of a degree.

Federal financial aid programs were found to be important to the first-year persistence of community college students in this study. Receiving federal Pell grants and participating in the federal work-study program were both positive predictors of student retention. Although community colleges are relatively low tuition institutions, lack of state funding has resulted in tuition increases, placing the burden of college costs on individuals and families who are already struggling financially. Financial aid opportunities for students attending two-year institutions will be increasingly important as higher education costs rise.

The overall results of this research of first-time community college students found that receiving a federal Pell grant, passing college orientation in the first semester, passing general psychology in the first semester, passing general biology in the first semester, passing U.S. History in the first semester, participating in the SSS program, participating as a work-study student, and participating in athletics were predictors of first-year student retention (see Figure 1). Student incoming high school GPA and first-semester college GPA were also positive predictors of student retention. Students who did not take English composition and U.S. History their first semester of college were less likely to persist to the next fall.

Pre-Entry Attribute Factors that Differentiated Student Retention

Higher High School GPA*
Receiving Federal Pell Grant*
Higher ACT Scores
Higher ACT Compass Math and Writing Scores
Homeschooled Students^a

Academic Experience Factors that Differentiated Student Retention

Passed General Biology*
Passed U.S. History*
Passed College Orientation*
Passed General Psychology*
Higher First Semester College GPA*
Passed Developmental Reading

Reduced the Odds of Student Retention

Did Not Enroll in English – First College Semester*
Did Not Enroll in U.S. History – First College Semester*

Social Experience Factors that Differentiated Student Retention

SSS Participant*^a
Work-Study Student*^a
Student Athlete*^a

Figure 1. Factors that differentiated first-year student retention.

*Regression model predictors of first-year student retention, ordered strongest to weakest.

^aThese variables included small sample sizes ranging from 2.7% to 11.8% of the student sample.

Recommendations

According to Petrides (2003), “college and university leaders play a crucial role in ensuring that their institutions use the data they generate to more effectively plan, operate, and manage” (p. 25). This research utilized data from the CC student database system, and provides institution-specific outcomes to use for effective planning and

decision making promoting student success and retention. The recommendations listed below focus specifically on gatekeeper courses, developmental education, federal Pell grants and work-study programs, and scholarship opportunities.

1. Provide additional student support for success in gatekeeper courses.
2. Accelerate the developmental education sequence.
3. Expand the Educational Opportunity Center grant program.
4. Expand scholarship opportunities for part-time students.
5. Increase recruitment of work-study students in their field of study.

Recommendations for Gatekeeper Courses and Developmental Education

This research found that students who successfully complete certain gatekeeper courses with a grade of C or higher had increased odds of being retained to the next fall. The only gatekeeper course that was not a predictor of student retention was college algebra. Students who did not enroll in U.S. History or English composition (most likely due to developmental reading and writing scores) during their first semester of college had decreased odds of being retained to the next fall. These findings suggest that CC consider ways to improve student academic performance in gatekeeper courses and find ways to accelerate the developmental education sequence.

CC currently tracks mid-term grades of students and attempts to contact those with D and F grades. However, waiting until mid-term may be too late for many students to raise their grade to passing by the end of the semester. It may be beneficial to assess incoming students either through the use of standardized non-cognitive assessments or through advising appointments to identify students considered to be “at-risk” earlier in

the semester. The identified at-risk students could be provided with early intervention strategies such as tutoring referral and other supports.

The developmental education coursework sequence may also be an area that CC could examine to promote student retention. As was previously noted, successful completion of developmental education courses was not found to be a predictor of student retention. Jaggars, Hodara, Cho, and Xu (2015) explained that due to external factors such as work and family, many community college students are pulled away from college before completing the developmental education sequence, or before they reach college-level coursework. Accelerating developmental education sequences could decrease opportunities for external forces to pull students away from college before they reach the gatekeeper courses.

Jaggars et al. (2015) examined three different accelerated developmental education programs, and found that overall accelerated programs were successful in increasing the probability that students would enroll in and complete college-level math and English. They also noted that successful accelerated programs are those that support faculty with implementation of the program and provide extra supports to students. Some accelerated programs allow students to mainstream into college-level courses while providing them with extended instruction time and other academic supports. Additional academic assistance, like supplemented instruction, are more important during a student's first year of college and particularly for students who are not college ready (Tinto, 2012). Based on the findings from this current student retention study and research of developmental education programs suggested by Jaggars et al. (2015), CC should consider reducing the time of completion for their developmental education program.

Recommendations for Federal Pell Grants, Work-Study, and Scholarships

This study found that students receiving federal Pell grants and students participating in the federal work-study program were more likely to persist to the second year of college. Pascarella and Terenzini (2005) contend that the impact of financial aid is particularly evident in students who are low-income and attending two-year colleges. Therefore, it is recommended that CC consider increasing and supporting new ways to promote and enhance financial aid opportunities for students.

As was noted in this study, 61.3% of the first-time students at CC were first-generation college students. Furthermore, this study revealed that part-time students were 1.92 times more likely than full-time students to be first-generation college students. First-generation students need support and guidance to navigate the college system and apply for federal financial aid. CC currently partners with a grant funded program, the Educational Opportunity Center (EOC), to provide students with assistance in applying to college and completing the Free Application for Federal Student Aid (FAFSA). Unfortunately, not all of the CC service area has access to advisors from the EOC. Utilizing evidence from this study, CC should consider writing for an expansion of the EOC program in the next grant cycle. The expansion could increase current financial aid outreach services and extend the program to all areas of the CC service region.

Financial aid access for part-time students is another area CC could strengthen. Part-time students are less likely to receive federal Pell grants and are more likely to withdraw from college due to work and financial challenges (Pascarella & Terenzini, 2005). CC should consider expanding scholarship opportunities for part-time students who qualify for lower amounts of Pell grants or have no access to Pell grants. Tinto

(2012) described a program offered through two colleges in New Orleans that offered \$1,000 scholarship incentives to students who remained enrolled at least half-time and maintained a 2.0 GPA. Students in the program “were more likely than nonenrollees to register for college, to persist once they entered, and to earn more credits and higher grade-point averages through four semesters” (p. 52).

Work-study students are able to gain financial support while being socially and academically engaged with faculty, staff, and other students on campus, which could explain why they are more likely to be retained (Tinto, 2012). This is particularly true for work-study students working in an area on campus that is directly related to the students’ field of study, for example, students interested in solar energy working on the CC solar home and receiving work-study benefits. This evidence suggests CC should consider being more intentional about recruiting work-study students to work in campus departments related to the area they are interested in pursuing academically.

Conclusion

Student retention is a highly complex and interrelated issue that encompasses all departments and divisions of an institution. For this reason, it is critical for leaders in higher education to strategically gather institutional data, and merge that data with broader research and trends within higher education (Bresciani, 2010). The recommendations derived from this research provide CC with specific areas of concentration that can help the institution further promote the retention of students.

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Appendix B

Pre-Entry Attribute Summaries for Students Retained and Not Retained
Number, Percent, Mean, and Standard Deviation

Variables	Retained		Total
	Yes <i>n</i> (%)	No <i>n</i> (%)	
First-generation	311(46.6)	357(53.4)	668
Not first-generation	199(47.3)	222(52.7)	421
Pell recipient*	299(51.1)	286(48.9)	585
Not Pell recipient	211(41.9)	293(58.1)	504
Public or private high school diploma	462(48.4)	492(51.6)	954
Homeschooled*	9(56.3)	7(43.8)	16
High school equivalency	39(32.8)	80(67.2)	119

Variables	Retained		Total
	Yes <i>M</i> (<i>SD</i>)	No <i>M</i> (<i>SD</i>)	
High school GPA*	3.07(.86)	1.58(1.43)	848
ACT Compass reading score	179.61(13.75)	180.23(85.16)	654
ACT Compass writing score*	160.58(30.64)	155.03(35.17)	693
ACT Compass math score*	105.34(61.47)	81.45(56.37)	834
ACT composite*	20.06(3.71)	18.84(3.81)	591
ACT math*	19.48(3.69)	18.08(3.82)	597
ACT reading*	20.79(4.93)	19.74(5.07)	597
ACT English*	19.52(4.93)	18.26(4.74)	597

Note. *Significantly differentiated students retained and not retained.

Appendix C

Academic Experience Summaries for Students Retained and Not Retained
Number, Percent, Mean, and Standard Deviation

Variable	Retained		Total
	Yes <i>n</i> (%)	No <i>n</i> (%)	
College orientation			
A,B,C*	470(62.5)	282(37.5)	752
D,F,W	20(7.8)	236(92.2)	256
Not enrolled first-semester	61(75.3)	20(24.7)	81
Developmental reading			
Passed*	67(60.4)	44(39.6)	111
Did not pass	38(44.2)	48(55.8)	86
Not enrolled first-semester	405(45.4)	487(54.6)	892
Developmental English			
Passed	109(54.0)	93(46.0)	202
Did not pass	53(45.7)	63(54.3)	116
Not enrolled first-semester	348(45.1)	423(54.9)	771
Developmental math			
Passed	154(53.3)	135(46.7)	289
Did not pass	145(52.5)	131(47.5)	276
Not enrolled first-semester	211(40.3)	313(59.7)	524
General psychology			
A,B,C*	301(76.0)	74(19.7)	375
D,F,W	67(37.6)	111(62.4)	178
Not enrolled first-semester*	142(26.5)	394(73.5)	536
English composition			
A,B,C*	367(76.0)	116(24.0)	483
D,F,W	77(34.1)	149(65.9)	226
Not enrolled first-semester*	66(17.4)	314(82.6)	380
College algebra			
A,B,C	242(83.4)	48(16.6)	290
D,F,W	89(79.5)	23(20.5)	112
Not enrolled first-semester*	179(26.1)	508(73.9)	687

(continued)

Variable	Retained		Total
	Yes <i>n</i> (%)	No <i>n</i> (%)	
General biology			
A,B,C*	243(85.0)	43(15.0)	286
D,F,W	54(49.5)	55(50.5)	109
Not enrolled first-semester*	213(30.7)	481(69.3)	697
U.S. history –			
A,B,C*	288(85.5)	49(14.5)	337
D,F,W	76(45.5)	91(54.5)	167
Not enrolled first-semester*	146(25.0)	439(75.0)	585
Degree Status Selected			
Associate of Arts	329(51.2)	313(48.8)	642
Associate of Science	91(47.6)	100(52.4)	191
Associate of Applied Science	73(44.2)	92(55.8)	165
Certificate	34(37.4)	57(62.6)	91

Variable	Retained		Total
	Yes <i>M</i> (<i>SD</i>)	No <i>M</i> (<i>SD</i>)	
First semester college GPA*	2.97(.95)	1.53(1.44)	1089

Note. *Significantly differentiated students retained and not retained.

Appendix D

Social Experience Summaries for Students Retained and Not Retained
Number and Percent

Variable	Retained		Total
	Yes <i>n</i> (%)	No <i>n</i> (%)	
Lived in Residence Halls	48(50.0)	48(50.0)	96
Work-study*	23(79.3)	6(20.7)	29
Athlete*	25(62.5)	15(37.5)	40
SSS Program*	100(77.5)	29(22.5)	129
CAMP Program	21(52.5)	19(47.5)	40

Note. *Significantly differentiated students retained and not retained.

CHAPTER FIVE
CONTRIBUTION TO SCHOLARSHIP

Community College Student Retention:
An Examination of Student Pre-Entry Attributes, Academic Experiences, and Social
Experiences and the Relationship to First-Year Persistence
To be submitted to *The Community College Review*

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Abstract

This study investigated the extent that the attributes of incoming students and their subsequent academic and social interactions at an institution are related to community college student retention. Student data from a cohort of first-time students ($N = 1089$) attending a community college in southwest Missouri was analyzed to examine variables related to fall-to-fall student retention. Predictors of first-year retention included receiving federal Pell grants, high school GPA, receiving a C or higher in college orientation, first semester college GPA, and receiving a C or higher in general psychology, general biology, and U.S. History. The findings highlight the importance of college readiness and value of federal financial aid programs for community college student persistence.

Keywords: student retention, persistence, community college, college success, college readiness

Introduction

Open access to community colleges allows students from all education levels and backgrounds to attend college. Increasing access to college, specifically to those who are low-income and first-generation students, has been the focus across the United States (AACC, 2014). Unfortunately, access does not always translate to student success and completion of a college degree. Many institutions have provided access to education for students of diverse backgrounds, but have not been successful in retaining and graduating these students. Tinto (2012) described, “as access has more than doubled from nearly 9 million students in 1980 to almost 20 million in 2011, overall college completion rates have increased only slightly, if at all” (p. 2).

In an attempt to increase graduation rates, community colleges expend precious time and resources creating and implementing student support programs. Nevertheless, graduation rates are still extremely low, particularly for community colleges. According to the Institute of Education Sciences (2015), only 20% of first-time, full-time undergraduate students attending two-year public colleges complete a degree within three years. This rate is significantly lower than the 58% six-year graduation rate for public four-year institutions. The lower graduation rates for community college students reflects the many challenges this population of students face when attempting to complete their degree, including being less academically prepared and less economically secure (Crews & Aragon, 2007; Kuh, Kinzie, Schuh, & Whitt, 2010; Tinto, 2012).

Examining ways to increase student success and graduation at community colleges is critically important to the national economy and to the fiscal health of an institution. Overall, funding for public higher education continues to decrease; therefore,

tuition revenue is becoming a key source of income for institutions. Improving retention rates will help institutions maintain tuition revenue that is much needed to support faculty and staff in their efforts to provide quality education for all students. In addition to declining federal and state funding, community colleges are being held more accountable for student success and graduation rates. There has been a shift in state higher education funding toward performance budgeting initiatives that tie funding to demonstrated outcomes of the institution (McLendon, Heller, & Young, 2005).

The purpose of this study was to increase understanding of the extent that both the attributes of incoming students, and their subsequent academic and social interactions at an institution are related to community college student retention (Tinto, 1993). This study examined factors that can differentiate retention between student groups utilizing a student sample from a public community college located in southwest Missouri. Three research questions guided the study:

1. To what extent are student pre-entry attributes related to differences in student retention?
2. To what extent are student academic experiences related to differences in student retention?
3. To what extent are student social experiences related to differences in student retention?

Conceptual Framework

The conceptual framework for this study was Tinto's (1993) theory of student individual departure. The primary focus of Tinto's theory is that a student's academic and social integration within an institution increases the likelihood the student will

persist. The theory acknowledges that students enter higher education with varying pre-entry attributes such as family background, skills and abilities, and prior schooling. Students also possess varying levels of commitment to an institution, and external commitments such as work and family. The interaction of these incoming characteristics, and the academic and social experiences the student has with an institution are factors that determine whether a student will persist or not.

Tinto's (1993) longitudinal model depicts a process of interactions between students with varying pre-entry attributes that include financial resources, prior educational experiences, and family background. Research has suggested that students with college-educated parents who are well-prepared and academically talented are more likely to succeed in college (Kuh et al., 2010). Community colleges are open-admission institutions and cannot selectively admit those students with characteristics that more often lead to student success, nor is that the mission of community colleges. Nevertheless, community colleges can enact policies and programs that enhance the positive academic and social experiences of students once they arrive at the institution.

The academic and social systems of a college are also important components of Astin's (1999) input-environment-outcome (I-E-O) model. Astin's model proposed the academic and social environment of an institution provides opportunities for students to become involved in their learning by exposing them to new ideas, people, and experiences. Pascarella and Terenzini (2005) also acknowledged the role of the institutional environment on student outcomes. Their general causal model indicated that changes in students' learning are influenced by five sets of variables that include (a) structural/organizational characteristics of an institution; (b) student

background/precollege traits; (c) interactions with agents of socialization, i.e., faculty and peers; (d) institutional environment; and (e) quality of student effort. These models all recognize the impact of institutional policies, programs, and structures on student success.

According to Tinto (1993), his theory of student individual student departure “is structured to allow institutional planners to identify those elements of the institutional environment, academic and social, which may interfere with degree completion” (p. 113). He indicated that the theory can be viewed as a longitudinal process of interactions between the student’s incoming attributes and the academic and social systems of the college. Tinto’s theory in addition to components of Astin’s (1999) input-environment-outcome model and Pascarella and Terenzini’s (2005) model provided guidance for this study of student retention in a community college setting.

Scholarly Context and Related Literature

This scholarly review of student success and retention literature highlights the multiple variables that research studies have investigated including pre-entry attributes, and social and academic integration. Much of this research has utilized concepts from Astin (1999), Pascarella and Terenzini (2005), and Tinto (1993) as their conceptual framework. Although many of the large longitudinal studies have been based on traditional aged students attending four-year universities, there are several community college studies that offer insight into the application of the fundamental theories to two-year commuter students. The knowledge base and available research in the area of retention is vast, but there is still more to be learned about retaining community college students who work at least part-time and have significant family responsibilities.

Pascarella and Terenzini (2005) stated “both academic and social integration appear to shape student persistence in the residential four-year setting, but evidence from two-year colleges is ambiguous” (p. 427). The lack of comprehensive studies of the effects of incoming student attributes and student integration on the retention of community college students indicates a need for further examination.

Application of the Conceptual Framework in a Community College Setting

Several studies have suggested that persistence in community college students is affected more by external forces including family and work commitments than persistence of traditional four-year university students (Astin, 1999, Kuh et al., 2010; Pascarella & Terenzini, 2005). Many community college students have external obligations of work and caring for a family that influence their commitment to college (Kuh et al., 2010). Nevertheless, Tinto (1993) contended that “though the intentions and commitments with which individuals enter college matter, what goes on after entry matters more” (p. 136). This would suggest there is an opportunity for community colleges to more effectively retain adult students by providing supportive faculty, enriching academic experiences, and other social support systems.

Another challenge to applying traditional theoretical frameworks to the study of community college retention is the large number of diverse students who attend two-year institutions, many who are academically unprepared (Bailey & Alfonso, 2005; Kuh et al., 2010). In comparison to students attending a four-year university, the pre-entry attributes of community college students tend to include larger numbers of female students, students who are less academically prepared, low-income students, and minority students (Crews & Aragon, 2007). For many community colleges, as many as 60-75% of their

incoming freshmen are referred into at least one developmental course (Zeidenberg, Cho, & Jenkins, 2010). A review examining academic success rates of developmental students conducted by Noble and Sawyer (2013) found students who test below college level are “less successful overall than non-developmental students in terms of GPA/persistence over time and degree completion” (p. 57).

According to Pascarella and Terenzini (2005), research has revealed that academic integration may have a larger effect on persistence than social integration for two-year colleges. In addition, some researchers have questioned the relevance of social integration to community college students due to the diverse characteristics of students served by community colleges (Deil-Amen, 2011; Karp, 2011; Reason, 2009). Students attending two-year institutions do not typically engage in traditional forms of college social and academic activities due to the unique challenges they face attempting to balance academic life with outside family and work commitments. While Tinto’s (1993) theory is based on traditional types of social interactions, the theory also considers social experiences that occur within the classroom setting when measuring student integration. Both Deil-Amen (2011) and Karp et al. (2008) found that although the experiences may be more informal and classroom related than interactions at a four-year institution, social experiences were a factor in community college student involvement and integration.

The ways academic and social integration occur for community college students must be further explored. Community college student populations are becoming increasingly diverse in age, race, and socio-economic background (Kuh et al., 2010; Reason, 2009). Trends suggest the numbers of minority students, women, and those from lower socio-economic backgrounds attending two-year colleges will continue to grow as

the numbers of traditional aged, white, male students will remain steady (Pascarella & Terenzini, 2005). As student demographic characteristics change, retention research must examine how these new student populations learn and persist. According to Reason (2009), "the breadth and depth of knowledge necessary for informed practice in an era of rapid changes in the demographics of higher education will require more of both scholars and practitioners" (p. 486).

Pascarella and Terenzini (2005) made several recommendations of ways institutions can improve student success and persistence based on research they reviewed. However, they acknowledged that although the recommendations are based on empirical research, the implementation and effect of programs may vary by institution. They indicated a need for colleges to conduct research specific to their population of students. Just as there are differences between four-year and two-year college students, there are also differences in the structural and organizational features of community colleges that can have an indirect effect on student retention (Astin, 1999; Pascarella & Terenzini, 2005).

The numerous and interrelated factors that influence academic success and student retention make the process of examining reasons why students do not persist highly complex. Studies that are specific to an institution can simplify the process and allow administrators to be intentional and proactive in their pursuit of student success. This type of institution-focused research can more narrowly explore the variables that most affect student persistence and provide valuable information educators can use to assess their retention efforts and adjust them accordingly.

Setting for the Study

The student sample was selected from a small, public, community college that serves a nine county region in southwest Missouri. The community college serves a mostly rural population with educational attainment rates 10-20% below the state average (Lumina Foundation for Education, 2014). Similar to many community colleges, the majority of students attending this community college are first-generation college students; more than 60% are low-income; and approximately 40% are non-traditional, returning students.

Students attending this community college can pursue two-year associate degrees or certificate programs in a variety of disciplines including business, teacher education, nursing, emergency medical technician, and general studies. Students have the option to take classes at several different satellite locations throughout the service region or complete an entire associate degree online. Campus-wide enrollment for fall 2012 was 5,590 students.

Design of the Study

This quantitative, non-experimental study utilized archival data collected from college's institutional database system. The dependent variable for the study, fall-to-fall retention rates, was calculated as the percentage of first-time, degree-seeking students (both full- and part-time) who persisted from fall 2012 to fall 2013. The independent variables for the study were based on Tinto's (1993) "longitudinal model of institutional departure" (p. 114) and included pre-entry attributes of students, and their academic and social institutional experiences.

The pre-entry student attributes used for this study included (a) whether the student was a first-generation college student or not; (b) whether the student received a federal Pell grant or not; (c) high school grade point average (GPA); (d) ACT Compass entrance scores for math, writing, and reading; (e) ACT composite score and math, English, and reading subscores; (f) high school graduate or high school equivalency; and (g) whether the student graduated from a home school program. The set of academic experience variables used for this study included (a) college orientation course completion and grade; (b) first semester college grade point average (GPA); (c) developmental course participation and/or completion; (d) enrollment and grades in gatekeeper courses (this study utilized institutionally identified gatekeeper courses including general psychology, college algebra, U.S. History, English composition, and general biology); and (e) selected degree program upon entry to college. The set of social experience variables used for this study include whether or not the student (a) lived in the residence halls, (b) was a work-study student, (c) was an athlete, (d) participated in Student Support Services (SSS, TRIO Program), and (e) participated in the College Assistance Migrant Program (CAMP). CAMP is a federally funded program that provides academic, financial, and support services for a student or a parent who is a migrant farm worker.

Sample and Data

This study utilized archival data provided by the community college from their institutional student database system. Student institutional records provided student demographic information including race and gender, as well as individual level information including high school grade point average and incoming assessment test

scores. Participants ($N = 1,089$) in the study included all first-time, degree-seeking students enrolled at the college in the fall of 2012. Both full-time ($N = 837$) and part-time student samples ($N = 252$) were utilized in the study to examine whether differences existed between the two groups and their retention rates based on the three research questions.

Data Analysis

Several analysis strategies were utilized to answer the research questions. Data was analyzed with the Statistical Package for the Social Sciences (SPSS). Descriptive statistics was used to examine both the full-time and part-time student groups in each of the three research question areas (a) pre-entry attributes, (b) academic experiences, and (c) social experiences. Both chi-square tests of independence and independent samples t -tests were utilized to analyze the variables. Three logistic regression models were prepared to predict the odds of student retention in the three research question areas. Regression models were developed utilizing the variables that were found to be significant based on chi-square and independent samples t -tests. To test for multicollinearity, a linear regression analysis was performed to obtain the variance inflation factor (VIF) and tolerance statistics (Field, 2013). No problems were detected.

For the binary logistic regression analysis, categorical data within the academic experiences category were dummy coded. Each of the following variables were dummy coded into mutually exclusive dichotomous variables (a) college orientation, (b) developmental reading, (c) general psychology, (d) English composition, (e) general biology, and (f) U.S. History. For example, a student either did not enroll in college orientation, enrolled in college orientation and passed with an A, B, or C grade, or

enrolled in college orientation and received a D, F, or W for the course. Each variable was coded 0 for yes and 1 for no.

Results

Student data was collected from the participating college's student database system from a cohort of first-time students enrolled for fall of 2012. The three research questions related to student pre-entry attributes, academic experiences, and social experiences were used to guide the data analysis. The quantitative analysis included utilizing independent sample *t*-tests, chi-square tests of independence, and binary logistic regression.

Descriptive Summaries

Descriptive summaries of the student sample are included in Table 1. The overall sample of both full- and part-time students consisted primarily of white (79.7%) female students (54.4%). Of the students who were assessed based on the ACT Compass exam upon entry to the college ($N = 861$), 88.2% tested developmental in math, 47.3% tested developmental in writing, and 36.2% tested developmental in reading. The fall-to-fall retention rate for the overall sample was 46.8%.

Pre-entry Attributes

Chi-square tests of independence were calculated to compare the relationship between first-year student retention and student pre-entry characteristics that were categorical. Assumptions for acceptable cell counts were met for all chi-square analyses performed. Students who received Pell grants were 1.45 times more likely to be retained than students who did not receive a Pell grant. Homeschooled students were 1.37 times more likely to be retained than regular high school graduates and 2.64 times more likely

to be retained than students receiving a high school equivalency diploma. These findings should be considered in light of the relatively small number of homeschooled students ($N = 16$). No significant difference was found between students who were first-generation college students and students who were not first-generation and their retention to the next fall semester.

Table 1

Descriptive Statistics of Fall 2012 First-Time, Full- and Part-Time, Degree-Seeking Students

Variable	Categorical Variables	
	<i>n</i>	Percent
Full-time/Part-time		
Full-time	837	76.9%
Part-time	252	23.1%
Gender		
Male	497	45.6%
Female	592	54.4%
Race		
American Indian or Alaska Native	25	2.3%
Asian	13	1.2%
African American	17	1.6%
Hispanics of any race	102	9.4%
Native Hawaiian or Other Pacific Islander	10	.9%
Nonresident Alien	10	.9%
Race and Ethnicity unknown	3	.3%
Two or more races	30	2.8%
White	868	79.7%
Unreported	11	1.0%
Retention to next fall		
Yes	510	46.8%
No	579	53.2%

Independent samples *t*-tests were conducted to compare the mean pre-entry assessment scores and incoming student high school GPA of students who were retained and students who were not retained to the next fall semester. The results are presented in Table 2. Students who were retained had significantly higher ACT composite scores, as well as significantly higher ACT sub-scores in math, reading, and English. Students who were retained also had significantly higher ACT Compass scores in math and writing. There was no significant difference between the ACT Compass reading scores of students who were retained and students who were not retained.

Table 2

Independent Samples t-Test Analysis for First-Year Retention of All First-Time, Full- and Part-Time, Degree Seeking Students

Variable	Retained			Not Retained		
	<i>N</i>	<i>M</i>	SD	<i>N</i>	<i>M</i>	SD
Pre-entry attributes						
High school gpa**	430	3.23	0.52	418	2.76	0.59
Compass scores						
Math**	398	105.34	61.47	436	81.45	56.37
Reading	282	179.61	13.75	372	180.23	85.16
Writing*	312	160.58	30.64	381	155.03	35.17
ACT scores						
Composite**	346	20.06	3.71	245	18.84	3.80
Math**	352	19.48	3.69	245	18.08	3.82
Reading*	352	20.79	4.93	245	19.74	5.07
English*	352	19.52	4.93	245	18.26	4.73

Note. * $p < .05$, ** $p < .001$.

Overall, nine of the eleven pre-entry variables examined for this study were found to have significant relationships to first-year student retention. The significant variables included (a) whether students received federal Pell grants, (b) the type of high school diploma the student received, (c) ACT composite scores, (d) ACT math sub-scores, (e)

ACT reading sub-scores, (f) ACT English sub-scores, (g) ACT Compass math entrance scores, (h) ACT Compass writing entrance scores, and (i) the students' high school GPA. The pre-entry variables that did not have a significant relationship to student retention were whether the student was a first-generation college student and the ACT Compass reading entrance score. Statistical summaries of students retained or not retained in each of the pre-entry attribute categories is provided in Appendix A.

Pre-Entry Attributes Model Predicting Fall-to-Fall Retention. To predict first year retention of the student sample, a logistic regression model was developed utilizing pre-entry attribute independent variables and the binary dependent variable of retention. To initially assess the model and determine which independent variables were predictors of retention, the variables were analyzed hierarchically utilizing the enter block method (Field, 2013). ACT scores, ACT Compass scores, and the type of high school diploma a student received were not statistically significant after controlling for the effects of the covariates of high school GPA and receiving a federal Pell grant. A subsequent logistic regression model was developed excluding these variables and utilizing forward logistic regression. The results of the model are included in Table 3.

Regression results indicated that the overall model fit of the remaining predictors, high school GPA and Pell status, was questionable ($-2 \text{ Log Likelihood} = 778.786$) but was statistically reliable in predicting student retention ($X^2(1) = 113.888, p < .001$). The model correctly classified 67.7% of the cases. Around 22% of the variance in the dependent variable is explained by the model, Nagelkerke $R^2 = .216$. Incoming high school GPA and receiving a Pell grant were positive predictors of student first-year retention, as demonstrated in Table 3.

Table 3

Logistic Regression Model Utilizing Pre-Entry Attribute Variables to Predict Student Retention

	<i>B</i>	<i>SE</i>	Wald	<i>df</i>	<i>p</i>	Exp(<i>B</i>)	95% CI for Exp(<i>B</i>)	
							Lower	Upper
Pell	.512	.176	8.450	1	.004	.599	.424	.846
HS GPA	1.586	.169	88.446	1	< .001	4.883	3.509	6.796

Note. CI = Confidence Interval.

Academic Experiences

Several academic experience variables were analyzed using chi-square tests of independence to determine whether a relationship exists between student retention and the identified academic experience variables. Assumptions for acceptable cell counts were met for all chi-square analyses. Significant differences were found in six of the eleven areas. A summary outlining the results of chi-square tests performed in all three research question areas is included in Table 4.

All of the identified gatekeeper courses that were examined, except college algebra, had a significant relationship to student retention. Odd ratios for these gatekeeper courses further explain the differences. Students receiving a C or higher in their general psychology course were 6.74 times more likely to be retained than those who received a D, F, or W in the course.

Table 4

Chi-Square Analysis for First-Year Retention of All First-Time, Full- and Part-Time, Degree Seeking Students

Variable	Significant Relationship to Student Retention	Did Not Differentiate Retention in Students
Pre-entry attributes		
Student was first-generation		✓
Student received Pell grant	✓	
Student was homeschooled	✓	
Academic experiences		
College orientation course - student received a C or higher	✓	
Developmental courses		
Student passed reading course	✓	
Student passed English course		✓
Student passed math course		✓
Student who did not enroll in		
Reading course		✓
English course		✓
Math course		✓
Gatekeeper courses		
Student received a C or higher in general psychology course	✓	
Student received a C or higher in English composition	✓	
Student received a C or higher in college algebra		✓
Student received a C or higher in U.S. history	✓	
Students who did not enroll in		
General psychology	✓	
English composition	✓	
College algebra	✓	
General biology	✓	
U.S. history	✓	
Degree selected – AA, AS, AAS, or certificate		✓
Social experiences		
Lived in residence hall		✓
Work-study student	✓	
Participated on athletic team	✓	
SSS participant	✓	
CAMP participant		✓

Students receiving a C or higher in their English composition course were 6.12 times more likely to be retained than students receiving a D, F, or W in the course.

Students receiving a C or higher in their general biology course were 5.75 times more likely to be retained than students receiving a D, F, or W in the course. Finally, students receiving a C or higher in their U.S. History course were 7.04 times more likely to be retained than students receiving a D, F, or W in the course.

Chi-square analysis of the five identified gatekeeper courses also revealed that significantly fewer students than expected were retained to the next fall semester if they did not take the specific gatekeeper course their first semester. For example, when compared to students who did take general psychology their first semester, students who did not take the course were significantly less likely to be retained. These results were consistent for all five gatekeeper courses including general psychology, English composition, college algebra, general biology, and U.S. history.

Additional academic variables found to have significant associations to retention included information related to completion of college orientation and successful completion of developmental reading. Students receiving a C or higher in their college orientation course were 19.65 times more likely to be retained than those who received a D, F, or W in their college orientation course. Students who passed their developmental reading course on their first attempt were 1.92 times more likely to be retained than those who dropped or failed their reading course. Statistical summaries of students retained or not retained in each of the academic experience categories is provided in Appendix B.

In contrast, chi-square tests revealed no significant differences in variables related to students' successful completion of developmental English or developmental math. No

significant differences were found in retention of students who did not enroll in developmental reading, English, or math. There was also no significant difference in student retention related to the type of degree a student was pursuing. *T*-test analysis indicated that the mean first semester college GPA of students who were retained was significantly higher ($n = 510$, $M = 3.07$, $SE = 0.04$, $SD = 0.86$) than students who were not retained ($n = 579$, $M = 1.58$, $SE = 0.60$, $SD = 1.43$) to the following fall semester.

Academic Experiences Model Predicting Fall-to-Fall Retention. To predict first-year retention of the student sample based on student academic experiences variables, a logistic regression model was developed with the binary dependent variable of retention. To initially assess the model and determine which independent variables were predictors of retention, the variables were analyzed hierarchically utilizing the enter block method (Field, 2013). After controlling for the effects of each academic experience covariate examined with chi-square and *t*-test analysis, the following variables were excluded from the regression model, students who did not complete college orientation, students who did not complete general psychology, students who passed English composition, students who failed English composition, students who did not complete general biology, students who failed U.S. history, and all dummy codes of developmental reading. A subsequent logistic regression model was developed utilizing forward logistic regression. The results of the model are included in Table 5.

Regression results indicated that the overall model fit of the remaining predictors was questionable ($-2 \text{ Log Likelihood} = 851.757$) but was statistically reliable in predicting student retention; ($X^2(1) = 653.543$, $p < .001$). The model correctly classified 82.5% of the cases. Around 60% of the variance in the dependent variable is explained

by the model, Nagelkerke $R^2 = .602$. As demonstrated in Table 5, positive predictors of first year student retention (ordered strongest to weakest) are passing general biology, passing U.S. history, passing college orientation, passing general psychology, and first semester college GPA.

Table 5

Logistic Regression Model Utilizing Academic Experience Variables to Predict Student Retention

	<i>B</i>	<i>SE</i>	Wald	<i>df</i>	Exp(<i>B</i>)	95% CI for Exp(<i>B</i>)	
						Lower	Upper
First semester college GPA	.583	.088	43.870	1	1.792	1.508	2.130
Passed college orientation	.931	.257	13.166	1	2.538	1.535	4.198
Passed general psychology	.685	.194	12.412	1	1.984	1.355	2.904
Did not enroll in English	-.854	.213	16.131	1	.426	.281	.646
Passed general biology	1.180	.214	30.324	1	3.254	2.138	4.953
Did not enroll in U.S. History	-.506	.234	4.695	1	.603	.381	.953
Passed U.S. History	1.155	.262	19.510	1	3.176	1.902	5.303

Note. CI = Confidence Interval, $p < .001$ for all variables.

Factors that reduce the odds of first-year student retention included not taking English composition and not taking U.S. History during the first college semester. Students cannot enroll in English composition and U.S. History until they have tested college level for the specific course. To enroll in English composition, students must test college level in English or have completed the developmental English sequence. Students enrolling in U.S. history must have tested college level reading or have completed the developmental reading coursework. There are no pre-requisite requirements for college orientation, general biology, or general psychology. These

findings highlight the lower odds of retaining students who test developmental when entering college.

Social Experiences

The sample size for each of the social experiences variables was small, ranging from 2.7% to 11.8% of the total student sample. The following findings should be considered in light of the small sample sizes for this category. A listing of each of the social experience variables and the number and percent of students retained or not retained in each category is provided in Appendix C.

All social experience variables utilized in this study were analyzed using chi-square tests of independence to determine whether a relationship exists between student retention and the identified variables. Assumptions for acceptable cell counts were met for all chi-square analyses. For the social experience variables, significant differences were found in whether a student was a work-study recipient, whether the student was an athlete, and whether the student participated in the SSS program.

Odds ratios were calculated and revealed the following effects. Students participating in the federal work-study program were 4.51 times more likely to be retained than students who did not participate in the federal work-study program. Students who were members of an athletic team were 1.94 times more likely to be retained than students who were not athletes. Students who participated in the SSS TRIO program were 4.62 times more likely to be retained than students who did not participate in SSS. No significant differences in student retention were revealed in whether students lived in the residence halls and whether students participated in the CAMP TRIO program.

Social Experiences Model Predicting Fall-to-Fall Retention. To predict first year retention of the student sample, a logistic regression model was developed utilizing the significant social experience variables and the binary dependent variable of retention. To initially assess the model and determine which independent variables were predictors of retention, the variables were analyzed hierarchically utilizing the enter block method (Field, 2013). A subsequent logistic regression model was developed utilizing forward logistic regression. The results of the model are included in Table 6.

Regression results indicated that the overall model fit was questionable (-2 Log Likelihood = 1431.255) but was statistically reliable in predicting student retention ($X^2(1) = 74.045, p < .001$). The model correctly classified 61.4% of the cases. Around 9% of the variance in the dependent variable is explained by the model, Nagelkerke $R^2 = .088$. Participating in the SSS program, participating in the federal work-study program, and participating on an athletic team were positive predictors of student first-year retention, as demonstrated in Table 6.

Table 6

Logistic Regression Model Utilizing Social Experience Variables to Predict Student Retention

	<i>B</i>	<i>SE</i>	Wald	<i>df</i>	<i>p</i>	Exp(<i>B</i>)	95% CI for Exp(<i>B</i>)	
							Lower	Upper
SSS	1.545	.222	48.359	1	< .001	4.686	3.032	7.242
Work-study	1.367	.473	8.344	1	.004	3.924	1.552	9.923
Athlete	.787	.337	5.470	1	.019	2.198	1.136	4.251

Note. CI = Confidence Interval.

Conclusion

The overall results of this research of first-time community college students found that receiving a federal Pell grant, passing college orientation in the first semester, passing general psychology in the first semester, passing general biology in the first semester, passing U.S. history in the first semester, participating in the SSS program, participating as a work-study student, and participating in athletics were predictors of first-year student retention (see Figure 1). Student incoming high school GPA and first-semester college GPA were also positive predictors of student retention. Students who did not take English composition and U.S. History their first semester of college were less likely to persist to the next fall.

Limitations

This research has a few important limitations. First, only certain relationships in Tinto's (1993) integration framework were examined. Outside environmental variables that are outlined in Tinto's (1993) model were not addressed in this study. The use of pre-entry attributes does help provide a link between students' past environmental experiences and motivation, and the current environment (Soria & Stebleton, 2012). At the same time, it means that many of the environmental influences including hours of outside employment and family responsibilities were not considered.

This research examined one cohort of students and their retention from the freshman to sophomore year at a community college. The findings provide a snapshot of variables that could affect retention at a single point in time. This limits the research as it did not assess how retention may change from a longitudinal perspective.

Pre-Entry Attribute Factors that Differentiated Student Retention

Higher High School GPA*
Receiving Federal Pell Grant*
Higher ACT Scores
Higher ACT Compass Math and Writing Scores
Homeschooled Students^a

Academic Experience Factors that Differentiated Student Retention

Passed General Biology*
Passed U.S. History*
Passed College Orientation*
Passed General Psychology*
Higher First Semester College GPA*
Passed Developmental Reading

Reduced the Odds of Student Retention

Did Not Enroll in English – First College Semester*
Did Not Enroll in U.S. History – First College Semester*

Social Experience Factors that Differentiated Student Retention

SSS Participant*^a
Work-Study Student*^a
Student Athlete*^a

Figure 1. Factors that differentiated first-year student retention.

*Regression model predictors of first-year student retention, ordered strongest to weakest.

^aThese variables included small sample sizes ranging from 2.7% to 11.8% of the student sample.

The generalizability of this study is limited because the research investigates first- to second-year retention of students at a single institution. This research was conducted at a small, rural, public community college located in the Midwest. While single-institution studies limit the generalizability, it allows for control of “extraneous factors associated with context, geography, and student experiences” (Barnett, 2011, p. 203).

Discussion and Implications

This research builds on the extensive literature examining student retention and the variables that influence persistence at a community college. It provides insight into the pre-entry attributes and academic and social experiences that relate to student retention. The results provide educational leaders with an overview of the variables that affect student retention in a community college setting.

Pre-Entry Attribute Variables and Student Retention

This study found the student more likely to be retained has a significantly higher incoming high school GPA and ACT scores. This evidence supports the wide range of studies that have examined student success in relation to high school GPA and ACT scores (Astin, 2005; Astin & Lee, 2003; Pascarella & Terenzini, 2005). ACT Compass math and writing scores were significantly higher in students who were more likely to be retained, but there was no significant difference in student incoming ACT Compass reading scores. According to the ACT website, all ACT Compass products will be phased out by December 2016 because the placement test “is not contributing as effectively to student placement and success as it had in the past” (ACT, 2016). As a result, many community colleges are in the process of re-evaluating their assessment policies to determine which measures will be used to assess incoming students. Evidence from this study would suggest community colleges use high school GPA as one of the placement measures for incoming students.

Students receiving financial aid, such as federal Pell grants, have also been shown to have higher rates of retention (Pascarella & Terenzini, 2005), which was supported in this study. In addition, this research revealed that part-time students were less likely to

receive federal Pell assistance. Finding ways to enhance and promote financial aid opportunities for part-time students may be an important strategy for community colleges to consider as they serve a large number of part-time students.

Although the sample size of homeschooled students in this study was small, students graduating from a homeschool program were more likely to be retained than students receiving a traditional high school diploma or a high school equivalency. Gloeckner and Jones' (2013) review of research on the success of homeschooled students in higher education found sample size issues with not only small numbers of students, but how homeschool students are tracked by institutions. Their review also noted that the number of students being homeschooled in the United States is increasing 7-15% annually. Based on the results of this research, and other studies reviewed by Gloeckner and Jones (2013), community colleges should consider increasing recruitment efforts toward this growing population of students.

It is noteworthy that for this sample of students, there was no significant difference in first-year student retention between students who were first-generation college students and students who were not first-generation. Prior research studies indicated that overall, first-generation students are less likely to be retained than students with parents who have college experience (Pascarella & Terenzini, 2005; Soria & Stebleton, 2012). Again, because most studies have been conducted at the university level, these results may indicate the community college environment has more academic and social support services available for first-generation students.

Academic Experiences and Student Retention

Consistent with several other studies examining the effects of freshman orientation classes on student success and retention, evidence from this study indicated students who completed college orientation were more likely to be retained than students who failed or did not take college orientation. College orientation was also a strong predictor of student retention to the next fall semester. These findings underscore the importance of ensuring the faculty teaching freshman orientation courses are well trained in student support services, as well as the need for early intervention for students who are not progressing in the course. Permzadian and Crede's (2016) research found that first-year seminars taught by trained instructors were more effective at increasing student retention than courses taught by instructors who did not receive training information.

Developmental education in the community college setting has been an area of research that continues to provide mixed results. Although the chi-square analysis from this research found that students completing the required developmental reading course were more likely to be retained than those who dropped or failed the course, none of the developmental education areas were found to predict student retention in first-year students. Some researchers have criticized developmental education at the community college level suggesting that lengthy developmental education sequences may harm student retention (Bailey & Cho, 2010). As a result, some community colleges have accelerated their developmental education sequences into a one-semester sequence instead of over two or more semesters. The community college that was the setting for this current study requires a two or three semester developmental sequence for students testing into the lowest level of developmental math, reading, and English. The findings

from this study support the need for community colleges to re-examine traditional formats of developmental education, and consider accelerated sequences and other approaches to support students who are not academically prepared for college.

According to the regression model in this study, the positive academic predictors of student retention came from students successfully completing basic gatekeeper courses, successfully completing college orientation, and their first-semester college GPA. Successful completion of gatekeeper courses can be challenging for students who are academically underprepared for college (Tinto, 2012). Students who did not take U.S. History or English composition their first semester of college had reduced odds of being retained to the next fall. As was previously noted, students testing below college level will most likely not enroll in the identified gatekeeper courses because they need to complete developmental coursework to help prepare them for college level courses.

This study's findings related to gatekeeper courses clearly demonstrate that students who are not college ready are less likely to be retained. Overall, this research supports the need for community colleges to consider new and innovative approaches to incoming student assessment, developmental education, and other academic supports to promote student success and retention, specifically for students who are academically underprepared.

Social Experiences and Student Retention

The social experience variables found to be predictors of student retention included students who were work-study students, students participating in the SSS program, and student athletes. Several studies have found that federal SSS programs have a positive effect on student retention (Pascarella & Terenzini, 2005). These

programs provide support services that include academic supports such as tutoring, as well as mentoring, advising, workshops, and cultural trips. Student support programs similar to SSS are difficult for community colleges to expand on a large scale because of the costs associated with the wide array of services and low student to advisor ratio. Further research could examine the specific services within SSS programs that are most closely related to student retention, allowing community colleges to more effectively target resources for all students.

Consistent with prior research, participating in the federal work-study program is a predictor of student retention in this study. For community colleges, this finding is important due to the large number of low-income students attending their institution. The Center for Analysis of Postsecondary Education and Employment (2015) noted that lower income and lower SAT scoring work-study students were 5-7% more likely to complete a bachelor's degree after six years than students with similar characteristics who were not work-study students. For students who were higher income and higher SAT scoring, there was no academic benefit to being a work-study student. These findings provide a basis for institutions to promote and expand work-study participation, specifically for low-income students.

Participation on an athletic team was a predictor of college retention in this study. Overall, student-athletes were more likely to be retained than students who were not participating on an athletic team. There is very little research related to the retention of student-athletes in a community college setting. Weiss and Robinson (2013) studied factors involved in retention of athletes at a university. Their research found that student relationships with the head coach and their teammates were important to retention. The

social and cultural environment of the institution, and college factors such as advising and tutoring were not factors associated with retention of student-athletes. Further research is needed to examine the factors related to student success and retention of athletes attending a community college.

Conclusion

Although community colleges face challenges of college-readiness and serving students from lower socio-economic backgrounds, they must find ways to help more students attain their educational goals. Retaining students to graduation is critical for the economic stability of the United States. “By 2018, nearly two-thirds of all American jobs will require a postsecondary certificate or degree” (American Association of Community Colleges, 2014, p. 4). Community colleges are in an excellent position to help rebuild the U.S. workforce by providing education for individuals from diverse backgrounds and income levels. This research can help guide institutions to decisions that support student retention.

Astin (2005) explained that an institution’s degree completion rate is a reflection of their student incoming attributes. The results of this student retention study support Astin’s research of the predictors of college completion. Student success in gatekeeper courses was found to be a strong predictor of college retention at an institution. Students who are not college ready struggle to complete gatekeeper courses and lack the appropriate test scores to begin some gatekeeper courses with their college-ready peers. These underprepared students must navigate through developmental course requirements increasing their time to completion of a degree.

Federal financial aid programs were found to be important to the first-year persistence of community college students in this study. Receiving federal Pell grants and participating in the federal work-study program were both positive predictors of student retention. Although community colleges are relatively low tuition institutions, lack of state funding has resulted in tuition increases, placing the burden of college costs on individuals and families who are already struggling financially. Financial aid opportunities for students attending two-year institutions will be increasingly important as higher education costs rise.

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Appendix A

Pre-Entry Attribute Summaries for Students Retained and Not Retained
Number, Percent, Mean, and Standard Deviation

Variables	Retained		Total
	Yes <i>n</i> (%)	No <i>n</i> (%)	
First-generation	311(46.6)	357(53.4)	668
Not first-generation	199(47.3)	222(52.7)	421
Pell recipient*	299(51.1)	286(48.9)	585
Not Pell recipient	211(41.9)	293(58.1)	504
Public or private high school diploma	462(48.4)	492(51.6)	954
Homeschooled*	9(56.3)	7(43.8)	16
High school equivalency	39(32.8)	80(67.2)	119

Variables	Retained		Total
	Yes <i>M</i> (<i>SD</i>)	No <i>M</i> (<i>SD</i>)	
High school GPA*	3.07(.86)	1.58(1.43)	848
ACT Compass reading score	179.61(13.75)	180.23(85.16)	654
ACT Compass writing score*	160.58(30.64)	155.03(35.17)	693
ACT Compass math score*	105.34(61.47)	81.45(56.37)	834
ACT composite*	20.06(3.71)	18.84(3.81)	591
ACT math*	19.48(3.69)	18.08(3.82)	597
ACT reading*	20.79(4.93)	19.74(5.07)	597
ACT English*	19.52(4.93)	18.26(4.74)	597

Note. *Significantly differentiated students retained and not retained.

Appendix B

Academic Experience Summaries for Students Retained and Not Retained
Number, Percent, Mean, and Standard Deviation

Variable	Retained		Total
	Yes <i>N</i> (%)	No <i>N</i> (%)	
College orientation			
A,B,C*	470(62.5)	282(37.5)	752
D,F,W	20(7.8)	236(92.2)	256
Not enrolled first-semester	61(75.3)	20(24.7)	81
Developmental reading			
Passed*	67(60.4)	44(39.6)	111
Did not pass	38(44.2)	48(55.8)	86
Not enrolled first-semester	405(45.4)	487(54.6)	892
Developmental English			
Passed	109(54.0)	93(46.0)	202
Did not pass	53(45.7)	63(54.3)	116
Not enrolled first-semester	348(45.1)	423(54.9)	771
Developmental math			
Passed	154(53.3)	135(46.7)	289
Did not pass	145(52.5)	131(47.5)	276
Not enrolled first-semester	211(40.3)	313(59.7)	524
General psychology			
A,B,C*	301(76.0)	74(19.7)	375
D,F,W	67(37.6)	111(62.4)	178
Not enrolled first-semester*	142(26.5)	394(73.5)	536
English composition			
A,B,C*	367(76.0)	116(24.0)	483
D,F,W	77(34.1)	149(65.9)	226
Not enrolled first-semester*	66(17.4)	314(82.6)	380
College algebra			
A,B,C	242(83.4)	48(16.6)	290
D,F,W	89(79.5)	23(20.5)	112
Not enrolled first-semester*	179(26.1)	508(73.9)	687

(continued)

Variable	Retained		Total
	Yes <i>N</i> (%)	No <i>N</i> (%)	
General biology			
A,B,C*	243(85.0)	43(15.0)	286
D,F,W	54(49.5)	55(50.5)	109
Not enrolled first-semester*	213(30.7)	481(69.3)	697
U.S. history –			
A,B,C*	288(85.5)	49(14.5)	337
D,F,W	76(45.5)	91(54.5)	167
Not enrolled first-semester*	146(25.0)	439(75.0)	585
Degree Status Selected			
Associate of Arts	329(51.2)	313(48.8)	642
Associate of Science	91(47.6)	100(52.4)	191
Associate of Applied Science	73(44.2)	92(55.8)	165
Certificate	34(37.4)	57(62.6)	91

Variable	Retained		Total
	Yes <i>M</i> (<i>SD</i>)	No <i>M</i> (<i>SD</i>)	
First semester college GPA*	2.97(.95)	1.53(1.44)	1089

Note. *Significantly differentiated students retained and not retained.

Appendix C

Social Experience Summaries for Students Retained and Not Retained
Number and Percent

Variable	Retained		Total
	Yes <i>N</i> (%)	No <i>N</i> (%)	
Lived in Residence Halls	48(50.0)	48(50.0)	96
Work-study*	23(79.3)	6(20.7)	29
Athlete*	25(62.5)	15(37.5)	40
SSS Program*	100(77.5)	29(22.5)	129
CAMP Program	21(52.5)	19(47.5)	40

Note. *Significantly differentiated students retained and not retained.

CHAPTER SIX
SCHOLARLY PRACTITIONER REFLECTION

Introduction

According to Schultz (2010), “meaning and purpose is generated through an understanding of the connection between leadership practice and theoretical knowledge” (p. 61). My dissertation research provided significance for me as an educational leader and scholarly practitioner. The process allowed me to consider the ways research is viewed from practitioners and also those contributing to scholarship in the field of higher education.

Influence of the Dissertation on My Practice as an Educational Leader

The dissertation process influenced the ways I research, analyze, and make decisions. It has allowed me to cultivate an enhanced understanding of complex problems of practice in higher education. In addition, I became more aware of the importance of collaboration between departments and divisions of an institution.

My research has furthered my understanding of the complexity in many educational situations that I will encounter as a leader. Educational leaders will find themselves faced with problems that are difficult to define, problems that are symptoms of another problem, and problems that rely on political or social judgment for resolution (Bolman & Deal, 2008). The factors that influence student persistence are multifaceted and complex. The complexity of my research became evident during my readings of related literature. There is a large volume of research in the area of student retention due to the many facets and factors involved. The factors of student success and retention cross all departments of an institution from academic affairs, student affairs, and finance.

During my research of student retention, I was reminded of my first summer in the EdD program when we worked in teams on the wicked problem. Student retention

research for me was similar to the wicked problem. There are many different ways to frame the problem of student persistence, just as we had to frame the wicked problem from different perspectives. I was grateful to have conducted other research projects within the EdD program that helped prepare me for the process of research and analysis. The experience gained analyzing the wicked problem and conducting research studies during the program provided me with greater understanding that the frustration I felt at times during my research was part of the process; with reflection and analysis, I could find clarity and meaning.

Researching and analyzing a complex problem has influenced how I make decisions and seek solutions to problems of practice. First, I allocate more time to critically reflect, read, and discuss issues to assist in my decision-making process. In addition, I develop a process for collaborating with other practitioners in order to expand my knowledge and increase my understanding of challenges and opportunities in higher education.

The dissertation has helped me develop a clearer and deeper understanding of student success and retention. The majority of our research for this EdD program had been completed within one semester. In contrast, the dissertation research was much more in depth requiring longer to complete. I learned that throughout the process of in-depth research there may be multiple challenges and delays, but it is important to always continue to move forward. The advice from my dissertation advisor and committee members was invaluable, and allowed me to continue, even when the process seemed too challenging. Continual reading, writing, and analyzing required for this study led me to a greater understanding of a complex problem facing administrators in higher education.

My research also made me more aware of the need for educational leaders to work across departments and divisions on campus. I am more intentional in my efforts to reach out to collaborate and share information with colleagues. My openness to diverse opinions increased as I struggled to understand how the factors of retention were affected by many different aspects of student experiences at our institution. Without collaboration, meaningful discussion, and cooperation, it would be extremely difficult to promote student persistence.

My research afforded me the opportunity to interact with several educational leaders at my own institution, as well as leaders within the K-12 sector. I found that not only are higher education administrators interested in ways to increase student retention, but many K-12 administrators are interested in how their students are performing in college. The interactions I experienced with leaders across educational sectors allowed me to develop a broader understanding of my research. This higher level of interaction with practitioners in higher education and the K-12 system is something I see as valuable to continue as an educational leader.

The research experience increased my motivation to use data and seek additional information before making decisions. I am utilizing new data specific to my division, and have started some basic trend data that faculty and staff can utilize in their own planning and goal setting. As was required in the dissertation process, I not only utilize data more effectively, but collaborate with other practitioners to balance the use of data with valuable insight from other educational leaders that is integrated with the data.

When reviewing and cleaning the data collected for my research, I realized there were inaccuracies within some of the variables I wanted to examine. Several variables

had to be corrected before moving forward with data analysis. Some of the variables I had originally proposed to study had to be eliminated from the research due to the lack of accurate data. The experience of cleaning a large data set made me more diligent in my efforts to ensure the data I use is high-quality and accurate. I am also more cautious when interpreting other research studies.

Influence of the Dissertation on Me as a Scholar

Scholarly research is critically important to educational leaders who are searching for ways to solve complex problems of practice. Knowledge gained from scholarly inquiry can help practitioners develop a theoretical understanding of issues they face as practitioners. The scholarly process of the dissertation helped increase my understanding of statistical analysis, enhanced my ability to analyze scholarly research, and increased my desire to continually learn and grow as a scholar.

The dissertation process helped me to increase my understanding of statistical analysis. It had been several years since I participated in a statistics class when I started the EdD program. Reading the Field (2013) book on statistics was challenging as my understanding of the statistical concepts was extremely limited. Fortunately, my knowledge of statistical tests greatly improved after completing the summer coursework and quantitative research project. In addition, conducting several small research studies throughout the EdD program allowed me to feel more comfortable determining the methods for my student retention research. Nevertheless, my understanding of the most appropriate statistical tests to run for my data was still limited. After completing the research for my dissertation, I am more confident in my scholarly abilities and would feel comfortable developing further quantitative studies using statistical analysis.

The dissertation process also enhanced my ability to more effectively analyze, synthesize, and evaluate other scholarly research. The ability to critically analyze research is valuable as it allows an individual to increase the level of understanding of educational issues and problems. As an educational scholar, I examine and research problems with a lens of critical inquiry that I developed through the process of completing my dissertation.

Lastly, I realize that although I expanded my knowledge greatly through the process of completing my dissertation, there is more to learn about how to conduct scholarly research. In the beginning of the dissertation process, my learning curve was high. This was the first time I had performed a research study such a large scale. Over the course of the research, my scholarly writing improved, my ability to understand statistical tests and analysis increased, and my level of reflection and thought was heightened.

Although my scholarly knowledge and ability to conduct research have improved, my level of understanding will continue to expand the more experience I gain. One of the researchers I used for my theoretical framework was Vincent Tinto (1993, 1997, 2012). Tinto's fundamental research in the area of student success and retention was the result of in-depth analysis. After years of research, he published many scholarly writings. His level of understanding of the factors involved in student retention are well above what I learned in the course of my dissertation. Reading Tinto's research helped me recognize there is much more to learn not only in the area of student retention, but within the realm of higher education in general. Continual learning is important to my development as a scholar and an educational leader.

Conclusion

Tinto (1993, 1997, 2012) is an excellent example of an individual scholar who conducted valuable research offering fundamental knowledge of student success in higher education, while at the same time providing practitioners with effective ways to promote student persistence within their institution. Similarly, the format of this dissertation requires the consideration of contribution to scholarly research and practitioner knowledge. Writing to both audiences was meaningful to me and enhanced my learning as both a scholar and practitioner.

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Appendix B

Pre-Entry Attribute Summaries for Students Retained and Not Retained
Number, Percent, Mean, and Standard Deviation

Variables	Retained		Total
	Yes <i>n</i> (%)	No <i>n</i> (%)	
First-generation	311(46.6)	357(53.4)	668
Not first-generation	199(47.3)	222(52.7)	421
Pell recipient*	299(51.1)	286(48.9)	585
Not Pell recipient	211(41.9)	293(58.1)	504
Public or private high school diploma	462(48.4)	492(51.6)	954
Homeschooled*	9(56.3)	7(43.8)	16
High school equivalency	39(32.8)	80(67.2)	119

Variables	Retained		Total
	Yes <i>M</i> (<i>SD</i>)	No <i>M</i> (<i>SD</i>)	
High school GPA*	3.07(.86)	1.58(1.43)	848
ACT Compass reading score	179.61(13.75)	180.23(85.16)	654
ACT Compass writing score*	160.58(30.64)	155.03(35.17)	693
ACT Compass math score*	105.34(61.47)	81.45(56.37)	834
ACT composite*	20.06(3.71)	18.84(3.81)	591
ACT math*	19.48(3.69)	18.08(3.82)	597
ACT reading*	20.79(4.93)	19.74(5.07)	597
ACT English*	19.52(4.93)	18.26(4.74)	597

Note. *Significantly differentiated students retained and not retained.

Appendix C

Academic Experience Summaries for Students Retained and Not Retained
Number, Percent, Mean, and Standard Deviation

Variable	Retained		Total
	Yes <i>N</i> (%)	No <i>N</i> (%)	
College orientation			
A,B,C*	470(62.5)	282(37.5)	752
D,F,W	20(7.8)	236(92.2)	256
Not enrolled first-semester	61(75.3)	20(24.7)	81
Developmental reading			
Passed*	67(60.4)	44(39.6)	111
Did not pass	38(44.2)	48(55.8)	86
Not enrolled first-semester	405(45.4)	487(54.6)	892
Developmental English			
Passed	109(54.0)	93(46.0)	202
Did not pass	53(45.7)	63(54.3)	116
Not enrolled first-semester	348(45.1)	423(54.9)	771
Developmental math			
Passed	154(53.3)	135(46.7)	289
Did not pass	145(52.5)	131(47.5)	276
Not enrolled first-semester	211(40.3)	313(59.7)	524
General psychology			
A,B,C*	301(76.0)	74(19.7)	375
D,F,W	67(37.6)	111(62.4)	178
Not enrolled first-semester*	142(26.5)	394(73.5)	536
English composition			
A,B,C*	367(76.0)	116(24.0)	483
D,F,W	77(34.1)	149(65.9)	226
Not enrolled first-semester*	66(17.4)	314(82.6)	380
College algebra			
A,B,C	242(83.4)	48(16.6)	290
D,F,W	89(79.5)	23(20.5)	112
Not enrolled first-semester*	179(26.1)	508(73.9)	687

(continued)

Variable	Retained		Total
	Yes <i>N</i> (%)	No <i>N</i> (%)	
General biology			
A,B,C*	243(85.0)	43(15.0)	286
D,F,W	54(49.5)	55(50.5)	109
Not enrolled first-semester*	213(30.7)	481(69.3)	697
U.S. history –			
A,B,C*	288(85.5)	49(14.5)	337
D,F,W	76(45.5)	91(54.5)	167
Not enrolled first-semester*	146(25.0)	439(75.0)	585
Degree Status Selected			
Associate of Arts	329(51.2)	313(48.8)	642
Associate of Science	91(47.6)	100(52.4)	191
Associate of Applied Science	73(44.2)	92(55.8)	165
Certificate	34(37.4)	57(62.6)	91

Variable	Retained		Total
	Yes <i>M</i> (<i>SD</i>)	No <i>M</i> (<i>SD</i>)	
First semester college GPA*	2.97(.95)	1.53(1.44)	1089

Note. *Significantly differentiated students retained and not retained.

Appendix D

Social Experience Summaries for Students Retained and Not Retained
Number and Percent

Variable	Retained		Total
	Yes <i>N</i> (%)	No <i>N</i> (%)	
Lived in Residence Halls	48(50.0)	48(50.0)	96
Work-study*	23(79.3)	6(20.7)	29
Athlete*	25(62.5)	15(37.5)	40
SSS Program*	100(77.5)	29(22.5)	129
CAMP Program	21(52.5)	19(47.5)	40

Note. *Significantly differentiated students retained and not retained.

VITA

Cynthia Adamson was born in Joplin, MO in 1972. She earned a Bachelor of Science in Business Administration from Missouri Southern State University, with the intent of working in Human Resources. After briefly working in Human Resources, she realized that was not her career path and made a change to higher education. She has worked in higher education since 1999. For the past eleven years, she has served as the Director of the Webb City Campus for Crowder College. She earned a Masters of Arts in Communication from Pittsburg State University in 2003. A defense of the present dissertation will meet the remaining requirements for completion of a doctorate in Educational Leadership and Policy Analysis through the University of Missouri. She has a passion for helping students succeed in the pursuit of their academic goals. She plans to continue her career in higher education and work in administration.