Individual and Combined Impact of Institutional Student Support Strategies on

First-time, Full-time, Degree-seeking Community College Students

by

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ABSTRACT

Although U.S. rates of college enrollment among 18-24 year olds have

reached historic highs, rates of degree completion have not kept pace. This is

especially evident at community colleges, where a disproportionate number of

students from groups who, historically, have had low college-completion rates

enroll. One way community colleges are attempting to address low completion

rates is by implementing institutional interventions intended to increase

opportunities for student engagement at their colleges.

Utilizing logistic and linear regression analyses, this study focused on

community college students, examining the association between participation in

institutional support activities and student outcomes, while controlling for specific

student characteristics known to impact student success in college. The sample

included 746 first-time, full-time, degree-seeking students at a single community

college located in the U.S. Southwest. Additional analyses were conducted for the

440 first-time, full-time, degree-seeking students in this sample who placed into at

least one developmental education course.

Findings indicate that significant associations exist between different types

of participation in institutional interventions and various student outcomes:

Academic advising was found to be related to increased rates of Fall to Spring and

Fall to Fall persistence and, for developmental education students, participation in

a student success course was found to be related to an increase in the proportion

of course credit hours earned. The results of this study provide evidence that

student participation in institutional-level support may relate to increased rates of

college persistence and credit hour completion; however, additional inquiry is warranted to inform specific policy and program decision-making at the college and to determine if these findings are generalizable to populations outside of this college setting.

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CHAPTER 1

Introduction

This chapter provides an introduction to the purpose of the study and presents the basis for the research questions. This study sought to examine the impact of institutional interventions intended to support first-time, full-time, degree-seeking community college student persistence (i.e., progress toward degree completion). At the conclusion of this chapter, the study's research questions, definitions of key terms, a chapter summary, and an overview of the organization of the study are provided.

Background

In the context of ensuring a pool of qualified workers, attainment of postsecondary education is vital to the nation's economic growth: The United States (U.S.) Department of Labor predicts that 90% of the nation's fastest growing jobs will require at least some postsecondary (i.e., post-high school) education or training (Duncan, 2009). U.S. Secretary of Education Arne Duncan (2009) notes that U.S. President Barack Obama expects the higher education budget "to be the engine that will drive the nation's economic recovery" (p. 27), adding that the nation's economy cannot continue to grow without an educated workforce. Carnevale, Smith, and Strohl (2010) report projections showing that by the year 2018, the U.S. postsecondary education system will have produced 3 million fewer graduates than the labor market will require (p. 16).

Researchers estimate that presently 35% to 41% (approximately 11.5 million) of all 18-24 year olds in the U.S. enroll in some type of postsecondary

education (Berube, 2010; National Center for Education Statistics, 2011; National

Center for Public Policy and Higher Education, 2008; Taylor, Fry, Wang,

Dockterman, & Velasco, 2009). This historically high rate of enrollment (Taylor

et al., 2009) reflects an increase in college attendance for this age group in recent

decades (Berube, 2010; National Center for Education Statistics, 2011); however,

even with this historically high postsecondary enrollment, as of 2008 the U.S.

ranked seventh (tied with New Zealand) in postsecondary attendance, across all

Organisation for Economic Co-operation and Development (OECD) countries

(National Center for Public Policy and Higher Education, 2008).

In terms of postsecondary completion (i.e., student attainment of a

degree), as compared to other OECD countries, the U.S. (at 39%) is second only

to Canada in the percent of its *older* population (35-64 year olds) holding an

associate's degree or higher; however, for the percent of its *younger* population

(25-34 year olds) holding an associate's degree or higher, the U.S. (at 39%) is tied

for tenth place and is surpassed by Canada, Japan, Korea, New Zealand, Ireland,

Belgium, Norway, France, and Denmark (National Center for Public Policy and

Higher Education, 2008). This dichotomy of U.S. postsecondary degree

attainment across age groups highlights the fact that the U.S. is not keeping pace

with other nations in educating its younger population. The State Higher

Education Executive Officers organization (SHEEO) has forecasted that the U.S.

needs to produce one million more college graduates a year to meet the needs of

the 2025 U.S. economy (as cited in Rothkopf, 2009).

Critics of these global comparisons dispute the comparison methodology that has been employed to calculate postsecondary enrollment and completion rates across countries (Adelman, 2009; American Association of State Colleges and Universities, 2010); however, even if global comparisons represent an exaggerated negative judgment of the U.S.'s standing in postsecondary degree completion rates, the fact remains that even *within* the U.S., postsecondary completion rates are low, with evident disparities among students from different racial/ethnic groups and levels of family income. Although the percentage of students enrolled in U.S. postsecondary education has increased in recent years, rates of postsecondary degree (e.g., associate's or bachelor's) completion have not kept pace with this increased enrollment (Berube, 2010, p. 107). There is concern that if current U.S. trends of postsecondary completion continue, existing inequities will be exacerbated for students who have traditionally low degree-completion rates (Cox, 2009).

Degree completion rates at community colleges, the focus of this study, are lower than those at four-year institutions: The National Center for Education Statistics (NCES; 2010; as cited in D'Amico & Morgan, 2010) reports that only 20% of students who begin their postsecondary education at a public community college earn a certificate or associate's degree within three years (150% of expected time to graduation). Further illustrating the lack of student persistence at the community college are student attrition (departure) rates: One-third to one-half of students who begin their postsecondary education at a community college do not even return for a second year (Fontana et al., 2006; Lincoln, 2009;

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Southern Regional Education Board as cited in Summers, 2003) and almost one-fifth of 18-24 year old students who attend community colleges never even complete 10 credit hours (Bailey & Alfonso, 2005).

      Postsecondary degree completion differs among student groups. Postsecondary degree completion rates differ among income groups (i.e., level of family income). Sixty-eight percent of students from high socioeconomic status (SES; i.e., a composite measure compiled from parents' income, level of education, and occupation) families complete a bachelor's degree, compared to only 9% of students from low-SES families (Bowen, Chingos, & McPherson, 2009). Additionally, children from families with low SES are more likely to enroll in a community college: The Institution for Higher Education Policy reports that 55% of students from families with annual incomes of less than $30,000 attend community colleges (Cunningham, 2002). Only 8.6% of students from families with incomes of more than $100,000 attend community colleges (Boswell, 2004).

      Degree completion also differs across racial and ethnic groups (i.e., Black, Hispanic, Native American/American Indian, White). Researchers at NCES report that in the U.S., of all first-time students seeking a bachelor's degree at a four-year postsecondary institution, 67% of Asians/Pacific Islander students, compared with 60% of White, 48% of Hispanic, 42% of Black, and 40% of American Indian/Alaska Native students graduate with a bachelor's degree (or its equivalent) within six years (National Center for Education Statistics, 2010). Similar discrepancies across race/ethnicity are also found at the community college. NCES (as cited in the *Digest of Education Statistics*, 2009) reported that

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for the 2007-2008 academic year, of all associate's degrees earned at degree-granting institutions, 65.6% were awarded to White students, 14% to Black students, 12.3% to Hispanic students, and 8.1% to Asian/Pacific Islander, American Indian, Alaska Native, or non-resident alien students (Table 282).

Compounding this issue of disparity in degree completion across racial/ethnic groups are the projected changes of the nation's demographics. According to the U.S. Census Bureau (as cited in Reindl, 2007), the percentage of U.S. Black and Hispanic individuals who are 18-44 years old is expected to increase by 30% (10 million) by 2025. In comparison, the percentage of U.S. White individuals in the same age bracket is expected to decline by 6.1% (4.4 million; Reindl, 2007). "Low income and minority [i.e., Black, Hispanic] students – the segments of the population growing most rapidly—are not succeeding [in college] at rates equivalent to their [population] growth" (Reindl, 2007, p. 2). For overall degree completion rates to increase in the U.S., existing disparities in postsecondary educational attainment must be improved.

Enrollment at the community college. Researchers report that the lower cost of tuition (i.e., as compared to four-year institutions), proximity (i.e., reduced distance from home), less stringent admissions requirements (i.e., as compared to four-year postsecondary institutions), and students' specific educational goals contribute to the fact that community colleges enroll a disproportionate amount (in relationship to representation in the overall population) of students from racial/ethnic minority groups, low-income families, and those who are not academically prepared for college-level work (Bailey & Alfonso, 2005; Bailey,

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Jenkins, & Leinbach, 2005; Boswell, 2004; Calcagno, Bailey, Jenkins, Kienzl, & Leinbach, 2008; Cohen & Brawer, 2008; Cox, 2009; Fontana et al., 2006; Jarrell, 2004; Lincoln, 2009; Phillippe & Sullivan, 2005; Provasnik & Planty, 2008; Syed & Mojock, 2008). Additionally, overall student enrollments at community colleges are increasing at a faster rate than those at four-year institutions. The National Center for Public Policy and Higher Education reports that community college enrollments have increased 375% in a little over three decades, as compared to 103% growth in enrollment at public four-year institutions and 73% at private four-year institutions during the same time period (as cited in Boswell, 2004).

Thus, the U.S. community college is in a unique and challenging position to facilitate increased degree completion rates among students from groups who have not historically had high success rates in postsecondary education. This study sought to examine the ways in which one community college implemented strategies to facilitate student success, namely through institutional activities intended to increase student engagement and integration into the college.

Theoretical Framework

This study was guided by a theory of student engagement, which posits that the more engaged in educationally purposeful activities a college student is, the greater that student's chance of attaining successful outcomes (Kuh, 2006). A major theoretical underpinning of student engagement theory is Alexander Astin's (1984) student involvement theory, which purports that "the greater the student's involvement in college, the greater will be the amount of student learning and

personal development" (p. 307). Involvement theory differs from earlier stage-driven theories of student development in that involvement theory assumes the student to have an active, versus passive, role in the learning process. Involvement is defined as "the quantity and quality of the physical and psychological energy that students invest in the college experience" (p. 307). According to Astin, examples of student involvement include time/energy spent on academic work, interaction with faculty and staff, and participation in extracurricular activities.

Astin (1984) based student involvement theory on a longitudinal study of college dropouts in which it was suggested that the level of involvement in the college environment contributed to student persistence. Findings of this study indicated that students who lived on campus, joined fraternities/sororities or extracurricular activities, held an on-campus part-time job, and participated in athletics, honors programs, ROTC, and faculty research projects were more likely to persist at the college. Through follow-up studies, Astin found further evidence of the impact of involvement on student outcomes, lending support to the five postulates of student involvement theory: (a) Involvement refers to both the physical and psychological energy invested in various activities; (b) Involvement occurs along a continuum, with various degrees of involvement occurring across different students and across different activities at any given time; (c) Involvement has both quantitative (e.g., number of hours spent studying) and qualitative (e.g., comprehension versus daydreaming) features; (d) The amount of student learning and development associated with an activity is directly

proportional to the quality and quantity of involvement in that activity; and (e)

The effectiveness of an educational policy/practice is directly related to the

policy/practice's ability to increase student involvement. Astin (1984) noted that

the last two postulates are especially important to the theory of student

involvement, as they connect the *theory* of involvement to the *practice* of

improving educational effectiveness at an institution.

Based on the premise that the college student is not simply a passive

recipient of education, but rather an active participant in the learning process,

student engagement theory highlights the role of the institution in facilitating

opportunities for students to exercise this more active role in college. Student

engagement is defined as "the time and energy students invest in educationally

purposeful activities and the effort institutions devote to using effective

educational practices" (Kuh, Cruce, Shoup, Kinzie, & Gonyea, 2008, p. 542).

Both the student and institution have a role in student engagement: As the student

invests time and effort into academics and other college activities that lead to

student success, the institution manages the resources, opportunities for learning,

and campus services in a way that encourages students to participate in – and

benefit from – their college experience (Kuh, Kinzie, Schuh, Whitt, & Associates,

2005).

Chickering and Gamson's (1987) widely cited *Seven Principles for Good*

Practice in Undergraduate Education provides examples of indicators of student

engagement, including student-faculty contact, reciprocity/cooperation among

students, active learning, prompt feedback, an emphasis on time-on-task,

communication of high expectations, and respect for diverse talents and ways of learning. Kuh and colleagues (2005; 2008) report that specific college practices that encourage student engagement include orientation, placement testing, college student success courses, learning communities, intrusive (i.e., proactive) advising, early warning systems, redundant safety nets, supplemental instruction, peer tutoring/mentoring, theme-based campus housing, adequate financial aid/on-campus work, internships, service learning, and effective teaching practices.

Research supporting the connection between student engagement and positive student outcomes (e.g., persistence, academic achievement) has focused on four-year institutions and their students (Pascarella & Terenzini, 2005). In a recent study that sought to contribute to the literature on the relationship between student engagement and student outcomes, Kuh et al. (2008) examined student engagement (as measured by the National Survey of Student Engagement, NSSE) as it related to the student outcomes of course grades and first to second year persistence among students at 18 four-year institutions. The researchers found that student engagement was positively related to grades and persistence and that the effects of engagement were greater for students of color and academically underprepared students.

Although findings such as those of Kuh et al. (2008) offer insight into the college student engagement-outcome connection, there is a need for further research that is specific to community college students, given that inherent structural differences exist in the student populations served by community colleges and four-year institutions. These differences include time spent on

campus (i.e., residence, extracurricular activities), academic preparedness, family income, and racial/ethnic group membership (Bailey & Alfonso, 2005; Bryant, 2001; Cohen & Brawer, 2008; Jenkins, 2007; Marti, 2009; Wirth & Padilla, 2008). Additionally, the institutional infrastructure of a community college campus does not provide as many opportunities for engagement outside of the classroom as that of the four-year institution (Marti, 2009).

The Center for Community College Student Engagement promotes research related to the impact of student engagement at the community college, specifically through the framework of the Community College Survey of Student Engagement (CCSSE). First administered in 2001, the CCSSE was developed out of the same general empirical research base as the NSSE, but focuses on constructs appropriate to the community college and its student population. For example, in recognition of the differences between community colleges and four-year institutions, CCSSE does not include items that assume on-campus residence; but there is a strong emphasis placed on items related to technical education, student/academic support services, and student retention (Center for Community College Student Engagement, 2011).

The five constructs of CCSSE are active and collaborative learning, student effort in educational pursuits, degree of academic challenge, student-faculty interaction, and support of learners through campus practices and services (Marti, 2009). These constructs are referred to as benchmarks of institutional effectiveness in promoting student engagement at the community college and are representative of institutional practices believed to be "critically influential" to

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student success at community colleges (Marti, 2009, p. 16). The relationship of these constructs to community college student achievement and persistence has been validated through three major studies (with Florida community colleges, CCSSE Hispanic Student Success Consortium, and 24 of the 27 initial Achieving the Dream colleges) and are representative of institutional characteristics that facilitate student engagement and, subsequently, positive student outcomes (Marti, 2009; McClenney, Marti, & Adkins, 2006).

Synthesizing several decades of research in higher education, Pascarella and Terenzini (2005) emphasize the institution's role in promoting student engagement:

> If, as it appears, individual effort or engagement is the critical determinant of the impact of college, then it is important to focus on the ways in which an institution can shape its academic, interpersonal, and extracurricular offerings to encourage student engagement. (p. 602)

Community colleges in particular should act intentionally in providing opportunities for student engagement. Especially for academically underprepared students—for whom student engagement may be especially important in facilitating student achievement and persistence—opportunities to engage with the institution are of critical importance (Center for Community College Student Engagement, 2007; Kuh et al., 2008). Based on the foundational belief that "institutional practices affect student behaviors," community colleges' purposeful development of student engagement opportunities is believed to be directly linked

to student success. This study used the theoretical framework of student engagement to identify and measure the impact of several intentionally developed student support activities on the academic progress and persistence of community college students.

Problem Statement

Community colleges, where a disproportionate amount of academically underprepared, racial/ethnic minority, and economically disadvantaged students enroll, have low degree completion rates. This, coupled with the changing demographics of the U.S. and increasing rates of enrollment at community colleges, represents a significant barrier to increasing overall rates of U.S. postsecondary degree completion.

Purpose of the Study

The focus of this study was one community college's attempt to address low student persistence rates at their institution through implementation of institutional interventions. This study examined the impact of specific institutional support services on intermediate student outcomes such as student persistence and successful course credit hour completion at the college. This study focused on intermediate, not final (e.g., graduation), outcomes for two reasons: (a) A primary goal of the study was to examine the impact of student support activities (participation in orientation, participation in academic advising, and completion of a student success course) on the student's experience *while at* the college of study; and (b) Fall 2009 was the first semester in which specific initiatives supporting student participation in these three activities were emphasized at the

college. On average, the minimum amount of time it takes the majority of first-time public community college students to complete an associate's degree, transfer to a four-year institution, or complete a bachelor's degree is three years (Adelman, 2005; Berkner, He, Mason, & Wheeless, 2007; Hoachlander, Sikora, & Horn, 2003). This extends beyond the timeframe examined in the present study and thus a focus on intermediate student outcomes was warranted.

The researcher's interest in intermediate student outcomes was also based upon the explicitly stated intermediate educational goals of the college of study and its district, supported within the community college literature, and exists within the context of more broadly defining *student success* at the community college. Practically speaking, student attainment of intermediate goals such as successful course completion and semester-to-semester and yearly persistence are necessary to ultimately attain final educational outcomes such as degree completion. Measuring the success of a community college, and its students, based solely on graduation rates can be misleading; scholars advocate for a more inclusive definition of student success that focuses on student *progress* toward graduation and incorporates intermediate outcomes such as semester-to-semester persistence, course completion, and student-defined goal attainment (Adelman, 2005; Bailey, Crosta, & Jenkins, 2006; Bailey et al., 2005; Goldberger & Kazis, 2009; Goldrick-Rab, 2010; Guiterrez & Dantes, 2009; Harris, 1998; Jenkins, 2007; Wirth & Padilla, 2008).

Specific to developmental education students, the literature has shown that progressing through a sequence of developmental (i.e., below college-level)

coursework and being successful in subsequent college-level courses is an important intermediate outcome for success (Bettinger & Long, 2004; Calcagno & Long, 2008; Gerlaugh, Thompson, Boylan, & Davis, 2007). Supportive of this fact, nationally based initiatives such as Achieving the Dream are working to expand data collection efforts to include intermediate outcomes that occur during a student's first two years at a community college, such as continuous enrollment at the college, completion of developmental education coursework, and enrollment in/completion of first college-level math and English coursework (Goldberger & Kazis, 2009). Thus, the study incorporated this broader view of community college "student success."

Research Questions

In general, this study sought to answer the question, *does student participation in specific institutional activities, or combinations of these activities, positively affect student outcomes at a community college?* More specifically, for first-time, full-time, degree-seeking students who took the college of study's three placement assessment exams and enrolled at the college for the first time in the Fall 2009 semester:

1. Does student participation in new student orientation and/or participation in academic advising affect:
   a. first-year fall semester to spring semester persistence?
   b. first-year fall semester to second-year fall semester persistence?

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c. proportion of attempted course credit hours successfully

        completed by the end of the Fall 2010 semester?

2. For students who placed into developmental education

    coursework in at least one subject, does student participation in

    new student orientation and/or participation in the

    recommended three-credit student success course affect:

    a. first-year fall semester to spring semester persistence?

    b. first-year fall semester to second-year fall semester

        persistence?

    c. proportion of attempted course credit hours successfully

        completed by the end of the Fall 2010 semester?

    d. success (grade of A, B, C, or Pass) in at least one

        subsequent same-subject college-level course?

Additionally, to add to the understanding of the impact of the college's three-

credit student success course, this study examined how first-time students who

were still enrolled at the college in the Spring 2011 semester perceived the impact

on their educational progress of this student success course taken during their first

college semester of study (Fall 2009).

Significance of the Study

This study was important for several reasons. First, this study focused on

institutional interventions' impact on *community college* student outcomes. Given

the aforementioned rise in enrollment (as compared to the four-year institution)

and the disproportionate number of students attending community colleges who

are academically underprepared, economically disadvantaged, or from minority ethnic/racial groups, the community college plays – and will continue to play – an important role in the foundation of U.S. postsecondary education. Shifting the focus from college access to access *and completion*, national leaders, policymakers, educators, foundations, and scholars alike have joined in the call for greater attention to student persistence and degree completion at the community college (American Graduation Initiative, 2009; Bailey & Alfonso, 2005; Bailey et al., 2005; Calcagno et al., 2008; D'Amico & Morgan, 2010; Fontana et al., 2006; National Center for Public Policy and Higher Education, 2008; Wirth & Padilla, 2008).

Despite this increased attention, there is a significant lack of outcomes-based research on how institutional factors may influence student outcomes at the community college. Although student persistence, completion, and success within postsecondary education have been reviewed in the research for decades, the majority of this prior research focuses on students and institutional practices and policies at four-year institutions (Alfonso, Bailey, & Scott, 2005; Bailey & Alfonso, 2005; Cohen & Brawer, 2008; Jenkins, 2007; Pascarella & Terenzini, 2005; Wirth & Padilla, 2008). Given the previously identified differences in both student populations and institutional characteristics between community colleges and four-year institutions, the applicability of findings from four-year institutional research to community colleges may be limited (Bailey & Alfonso, 2005; Bryant, 2001; Cohen & Brawer, 2008; Jenkins, 2007; Karp, Hughes, & O'Gara, 2010; Wirth & Padilla, 2008). This study seeks to contribute to research specific to

community colleges by focusing solely on the experiences and student outcomes of students at a single community college.

Second, this study used *institutional data* to provide information that will be useful in informing decision-making at the institution. Scholars note that institutional data should be used not only for accountability purposes (e.g., state and federal reporting), but also in the assessment of the institution's educational programs and services (Morest & Jenkins, 2007; Walleri, 2003). This is in alignment with initiatives put forth by organizations such as the League for Innovation in the Community College and the Achieving the Dream initiative, wherein the use of data specifically to improve policies and practices related to student outcomes (e.g., persistence, graduation, transfer) is supported. In particular, the Achieving the Dream: Community Colleges Count initiative has been a key supporter in facilitating a transition from a *culture of anecdote* to a *culture of evidence* in the community college. A *culture of evidence* is one that necessitates both the institutional researcher (*keeper of the data*) and postsecondary faculty and staff (*user of the data*) play an active role in the collection, analysis, and subsequent *use* of data in decision making (Bailey & Alfonso, 2005; Boggs, 2009; D'Amico & Morgan, 2010; Dowd, 2005; Morest & Jenkins, 2007; Syed & Mojock, 2008).

Third, this study used *appropriate statistical analysis* to measure the isolated and combined impact of institutional interventions. Bailey and Alfonso (2005) report that in most cases, community college single-institution studies, wherein data are collected through administration of a survey or gathered from the

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institution's own database, fail to employ statistical techniques that control for non-random sorting into comparison groups (e.g., comparing student outcomes of developmental education students and non-developmental education students without controlling for previous academic experience) and therefore do not measure accurately the impact of any specific institutional intervention (e.g., policy or program). Morest and Jenkins (2007) concur, reporting that fewer than half of the community colleges in a recent study reported using any kind of statistical technique (e.g., chi square analysis, linear regression, logistic regression) in their research.

Finally, the study focused on institutional interventions that were *within the control of the institution*, while addressing both the *isolated and combined impacts* of these interventions. Jenkins (2007) and Bailey and Alfonso (2005) note that within existing higher education research, there is an overemphasis on how student characteristics (e.g., demographics, previous academic experience) and institutional features (e.g., selectivity, size, resources) influence student outcomes, rather than on how actual institutional policies and practices that are under an institution's control (e.g., orientation programs, academic advising) affect student outcomes.

Although colleges may indeed be interested in the impact that a single program or practice at their institution has on student outcomes, focusing on discrete college practices ignores the interplay among several programs or practices being implemented by the institution (Bailey & Alfonso, 2005; Jenkins, 2007). Research that explores student outcomes at the community college should

therefore exhibit a recognition of the complexity and synergistic nature of the student experience; student outcomes are most likely not the result of an isolated policy, program, or intervention (Bailey & Alfonso, 2005; Fontana et al., 2006; Jenkins, 2007; Jones & Watson as cited in Jarrell, 2004). By examining both the individual and combined impacts of specific institutional support programs, while controlling for other factors shown to be related to student outcomes (e.g., previous academic experience), this study both acknowledged and addressed the interrelatedness of students' participation in specific institutional programs and activities at a single community college.

Scope and Limitations

The main source of data used in this study were institutional data, data that are collected by the institution as a part of normal educational practices across standard activities and timeframes of the academic year. A limitation in working with institutional data is the lack of control the researcher has over both the type of data that exist, as well as how the data are collected, stored, and maintained. By using institutional data, the research questions guiding the study inherently were bounded by the type and amount of data collected by the institution. Additionally, the researcher had limited control over the number of participants in the study, as this was established by the number of students who were enrolled at the institution during the study's timeframe and who met the study's inclusion criteria.

Finally, the study included data from a single institution. Although this focus was intended to facilitate resulting analyses and findings that were specific

and meaningful to the college of study, it also limited the ability of the researcher

to access data that would result in reasonably equivalent comparison groups in

terms of age (i.e., 24 years of age or younger and older than 24 years of age) and

previously earned college credits (i.e., students who earned less than a semester's

worth of college credits before enrolling and students who earned a semester or

more worth of credits). Chapter 5 provides suggestions for further research in

these areas that may be of interest but were not within the scope of this study.

Definitions of Key Terms

Definitions of terms that are important to this study are included below.

Community college. This study employed the definition set

forth by Cohen and Brawer (2008) and refers to any postsecondary

institution that is "regionally accredited to award the associate in

arts or the associate in science as its highest degree" (p. 5).

Degree-seeking. This refers to a student who self-reports an

educational goal of obtaining at least an associate's degree.

Developmental education. This refers to coursework that

focuses on below college-level skills and competencies. The terms

developmental and *remedial* are often used interchangeably,

however some scholars distinguish the term *remedial* (i.e.,

coursework that is being retaken) from *developmental* (i.e.,

coursework that focuses on new material; Calcagno & Long,

2008). Due to the negative connotation of *remedial* (i.e., a remedy

to correct something that is wrong; Boroch et al., 2010), the term

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developmental has been used in this study to refer to below

college-level coursework.

  First-time college student. This study employed the

definition of a first-time college student used by the college at

which the study took place: A first-time college student is one who

did not have any previous college experience and who was

attending a postsecondary institution for the first time at the

undergraduate level. (This includes students who earned dual-

enrollment college credit while still enrolled in high school.)

(Eagle Valley College, personal communication, May 23, 2011)

  Full-time college student. A college student who is enrolled

in 12 or more credit hours within a semester. (Eagle Valley

College, personal communication, March 2, 2011)

  Persistence. This term is used to indicate a student's ability

to successfully progress academically within postsecondary

education. For the purposes of this study, student persistence was

operationally defined as having evidence of consistent attendance

patterns (i.e., enrollment from semester to semester and from year

to year) within the college of study or another college within the

same community college district.

  Socioeconomic status. A composite measure compiled

from parents' income, level of education, and occupation.

Chapter Summary and Organization of the Study

This chapter provided an introduction to the study, including the background, theoretical framework, problem statement, purpose, and research questions guiding the study. The study's significance, limitations, and definitions of key terms also were presented. The economic value of postsecondary education, need for improved student persistence and degree completion rates, and current discrepancies between community colleges and four-year postsecondary institutions in terms of degree completion, enrollment rates, and student body were examined. Chapter 2 provides a review of the literature related to the role of the community college, theories of student persistence, specific institutional interventions intended to influence student persistence at the community college, and use of institutional data. Chapter 3 provides an overview of the study's approach and related methods that were employed for each research question listed above. The results of the conducted data analyses are presented in Chapter 4. These results are further discussed in Chapter 5, in which the study's conclusion and suggestions for future research are also presented.

CHAPTER 2

Review of the Literature

This chapter provides a review of the literature on community college research, theories of student persistence as they relate to the community college, specific institutional strategies employed by community colleges to influence student success, and the use of institutional data at the community college. The chapter concludes with a chapter summary.

Role of the Community College

Within the U.S., the economic benefits associated with postsecondary degree completion serve as a primary rationale to increase academic preparedness for postsecondary education and for efforts to close the gap in degree completion that exists among students from different racial/ethnic and socioeconomic groups (Cox, 2009). The economic value of completing postsecondary education translates to both increased earning potential (Baum, Ma, Payea, 2010; Chait & Venezia, 2009; Goldin & Katz, 2008) and a decreased chance of being unemployed (Berube, 2010). Presently, the economic rates of return for individuals who complete U.S. postsecondary education are at historic highs (Baum et al., 2010; Goldin & Katz, 2008).

Community colleges play an important role in providing access to postsecondary education for groups of students who, historically, have had low college completion rates (Cohen & Brawer, 2008). Black and Hispanic students comprise a larger proportion of the total student body at community colleges (14% and 15%, respectively), as compared to four-year postsecondary institutions

(10% and 9%, respectively; Provasnik & Planty, 2008). With regard to family income, 26% of students who enroll at community colleges are from families at or below 125% of the poverty threshold, as compared to only 20% of students in public and private not-for-profit four-year institutions (Horn & Nevill, as cited in Provasnik & Planty, 2008).

In terms of academic preparedness, of all U.S. students who go on to enroll in college, one-third are not prepared to engage in college-level coursework and consequently enroll in at least one developmental education course in mathematics, reading, or writing (Parsad & Lewis, 2003). The percentage of students at community colleges enrolling in developmental coursework is higher than that of students at four-year institutions: 42% of first-year students at community colleges enroll in developmental education coursework, as compared to only 20% of first-year students at public four-year institutions and 12% of first-year students at private four-year institutions (Parsad & Lewis, 2003). In a study based on longitudinal data for students who graduated from high school in 1992, Attewell, Lavin, Domina, and Levey (2006) reported these percentages as being even higher, with 58% of first-time college students at community colleges enrolling in developmental coursework, as compared to only 26% of first-time students at four-year institutions.

This lack of academic preparedness is important to the discussion of promoting positive college outcomes for community college students, given that previous academic experience has been shown to be a strong predictor of student success in postsecondary education (Adelman, 1999; Armstrong, 2000; Bailey &

Alfonso, 2005; Bean & Metzner, 1985; Calcagno et al., 2008; Cox, 2009; Jenkins, 2007; Summers, 2003). In the nation's current higher education structure, the community college plays a fundamental role in facilitating upward economic mobility for groups of students who are from racial or ethnic minority groups, low-income families, and who are academically underprepared.

Lack of Community College Research

Despite the role of the community college in providing access to higher education, a significant lack of research exists on the institutional factors that affect student outcomes at the community college. Although student persistence, completion, and success within postsecondary education have been examined in the literature for decades, prior research has focused on students and institutional practices and policies at four-year institutions (Alfonso et al., 2005; Bailey & Alfonso, 2005; Cohen & Brawer, 2008; Jenkins, 2007; Pascarella & Terenzini, 2005; Wirth & Padilla, 2008). Community colleges, a sector of higher education that enrolls nearly half of all U.S. undergraduate students – and an even larger percentage of economically disadvantaged students and those who identify with a racial/ethnic minority group – are neglected by higher education researchers (Bailey & Alfonso, 2005).

Pascarella and Terenzini (2005) note in the first volume of *How College Affects Students* (published in 1991) that, as an upper-bound estimate, only 5% to 10% of the over 2,600 studies on college impact examined focused on students at community colleges. In the second volume of *How College Affects Students* (published in 2005), Pascarella and Terenzini identified community college as

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continuing to be significantly underrepresented in the literature on college impact, but noted there were substantially more articles on the community college (conducted mainly in the 1990s), as compared to the first volume; however, Townsend, Donaldson, and Wilson (2004, as cited in Bailey & Alfonso, 2005) reviewed articles in mainstream journals of higher education that were published between 1990 and 2003 and found that only 8% of the 2,321 articles contained references to the community college. Increased attention is focused on the impact of the community college on U.S. students, yet a proportionally disparate emphasis on the student experience at four-year institutions remains.

Given the clear differences between community college and four-year institution student populations in terms of racial/ethnic group membership, family income level, and academic preparedness, it is not reasonable to assume findings from research conducted at the four-year institution apply equally to explanation of phenomena at the community college. This is particularly relevant to research findings on student engagement and persistence: In addition to differences in student population demographics and academic preparedness, researchers note that community college students, unlike their peers at four-year institutions, typically do not live on campus and spend little time participating in extracurricular activities (Bailey & Alfonso, 2005; Bryant, 2001; Cohen & Brawer, 2008; Jenkins, 2007; Karp et al., 2010; Wirth & Padilla, 2008). These significant differences between four-year and community college student populations must be considered when discussing strategies for student engagement and persistence.

Theories of Student Persistence

As noted above, much of the existing research on students in higher education focuses on the four-year postsecondary institution, as compared to the community college. Within this body of research, there is a significant focus on the topic of postsecondary student persistence (Metz, 2002). Three models of student persistence that the literature has shown to be most relevant to community college student persistence and to this study's research questions are Tinto's (1975, 1993) Student Integration Model, Bean and Metzner's (1985) Non-traditional Student Attrition Model, and Padilla's (1999, 2009) Qualitative Student Success Model (QSSM). The following section examines these models of student persistence, highlighting their relevance to the community college.

Tinto's student integration model. One of the most commonly cited models of student persistence is Tinto's (1975, 1993) Student Integration Model (Calcagno et al., 2008; Metz, 2002; Pascarella & Terenzini, 2005). Although Astin is credited with proposing one of the first college impact models in 1970, it is Tinto (1975) who provided a detailed theoretical structure on student departure and provided a central framework upon which researchers further developed (Metz, 2002; Pascarella & Terenzini, 2005).

Tinto's model is based on Durkheim's theory of suicide, wherein the likelihood of suicide is higher when individuals are insufficiently integrated into society (Tinto, 1975). Applied to college students, Tinto's model proposes that the likelihood of departing from college is higher when students are insufficiently integrated into the postsecondary institution. Scholars (including Tinto himself)

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note that Tinto was not the first scholar to apply Durkheim's theory of suicide to

student departure (Halpin, 1990; Metz, 2002; Spady, 1970; Tinto, 2006);

however, Tinto's model was the first to propose a detailed longitudinal model of

how students' interactions with their environment affect student departure and

retention (Halpin, 1990; Pascarella & Terenzini, 2005; Tinto, 2006).

In contrast to early models of postsecondary student departure that focused

on students' individual traits (i.e., attributes, skills, motivation), Tinto's model

recognizes that the decision to leave college is also based on the interactions that

occur between the individual student and the postsecondary institution (i.e., peers,

faculty, college administration; see Figure 1). Specifically, Tinto's (1975) model

proposes that:

> the process of dropout from college can be viewed as a
>
> longitudinal process of interactions between the individual and the
>
> academic and social systems of the college during which a
>
> person's experiences in those systems (as measured by his
>
> normative and structural integration) continually modify his goal
>
> and institutional commitments in ways which lead to persistence or
>
> to varying forms of dropout. (p. 94)

Commitments   Academic System   Commitments

| Family Background |
| Individual Attributes |
| Pre-College Schooling |

Goal Commitment

Institutional Commitment

Grade Performance

Intellectual Development

Academic Integration

Peer-Group Interactions

Faculty Interactions

Social Integration

Goal Commitment

Institutional Commitment

Dropout Decisions

Social System

Figure 1. Tinto's Student Integration Model. Source: Tinto (1975, p. 95).

Tinto's model points to a student's integration into both the academic and social systems of the college as the most important variable influencing a student's ability to persist.

Academic integration is characterized by an individual's academic performance and intellectual development during college, whereas social integration is characterized by informal peer group associations, semi-formal extracurricular activities, and interaction with faculty and college staff (Tinto, 1975). Operationally defined by Karp et al. (2010), academic integration is achieved when students develop an attachment to the intellectual life of the college; social integration is achieved when students develop relationships and connections outside of the classroom.

One of the major criticisms of Tinto's model is that it, like other early models of student departure, was developed based largely on four-year, residential universities and did not include commuter students, older students, nor those from racial/ethnic minority groups (Attinasi, 1992; Metz, 2002; Tierney, 1992; Tinto, 2006; Velasquez, 1996). Specifically for the community college student, where opportunities for integration into the institution may be limited due to time or resource constraints, research on how student integration affects student persistence continues to be developed. Two studies that have examined the extension of Tinto's theoretical model to the community college are that of Halpin (1990) and Karp et al. (2010); both are discussed below.

Although Tinto (1975) briefly addresses that institutional type (i.e., community college, four-year university) may influence student persistence,

Halpin (1990) was one of the first researchers to apply Tinto's model to the community college (Metz, 2002). Halpin found that after controlling for student background and environment factors, academic integration had a greater influence on student persistence than did social integration. Halpin notes that one reason academic integration is shown to play a role in student persistence at community colleges is the fact that academic systems do not differ greatly between four-year residential institutions and community colleges; in both institutional types, academic systems are made up of classes, professors, advisors, books, grades, papers, and exams. This is in contrast to social systems, which may vary greatly across the two institutional types. Halpin concludes that maximizing student-faculty contact in the community college would result in greater levels of integration, which would lead to greater student persistence.

Karp et al. (2010) challenge the idea that academic integration has a greater influence on community college student persistence. In examining how Tinto's model operates within the community college, the authors contend that both academic *and* social integration is related to persistence for community college students. Further, they argue that these two types of integration develop in concert (i.e., the same activities that lead to academic integration lead to social integration).

The research of Karp et al. (2010) emphasizes the importance of information networks, defined as "social ties that facilitate the transfer of institutional knowledge and procedures" (p. 76). As the authors further explain, a student who has an information network is one who has a specific person on

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campus to go to for information, uses faculty or classmates to obtain information, or seeks information through college-based social relationships or information chains. Social relationships not based on information exchange (e.g., a peer who is known to the student simply in passing) were not found to affect community college students' sense of belonging to the degree of social relationships based on information exchange (e.g., a peer who provides information about assignments, graduation requirements, professors; Karp et al., 2010). Information networks, built on meaningful information exchange, are important to student persistence because the creation of these networks subsequently facilitates a student's integration into the college.

Specifically, Karp et al. (2010) identify both the implementation of student-centered classroom pedagogies, as well as student participation in a college student success course, as being important to the development of information networks. This focus on the classroom supports Tinto's (1997) later work on the relationship between the educational experience of a community college student and student persistence: At the core of a college education is the educational experience. Given that many community college students do not spend much time on campus outside of the classroom, Karp et al. note that the formation of information networks (which occurs mainly through classroom interactions) is important to community college student persistence, in particular.

Therefore, the findings of Karp et al. (2010) support previous recognition of the heightened role of academic integration for community college student persistence: Community college students are more likely to develop information

networks (and subsequently achieve integration into the college) through academic sources, versus participation in campus social activities; however, the authors note that although social integration did not occur in a *traditional* manner (i.e., through student participation in campus clubs and activities) for the community college students in their study, social integration did indeed occur. The authors contend that social integration grew out of the academic integration achieved through students' academic experiences at the college. For community college students then, academic and social integration develop simultaneously, through student participation within the same (versus distinct) activities (Karp et al., 2010). Contrary to the notion that social integration does not play a role in community college student persistence, Karp et al. conclude that community college students achieve both social and academic integration, but that the process for attaining this integration is different from that of students at four-year institutions.

Bean and Metzner's non-traditional student attrition model. Bean's (1980) Model of Student Departure sought to introduce empirical evidence for a model of student attrition. Bean (1980) notes that previous models of college student attrition (such as Tinto's Student Integration Model) lacked the statistical procedures necessary for meaningful conclusions on variables that may, or may not, affect a student's decision to leave college. Grounded in the theoretical models proposed by Spady (1970) and Tinto (1975), Bean developed a causal model of student attrition (Bean, 1980; Metz, 2002). This model is based on the idea of employee turnover within an organization and carries the assumption that

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student attrition in institutions of higher education is similar to employee turnover in work organizations (Price as cited in Bean, 1980). Like Tinto's Student Integration Model, Bean's model is longitudinal and includes students' background characteristics as well as their interactions with the institution. Consistent with the earlier work of Tinto (1975), a major finding of Bean's (1980) study was that institutional commitment (i.e., "the degree of loyalty toward membership in an organization"; p. 160) was the most important variable explaining student dropout across both men and women.

Bean's Model of Student Departure was based on the experiences of students at a four-year residential university. Building on Bean's and other scholars' research on student attrition, Bean and Metzner (1985) subsequently developed a conceptual model that incorporated Bean's work, but was developed to explain non-traditional student departure. Non-traditional students were defined as students who were older than 24 years of age, or did not live on campus, or attended college part-time (Bean & Metzner, 1985). Bean and Metzner note that because of these factors, non-traditional students are mainly concerned with the academic offerings (i.e., courses, degrees) of an institution and are not greatly influenced by the institution's social environment. Due to this lack of social integration for the non-traditional student, Bean and Metzner noted the need for a different conceptual model than those proposed by Tinto (1975) and Spady (1970).

Bean and Metzner (1985) contend that a student's decision to leave college is based on four sets of variables: (a) academic performance (e.g., study

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habits, advising, course availability); (b) intent to leave (influenced by psychological and academic variables); (c) student background (e.g., academic performance in high school, educational goals, demographics); and (d) environmental variables (e.g., finances, hours of employment, family responsibilities; pp. 490-491; see Figure 2). This model highlights the role of the external (to the college) environment and minimizes the role of social integration in explaining non-traditional student departure.

FIGURE 1. A Conceptual Model of Nontraditional Student Attrition.

Key: → Direct effects
→ Direct effects presumed most important
←-→ Compensatory interaction effects
←⋯→ Possible effects
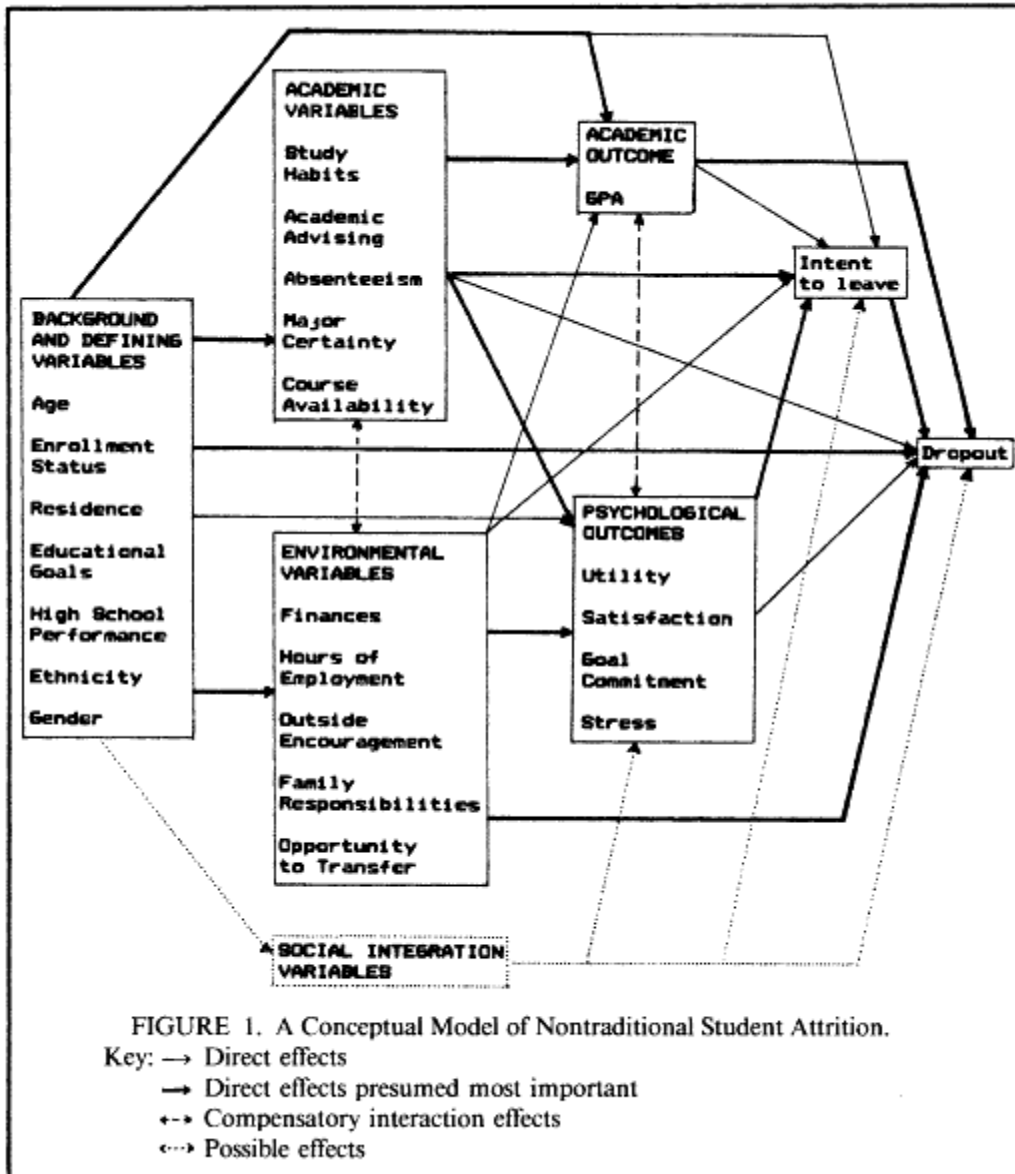
Figure 2. Bean and Metzner's Non-traditional Student Attrition Model. Source:

Bean and Metzner (1985, p. 491).

Highlighting the importance of the external environment to non-traditional student persistence, the model also predicts there to be interactional effects between various sets of variables and outcomes. The authors contend that for non-traditional students, support from the external environment (e.g., family, work) will compensate for weak academic support (e.g., advising), but a large amount of academic support will not compensate for weak environmental support (p. 492). Similarly, high levels of utility, satisfaction, or goal commitment and low levels of stress will compensate for low levels of academic success at college (as measured by grade point average; GPA), but a high level of academic success at college will not compensate for low levels of utility, satisfaction, or goal commitment and high levels of stress.

Padilla's qualitative student success model. More recently, Padilla (1999) and Wirth and Padilla (2008) note that despite decades of student departure research, postsecondary graduation rates have remained essentially stable at approximately 50%. Padilla (1999, 2009) calls for a shift in research focus from student *departure* to student *success*, defined as "progress toward graduation or actually graduating college" (Wirth & Padilla, 2008, p. 688). Padilla (2009) notes that preventing student dropout is not the same as promoting success: "While the emphasis on dropouts can drive departure prevention strategies, the emphasis on success promotes enabling strategies that can lead students to academic progress and, ultimately, graduation" (p. 9). More succinctly described, in the words of Tinto (2006), "Leaving is not the mirror image of staying" (p. 6). Padilla (1999, 2009) centers his model on the idea of overcoming

barriers: Although the type of barriers faced may differ across individual students, all students face some barriers that they must overcome to be successful at a particular postsecondary institution.

Padilla's (1999, 2009) Qualitative Student Success Model (QSSM) is composed of two parts: A theoretical Expertise Model of Student Success (EMSS; also referred to as the General Student Success Model—GSSM) and an empirical Local Student Success Model (LSSM; Wirth & Padilla, 2008). The EMSS is based on four assumptions about the college environment: (a) The campus environment is a *black box* wherein the inputs (e.g., students' previous academic experience) and outputs (e.g., profile of graduating students) are well understood, but what occurs *during* college to account for different rates of success (i.e., some students graduate whereas others drop out of college) is not well understood; (b) All students face some type of barriers to academic progress and graduation; (c) Students who overcome these barriers to success use their student expertise (i.e., heuristic and academic knowledge) to do so; and, (d) To overcome barriers, students must act on this student expertise (i.e., conation; action or the will to act; Padilla, 2009, pp. 21-26; see Figure 3).

EMSS as a General Model of Student Success

Prior experiences before arriving on campus → Experience on campus: / Barriers to student success → Knowledge: / Heuristic / Academic → Actions → Successful → Graduate / Not successful → Dropout
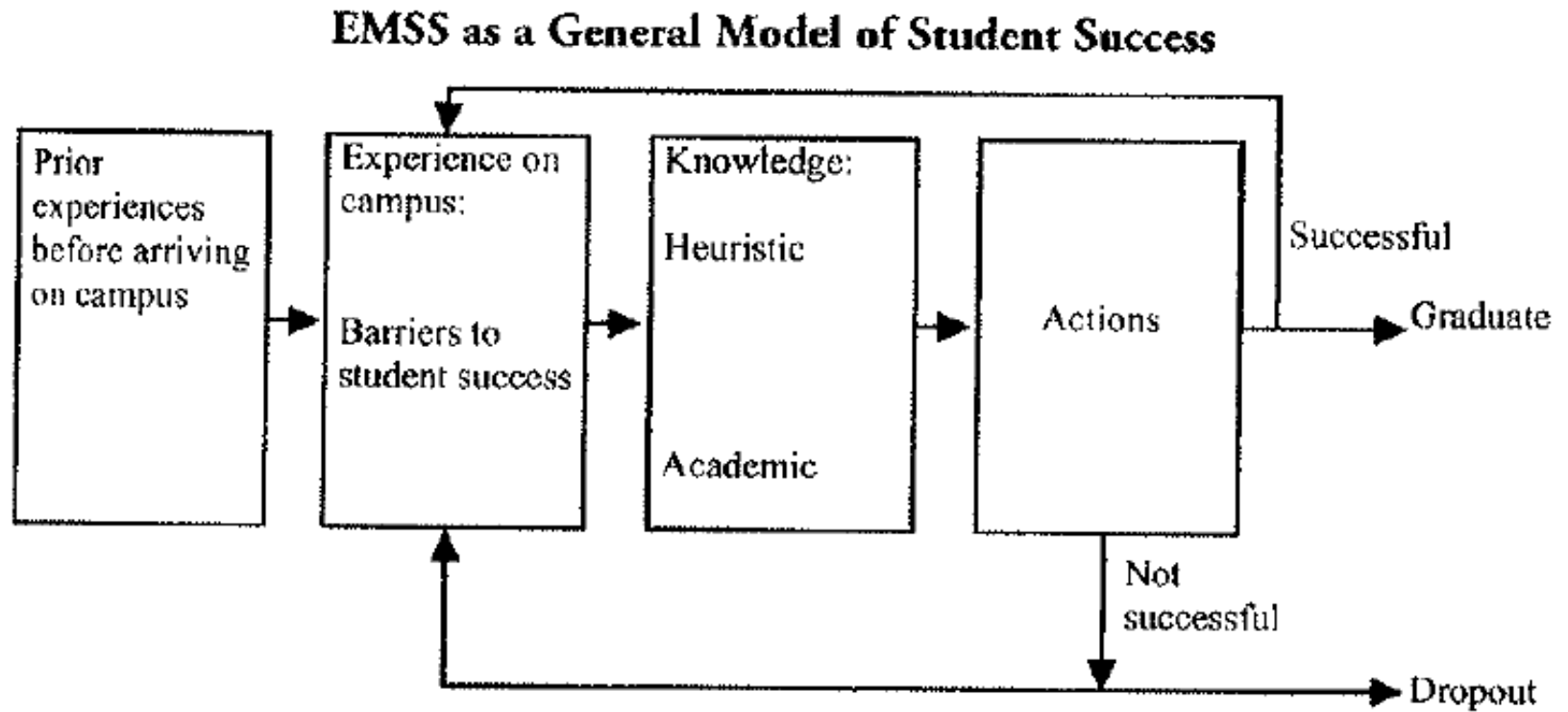
Figure 3. Padilla's General Student Success Model/Expertise Model of Student Success. Source: Padilla (2009, p. 27).

Padilla (2009) notes that heuristic (informal) knowledge is campus-dependent; it is the knowledge a student acquires through interaction with peers, college staff, faculty, and family members or friends who have experienced college. Academic (formal) knowledge is campus-independent; it is the content knowledge acquired in the classroom or library and is typically measured by exams and grades. Increasing one's academic knowledge may therefore be dependent upon having or obtaining heuristic knowledge (e.g., knowing where to go for help with classes, how to make an appointment with an advisor; Padilla, 2009). Students enter college with a base level of heuristic and academic knowledge and success (i.e., progression toward graduation and graduation) is dependent upon increasing both types of knowledge. Padilla (2009) notes that the EMSS focuses on heuristic knowledge acquisition, but recognizes that both types of knowledge (i.e., total knowledge) are important to student success.

The link between the more general EMSS and the locally developed LSSM are the three parameters specified by the EMSS, namely the barriers students encounter, knowledge students use to identify solutions, and actions students take to overcome these barriers (Padilla, 2009). By empirically determining what is included in each of these three parameters at an institution, the LSSM is created for that specific institution. Padilla (2009) notes that, to date, the LSSM has been created using a qualitative approach to data collection. Specifically, group interviews with students have served to inform the three parameters (i.e., barriers, knowledge to overcome barriers, actions to overcome barriers) in studies utilizing the EMSS to create a LSSM for a particular

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institution (Padilla, 1999; Wirth & Padilla, 2008). This highlights the student's role as "expert" in their experiences at the college; these experiences are most important to the creation of a LSSM (Padilla, 1999; 2009).

In a study utilizing the EMSS at a community college, Wirth and Padilla (2008) report that the resulting LSSM described barriers in six categories, including personal (e.g., lack of time management skills), financial (e.g., unemployment), coursework (e.g., lack of instructor support), learning (e.g., lack of study habits), institutional (e.g., lack of recreational facilities), and student support (e.g., no designated advisor). The knowledge needed to overcome these barriers was described by students as experiential knowledge, knowledge about studying and study skills, relational and comparative knowledge, and motivational knowledge. The actions identified to overcome the barriers at the college of study included strategic (e.g., base school around family and children), pragmatic (e.g., look for jobs), persuasive (e.g., ask instructor for options regarding group work), and supportive (e.g., talk to fellow students and make friends).

The LSSM is intended to be specific to a single institution; by design, the model serves to examine what accounts for student success at that particular institution at a particular point in time. Padilla (1999) notes that this specificity to a particular campus is particularly significant: "students do not experience success or failure abstractly but [rather] concretely within a particular campus and even in a particular academic program of that campus" (p. 133). The fact that LSSMs are developed through a qualitative research approach is not problematic with respect to lack of generalizability; the goal of the LSSM is to illuminate the student

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experience at a specific college at a specific time, so that the college may subsequently address the ways in which student success is fostered on their campus.

Padilla (2009) notes that developing a LSSM should not be the end point; the developed LSSM should subsequently serve as a data-driven tool to inform decision-making at the particular institution. Given that the EMSS and resulting LSSM focus on acquisition of heuristic knowledge, implementation of the LSSM most directly affects the student service and student advising roles within a college. Although the LSSM provides insight into the barriers to student success that exist at a specific institution, it is implementation of strategies and student services based on these data that will serve as the mechanism to address these barriers. To that end, for effective implementation of the LSSM Padilla (2009) advocates for collaboration between institutional researchers and student services practitioners. Using the development and implementation of a LSSM as an example, Padilla (2009) echoes Dowd's (2005) call for community college practitioners to take a more active role in purposefully analyzing and utilizing data to enhance student success on their campus.

A common thread across the research on student persistence, specifically at the community college, is recognition of the role of the institution in facilitating positive student outcomes. The belief that students enter into college with certain characteristics, but that students may then continue to be shaped by their environment is hopeful: "The idea that demographic profiles do not necessarily drive engagement as long as students develop senses of belonging, competence,

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and autonomy is one filled with promise for community colleges" (Schuetz, 2008, p. 305). There is some evidence that specific college support strategies do indeed relate to increased levels of student engagement, integration, persistence and academic achievement. Three of these strategies are elaborated on in the following section of this chapter.

Institutional Support Strategies for Encouraging Community College Student Persistence

To complement academic experiences and support received in the classroom, an effective community college student support service structure is intrusive (i.e., proactive), offered early in a student's college experience, and addresses low self-esteem, lack of time management/planning skills, and poor sociability (Karp, 2008). Overall, community college students who are more engaged with college faculty and staff, student peers, and their studies are more likely to learn, persist in college, and reach their academic goals (Center for Community College Engagement, 2009).

According to the theory of student engagement, the institution plays an important role in facilitating opportunities for students to become more engaged, subsequently increasing students' chances of integration into the college and of subsequently experiencing successful student outcomes, such as persistence and academic achievement. This study focused on three specific institutional support strategies that have been reported in the literature as relating to positive student outcomes: new student orientation, academic advising, and student success courses.

New student orientation. Colleges and universities offer new student orientation programs to welcome first-time students, introducing them to college structures, policies, procedures, and culture. Perigo and Upcraft (1989) define orientation as "any effort to help freshmen make the transition from their previous environment to the collegiate environment and enhance their success" (p. 82). In addition to welcoming students to campus, orientation programs are intended to increase new students' expectations regarding academic requirements of the institution, provide information on college services and resources that may assist them in meeting their academic goals, allow for students to interact with college faculty and staff, and provide students' families with an understanding of the student's collegiate experience (Busby, Gammel, & Jeffcoat, 2002; Perigo & Upcraft, 1989). New student orientation programs are widely adopted across colleges and universities: In a national survey conducted in 2000 by the Policy Center on the First Year of College, it was reported that 96% of U.S. postsecondary institutions offer some form of a new student orientation program (Barefoot, 2005, p. 52).

Orientation programs are typically offered during the summer prior to college enrollment (Mullendore & Banahan, 2005). Programs may last several hours, days, or weeks depending upon the college or university. Barefoot (2005) notes that the majority of U.S. community colleges (62%) report offering a new student orientation program that lasts one half-day in duration. Participation in orientation is often voluntary, with only 50% of community colleges indicating that student attendance at orientation is required for incoming students (Barefoot,

2005, p. 52). Student attendance at orientation programs is reflective of this: Based on the 2009 findings of the CCSSE, only 27% of community college students indicated they had attended an orientation program (Center for Community College Student Engagement, 2009, p. 14).

Until recently, orientation programs were often perceived as simply a socialization activity, in which incoming students should have "fun" before enrolling in college; however, given the recent heightened interest in student persistence, orientation programs have implemented a more purposeful focus on introducing students to the academic life of the college (Barefoot, 2005; Mayhew, Vanderlinden, & Kim, 2010; Mullendore & Banahan, 2005; Robinson, Burns, & Gaw, 1996; Seidman, 1991; Perigo & Upcraft, 1989). Cohen and Brawer (2008) note that the ideal format for a new student orientation program at the community college is dependent upon institutional goals: the college mission, culture, and student population should be considered in the development of an orientation program.

There is a significant lack of research on the impact of new student orientation programs on student outcomes, with very few studies focusing on the community college (Barefoot, 2005; Hollins, 2009; Mayhew et al., 2010). Overall, students indicate satisfaction with orientation programs (Miller, Dyer, & Nadler, 2002) and believe that the programs, in combination with other support mechanisms, have a positive impact on their ability to succeed academically (Orozco, Alvarez, & Gutkin, 2010); however, research on the impact of participation in an orientation program on student outcomes such as persistence or

academic achievement is limited and yields mixed findings. Additionally, much of the existing literature fails to differentiate between what has been defined in this study as new student orientation from the student success course (which is typically offered over the course of a semester or more; see the Student Success Course section of this chapter, below).

In a study of a new student orientation program at a large four-year institution, Busby et al. (2002) found a statistically significant difference between the GPAs and graduation rates of college freshmen who attended orientation as compared to those who did not attend an orientation; however, Perrine and Spain (2008) found that the impact of a week-long orientation program at a four-year college had little influence on course credits earned, GPA, or persistence when controlling for student background characteristics (e.g., gender, age, race, college entrance exam scores, high school GPA, transfer status, development needs).

In a single-institution study, Hollins (2009) found that community college students who participated in a one-day or one-half day orientation program had higher (but statistically insignificant) GPAs and higher (statistically significant) fall to spring semester persistence rates as compared to students who did not participate in a program. Hollins also found that students who participated in an orientation program in combination with a semester-long student success course had higher GPAs and retention rates than those students who did not participate in the combination of both orientation program and course. Hollins notes that findings may have been attributed to chance and cites the low number of students who participated in the combination of the orientation program and student

success course as a limitation in the ability to accurately interpret and generalize the findings.

Academic advising. The research on both community college student attrition (Bean & Metzner, 1985) and persistence (Wirth & Padilla, 2008), highlights the role of the academic advisor in assisting students navigate the college landscape. A support function embedded within the community college since early in its history (Cohen & Brawer, 2008), academic advising entails counseling and guidance related to career/life planning, course placement, and course selection (Boroch et al., 2010; Cohen & Brawer, 2008; King, 1993; Seidman, 1991) and may serve as a student's first contact with the college (Makela, 2006). King (1993) notes that academic advising is one of the most critical student support functions at the community college because it may be the only structural campus service that guarantees interaction between the student and a college representative.

For the community college student in particular, academic advising is especially important, given the high proportion of community college students who are from groups with traditionally high college attrition rates (e.g., from racial/ethnic minority groups, low income families, first generation students, or arrive at college academically underprepared; Bailey & Alfonso, 2005; Boroch et al., 2010; King, 1993; Orozco et al., 2010). Effective advisors act as a clearinghouse, providing key linkages to information necessary for students to successfully progress in the community college. In addition to providing academic guidance on courses and course registration, advisors also refer students

to other campus services (e.g., financial aid, tutoring, health services), which may subsequently contribute to student satisfaction and academic performance at the college (Cohen & Brawer, 2008; King, 1993; Orozco et al., 2010).

Because effective advising guides students through both academic (e.g., course offerings, recommended course placements) and social (e.g., career, campus life, resources and services available) decision making processes, the advising function contributes to the academic and social integration into the college that is important to a student's ability to persist (Bean & Metzner, 1985; Boroch et al., 2010; King, 1993; Orozco et al., 2010; Summers, 2003; Tinto, 1975; Wirth & Padilla, 2008). In colleges where mandatory course placement is not implemented or enforced, advisors play an especially important role in referring students to coursework that will promote their success and persistence (Boroch et al., 2010; Cohen & Brawer, 2008). This particular role of the community college advisor has been debated within the literature for several decades as it relates to the "cooling out" of community college students.

Cooling out, or the lowering of community college students' aspirations when academic ambitions exceed academic abilities, was suggested by Burton Clark in 1960 (Bahr, 2008; Clark, 1960; Cohen & Brawer, 2008). Clark (1960) emphasized the academic advisor's role in *cooling out*, referring to college counselors as "agents of consolation" (p. 575). More recent research has subsequently examined the role of advising in the *cooling out* function and has reported findings that do not support a link between advising and *cooling out* (Bahr, 2008; Rosenbaum, Deil-Amen, & Person, 2006; Seidman, 1991). That is

not to say that *cooling out* as a broader function across an institution does not exist; rather, its link to the academic advisor is thought to be much weaker than initially purported by Clark (1960; Bahr, 2008; Rosenbaum et al., 2006). In fact, Rosenbaum et al. contend that advisors have the ability to "warm up" students, and also emphasize the role of faculty in influencing student aspirations.

Recent research findings on the relationship between advising and persistence further challenge the idea that academic advisors lower community college student aspirations and negatively influence a student's chance for college success. Academic advising has been reported to positively affect student satisfaction, GPA, and persistence (Bahr, 2008; Muraskin & Lee, 2004; Seidman, 1991). The importance of effective academic advising is especially pronounced for academically underprepared students, for whom the adviser is thought to play a key role in facilitating connections between course placement recommendations, coursework, career goals, and campus resources (Bahr, 2008; Boroch et al., 2010; Makela, 2006; Orozco et al., 2010; Summers, 2003); however, Orozco et al. notes that students who would benefit the most from academic advising are also the students who fail to use it. In the 2009 CCSSE, even though 90% of community college student respondents indicated that academic advising/planning is *very important* or *somewhat important*, only 56% of respondents indicated that they used advising services *sometimes* or *often*, with 35% indicating that they *rarely* or *never* used advising (Center for Community College Student Engagement, 2009, p. 14).

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Though research has shown a link between academic advising and student outcomes, the direction and magnitude of the impact is dependent upon the quality of guidance provided to students by an advisor (or more commonly, any number of advisors who work with a student throughout an academic year). Poor counseling from academic advisors can be detrimental to community college student success (Deil-Amen & Rosenbaum, 2002; Rosenbaum et al., 2006).

Student success course. Student success courses (also referred to as orientation courses, skills courses, or freshman seminars) are intended to orient students to college, focusing on the *non-academic skills* believed to be essential to academic progress and college student success (Derby & Smith, 2004; Glass & Garrett, 1995; Jarrell, 2004). Common topics covered in these courses include study skills (e.g., note-taking, test-taking), time management, critical thinking, understanding learning styles, and career/goal planning (Jarrell, 2004; O'Gara, Karp, Hughes, 2009; Stovall, 1999; Zeidenberg, Jenkins, & Calcagno, 2007).

The postsecondary student success course has existed as far back as 1882 within the U.S., with a decline in the 1960s before resurging in the 1970s in response to significant increases in both student enrollment and diversity (Cohen & Brawer, 2008; Stovall, 1999). Specifically at the *open-door* community college, many students lack the non-academic skills that are believed to be as equally important to student persistence as success in academic coursework (Cohen & Brawer, 2008; Pascarella & Terenzini, 2005). The student success course has been widely adopted as the institutional response to this issue (Mills, 2010; Zeidenberg et al., 2007). Based on a national survey, it is estimated that approximately 65%

of community colleges offer student success courses on their campus (Tobolowsky, as cited in Mills, 2010).

In addition to facilitating student development of essential non-academic skills, a complementary goal of the student success course is to increase students' competency and comfort level in navigating the college. At a basic level, student success courses often provide campus tours and mandatory visits with advisors, career counselors, financial aid, and other college support staff areas (Glass & Garrett, 1995; O'Gara et al., 2009; Scrivener, Sommo, & Collado, 2009). But these courses also increase students' familiarity with the college campus in a more significant way; course materials and activities purposefully facilitate student connections with peers, faculty, and other campus personnel. Unlike new student orientation programs wherein information is *presented to* (i.e., one-way) community college students, student success courses provide a more interactive and iterative opportunity for *connection* (i.e., two-way) to occur between the student and the college over the course of a semester or more (Center for Community College Student Engagement, 2009). These connections subsequently facilitate the social and academic integration into the college that is the basis for Tinto's (1975, 1993) Student Integration Model (Glass & Garrett, 1995; Mills, 2010) and the theory of student engagement (Center for Community College Student Engagement, 2007; Kuh et al., 2008). Given the relationship between student integration into the college and persistence, it is recommended that students complete student success courses during the first semester of their college career (Duggan & Williams, 2011; Jarrell, 2004; O'Gara et al., 2009).

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O'Gara et al. (2009) report that participation in a student success course –
in which campus support services (e.g., academic advising, tutoring) may be
emphasized, encouraged, or required – results in a magnification of the course's
benefits. This magnification occurs because course participants not only learn
about available campus resources, but also feel more comfortable in accessing
these services. Mills (2010) concurs, reporting that in a comparison of student
participation in student success courses and level of student engagement as
measured by the CCSSE, findings indicate that student success course participants
found the campus environment more supportive and reported more frequent use
of campus support services (e.g., advising, career services).

Researchers note the lack of empirical research on the effectiveness of
community college student success courses (Boroch et al., 2010; Mills, 2010;
O'Gara et al., 2009; Zeidenberg et al., 2007); however, several existing
quantitative and qualitative explorations into the impact of student success
courses on student outcomes may inform future research on the impact of student
success courses at the community college. In a study that explored the
relationship between completion of a student success course by first-time, full-
time, credential-seeking community college students and their subsequent
persistence and GPA, Glass and Garrett (1995) found that completion of the
course during the first semester of college enrollment positively affected a
student's ability to persist and perform academically (as measured by GPA).

Stovall (1999) examined participation in a community college student
success course and its relationship to GPA, completion of credit hours, continuous

enrollment in college, total terms of college enrollment, and graduation. Stovall

found that participation in the course yielded short-term (i.e., one-semester)

positive effects on student GPA and completion of credit hours, as well as short

and long-term (i.e., through the student's third year of college) positive effects on

continuous enrollment in college. Stovall also noted long-term positive effects on

total terms of college enrollment and graduation. Derby and Smith (2004) found

similar results in a study that investigated the relationship between enrollment in a

student success course and student persistence, reporting a positive association

between enrollment in the course and student persistence.

Zeidenberg et al. (2007) utilized institutional data from Florida community

colleges to investigate the relationship between enrolling in a student success

course and completion of a credential, persistence, and transfer to a four-year

institution. Zeidenberg et al. found marginal positive effects of enrollment in a

student success course on all three outcomes and recommended that community

colleges consider requiring student enrollment in these courses.

Qualitative studies investigating student perspectives of enrollment in a

student success course report that students generally are satisfied with the courses,

find information provided in student success courses useful, develop skills to help

them succeed academically, feel more comfortable using campus services and

resources, and are able to build relationships with peers and faculty through

participation in the course (Duggan & Williams, 2011; O'Gara et al., 2009). As

previously noted, student success courses are believed to facilitate the

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development of information networks, through which students gain institutional knowledge that affect their ability to persist (Karp et al., 2010).

Student success courses are especially important to the success of students who place into developmental education coursework; it is for this group of students that student success courses are often recommended (Boroch et al., 2010; Gerlaugh et al., 2007; Zeidenberg et al., 2007). In the previously mentioned study by Zeidenberg et al. (2007), enrollment in a student success course appeared to improve developmental education students' chances of earning a college credential as compared to enrollment in developmental coursework alone (i.e., without enrolling in a student success course). Zeidenberg et al. found that students who enrolled in developmental coursework were 7% less likely to earn a credential as compared to students who did not enroll in developmental coursework; however, students who enrolled in developmental coursework and also enrolled in a student success course were only 2% less likely to complete a credential (pp. 2-4).

Scrivener et al. (2009) concluded that a student success course, combined with student participation in additional academic support activities (e.g., assessment testing, tutoring, academic counseling), positively influenced community college students who were on academic probation. Scrivener et al. found that controlling for student characteristics, probationary students who participated in the college student success course were more likely to gain good academic standing, increase their GPA, and complete a higher number of credits

than students who were on probation but did not participate in a college student success course.

Although promising outcomes for student participation in student success courses have been reported, researchers note that many of the studies in this area are limited to single-institution studies or lack proper statistical controls to reasonably isolate the impact of student success courses (Mills, 2010; O'Gara et al., 2009; Zeidenberg et al., 2007). Further, research providing a better understanding of which course components affect different student groups could provide an opportunity for colleges to target specific student needs with customizable student success course delivery (Duggan & Williams, 2011; Glass & Garrett, 1995; Zeidenberg et al., 2007).

Use of Institutional Data to Measure Student Success

The impact of participation in each of the institutional support strategies discussed (i.e., new student orientation, academic advising, student success course) may be further examined using available institutional data captured by the community college. In fact, Karp (2008) urges that as community colleges develop and implement innovative programs and services, a culture must be built in which data and evidence are used to evaluate the impact of these innovations. Further, Walleri (2003) identifies assessment of educational programs and service units as a critical area of the institutional research function at community colleges. Institutional data provide the basis for tracking student progress (e.g., persistence, graduation) and assessing the impact of academics and student support programs (e.g., instruction, orientation, advising) on this progress (Caison, 2007; Walleri,

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2003). Through these activities, institutional researchers are obligated to recognize problems and weaknesses within programs and policies at the institution and are cautioned to remain unbiased throughout the research process (D'Amico & Morgan, 2010; Walleri, 2003).

In support of the use of institutional data to examine the impact of institutional practices on student outcomes, Caison (2007) found that within a single institution, the use of institutional database variables provided better prediction of student persistence than did the Institutional Integration Scale, a validated instrument developed by higher education scholars Ernest Pascarella and Patrick Terenzini. Further, Caison (2007) highlighted the importance of institutional data being readily available and not as "resource-intensive" as administering student surveys (p. 436). This is especially relevant, given that one of the major challenges related to institutional research at the community college is a lack of research capacity in terms of staffing and funding (Morest & Jenkins, 2007; Walleri, 2003): Morest and Jenkins (2007) note that only institutions with an average full-time student enrollment of 7,763 employ more than two full-time institutional research staff.

Chapter Summary

This chapter examined relevant literature on the role of the community college, the lack of research devoted to community colleges, models of student persistence as they relate to the community college, and three specific institutional support strategies that are commonly used to facilitate student success at the community college: new student orientation, academic advising, and the student

success course. Additionally, this chapter briefly reviewed the importance and use

of institutional data at the community college. Chapter 3 restates the study's

aforementioned research questions and details the approach and related methods

that were used to examine these questions.

CHAPTER 3

Research Methodology

This chapter describes the study's design, process of data collection, and subsequent analyses. The analysis for each research question is addressed separately in the Data Analysis section of this chapter. The research questions of the study are once again presented below. The population (and sample) for the two focal research questions consists of first-time, full-time, degree-seeking students who took all three placement assessment exams and enrolled at the college of study for the first time in the Fall 2009 semester.

1. Does student participation in new student orientation and/or participation in academic advising affect:

   a. first-year fall semester to spring semester persistence?

   b. first-year fall semester to second-year fall semester persistence?

   c. proportion of attempted course credit hours successfully completed by the end of the Fall 2010 semester?

2. For students who placed into developmental education coursework in at least one subject, does student participation in new student orientation and/or participation in the recommended three-credit student success course affect:

   a. first-year fall semester to spring semester persistence?

   b. first-year fall semester to second-year fall semester persistence?

> c. proportion of attempted course credit hours successfully completed by the end of the Fall 2010 semester?
>
> d. success (grade of A, B, C, or Pass) in at least one subsequent same-subject college-level course?

For both research questions, the impact of each predictor was evaluated controlling for two key variables known to relate to academic success: previous academic experience and an indicator of family income level. Additionally, to add to the understanding of the impact of the college's three-credit student success course, this study examined how Fall 2009 first-time students who were still enrolled at the college in the Spring 2011 semester perceived the impact on their educational progress of this student success course taken during their first college semester of study (Fall 2009).

Research Design

This quantitative study uses an *ex post facto* research design. In an *ex post facto* design, also referred to as causal-comparative research, differences in comparison groups have already occurred (Campbell & Stanley, 1963; Fraenkel & Wallen, 1996). This research design was appropriate for this study for three reasons: (a) The researcher examined the impact of events that occurred in the past; (b) The students within the study were not randomly assigned to comparison groups; and (c) The researcher did not have control over manipulation of the independent variables (i.e., the number or type activities in which students participated; Fraenkel & Wallen, 1996).

To complement this study, a descriptive summary of data obtained from a student survey has been incorporated into the research. These survey data capture students' perceptions of the impact of a three-credit student success course on their experiences at the college.

Research Site and Participants

The study took place at a public two-year community college located in the U.S. Southwest, classified by the Carnegie Foundation for the Advancement of Teaching as a medium-sized two-year (M2) college (i.e., full-time student enrollment of 2,000-4,999; Carnegie Foundation for the Advancement of Teaching, 2011). Throughout this study, this institution will be referred to by the pseudonym Eagle Valley College. Eagle Valley College is part of a college district consisting of several community colleges located throughout a large metropolitan area.

The participants in this study consisted of all first-time, full-time, degree-seeking students who took the three recommended placement assessment exams of Eagle Valley College, complied with the course placement recommendation, and enrolled for the first time during the Fall 2009 academic semester. *First-time* indicates that the student had not been previously enrolled as a full-time student at any other postsecondary institution. *Full-time* indicates that the student was enrolled in at least 12 credit hours at the college during the Fall 2009 semester. *Degree-seeking* indicates that prior to enrollment, a student self-reported the intention to obtain at least an associate's degree. The *three placement assessment exams* required by the college are organized by subject: English, Math, and

Reading. For students entering Eagle Valley College in Fall 2009, a variety of exams administered by the college and its district satisfied this requirement and these exams were offered at no cost to the student. *Complying with the placement assessment recommendation* indicates that if a student placed into a developmental education course based on their placement assessment exam ranking, the student subsequently enrolled in a developmental education course in that subject. Likewise, for the purposes of this study, a student who placed into a college-level course based on his/her placement assessment exam ranking and subsequently enrolled in either a college-level or developmental education course would be in compliance with the placement recommendation. Thus, compliance in this study refers to enrollment in coursework that is at or below the course placement recommendation level.

The original data file contained 793 individual student records. Upon initial examination of the dataset by the researcher, it was noted that one student record was missing student age. Given that the student record only represented one out of 793 records (0.13%) and that the record contained no other missing data, the decision was made to retain this student record in the study.

Additionally, the researcher noted a low number of students included in the initial data set who: (a) were over the age of 24 years in Fall 2009 ($n = 38$); or (b) had earned 15 or more college credit hours prior to enrollment as a first-time, full-time student at Eagle Valley College in Fall 2009 ($n = 10$). Of the 48 students noted above, one student was both over 24 years old and had earned 15 or more college credit hours prior to enrollment at Eagle Valley College, resulting in a

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total of 47 students who fell into one or more of these categories. Because these two groups are not representative of the population to which the district-wide policy is intended (i.e., recent high school graduates who do not have college experience), the researcher further examined the rates of persistence and proportion of successfully completed credit hours after one year of college for these two groups.

The purpose of this examination was to see if there were differences in the means on each outcome variable (persistence and successfully completed credit hours), given that these dissimilarities would indicate that students in these two small groups may perform differently than the majority of the students in the sample ($n = 755$ and $n = 783$ for age and previously earned credit hours, respectively). A variety of "cut points" for both age and previously earned college credit hours were examined descriptively to determine if omitting students who were over 24 years of age in Fall 2009 or who had earned 15 or more credit hours prior to enrollment was reasonable, given the intent of the study.

Tables 1 and 2 provide the differences in means for the three outcome variables that were employed in both research questions (i.e., Fall 2009 to Spring 2010 persistence, Fall 2009 to Fall 2010 persistence, and proportion of course credit hours successfully completed by the end of the Fall 2010 semester). The tables represent differences in performance on the three outcome variables within each number of previously completed credit hours group interval (Table 1) and each age group interval (Table 2).

For example, Table 1 shows that there was a 22.20 percentage point difference in the proportion of successfully completed credit hours by the end of Fall 2010 between students who had previously earned 15 or more credit hours and those who earned less than 15 credit hours. Students who had previously earned 15 or more college credit hours before enrolling at Eagle Valley in Fall 2009 successfully completed a higher proportion of credit hours (by 22.20 percentage points) by the end of Fall 2010. Similarly, Table 2 illustrates that students who were 24 years old or younger in Fall 2009 had a higher rate (by 12.38 percentage points) of Fall 2009 to Fall 2010 persistence than those who were older than 24 years of age.

Table 1

Differences in Means of Outcome Variables based on Previously Completed College Credit Hours

Outcome	Mean Difference for Credit Hours Completed Prior to Fall 2009		
	$\geq 6 - < 6^*$	$\geq 12 - < 12^*$	$\geq 15 - < 15^*$
Fall to Spring Persistence Rate	6.58%	5.59%	4.18%
Fall to Fall Persistence Rate	9.46%	20.47%	13.08%
Percentage of successfully completed credit hours	10.34%	11.30%	22.20%

Note. *The average difference of the outcome variable value (e.g., Fall to Spring Persistence Rate) for those who earned 6 (or 12 or 15) or more credit hours minus the outcome variable value for those who earned less than 6 (or 12 or 15) credit hours.

Table 2

Differences in Means of Outcome Variables based on Age

Outcome variable	Mean Difference for Age in Fall 2009			
	≤ 19 yrs. - > 19 yrs.[*]	≤ 21 yrs. - > 21 yrs.[*]	≤ 24 yrs. - > 24 yrs.[*]	≤ 25 yrs. - > 25 yrs.[*]
Fall to Spring Persistence Rate	8.35%	7.44%	10.02%	9.12%
Fall to Fall Persistence Rate	2.86%	6.08%	12.38%	10.36%
Percentage of successfully completed credit hours	3.56%	0.41%	0.85%	1.67%

Note. [*]The average difference of the outcome variable value (e.g., Fall to Spring Persistence Rate) for those who were 19 (or 21 or 24 or 25) years old or younger minus the outcome variable value for those who were older than 19 (or 21 or 24 or 25) years of age.

The differences between these mean differences were examined to identify where the largest change between interval groups occurred. For previously completed college course credit hours, for performance on two out of the three outcomes, the largest change occurred between the 12 credit hour interval group and the 15 credit hour interval group: For both Fall to Spring persistence rate and proportion of successfully completed credit hours by the end of Fall 2010, there was a larger difference (1.41 and 10.90 percentage points, respectively) between the 12 credit hour group and the 15 credit hour group means than there was between the means of any other groups. Thus, the 12 credit hour group was more similar to the 6 credit hour group than to the 15 credit hour group in terms of performance in both Fall to Spring persistence and proportion of successfully completed credit hours by the end of the Fall 2010 semester.

Similarly, with regard to age, for performance on two out of the three outcome variables, the largest change occurred between the 21 year old interval group and the 24 year old interval group: For both Fall to Spring persistence rate and Fall to Fall persistence rate there was a larger difference (2.58 and 6.30 percentage points, respectively) between the 21 year old group and the 24 year old group means than there was between any other groups. The 21 year old group was more similar to the 19 year old group with regard to persistence than it was to the 24 year old group.

It should be noted that based on this descriptive analysis of age and previously completed college credit hours and their relationship to persistence rates and successfully completed credit hours after a year of college enrollment,

the cut points identified (older than 24 years of age and 15 or more previously completed credit hours, respectively) hold true for only two out of the three outcomes of this study. Thus, further inquiry into how age and previously completed college credit hours may be warranted (please see Chapter 5).

This initial descriptive analysis was completed to identify relevant cut points for both age of student and the number previously completed college credit hours to be used in this study. Based on this analysis, students in the original dataset ($n = 793$) who were over 24 years of age or who had earned 15 or more college credit hours prior to enrollment at Eagle Valley College were omitted from this study. This resulted in a study sample ($n = 746$) that was more homogenous with respect to these two student characteristics.

Study timeframe. The study included student activities and academic outcomes of the Fall 2009, Spring 2010, Summer 2010, and Fall 2010 semesters. Given that a student may have participated in two of the activities included in this study (new student orientation and academic advising) during the spring or summer prior to the Fall 2009 semester, the study included the timeframe of March, 2009 through December, 2010. An exception to this timeframe was the survey, which was administered to participants during the Spring 2011 academic semester but asked students to reflect on a course taken during the Fall 2009 semester.

The researcher chose Fall 2009 as the beginning semester of the study because it was during this semester that Eagle Valley College implemented a district-wide initiative wherein placement assessment exams, new student

orientation, and academic advising were quasi-mandated for all first-time, full-time, degree-seeking students. In addition to participation in these three activities (placement assessment exams, new student orientation, and academic advising), Eagle Valley College strongly encouraged students who placed into at least one developmental education course to enroll in a three-credit student success course during their first semester of study. All of these activities were identified at both the district and college level as integral to student success; student participation in these activities was encouraged at all district colleges as part of the aforementioned district-wide initiative aimed at improving student outcomes, namely student persistence.

The term *quasi-mandated* is used to highlight the fact that the college strongly recommended compliance with the district-wide initiative; however, there was not an enforcement mechanism in place and therefore there was no penalty for students who did not comply. During the first academic year of implementation of this initiative at Eagle Valley College (2009-2010), not all students complied with the quasi-mandated initiative. Students' non-compliance provided this research study with variation in number and type of activities in which students participated; however, it must also be noted that this non-compliance may have introduced confounding factors to the study related to a student's self-selection to comply.

Indicator of previous academic performance. As noted, for the first and second research questions the sample was limited to those first-time, full-time, degree-seeking students who *took the college recommended placement*

assessment exams in Math, Reading, and English. The researcher bounded the study's sample by including only those students who had taken all three placement assessments, to provide an indicator of students' previous academic performance. This parameter did not significantly limit the study's student group: From estimates provided by Eagle Valley College staff, of all Fall 2009 first-time, full-time, degree-seeking students, 94% took all three placement assessment exams. The researcher also bounded the sample by including those who complied with the placement assessment recommendation, noting the high rate of compliance (approximately 90%) among all first-time, full-time, degree-seeking Eagle Valley College students who took the exams and started at the college in Fall of 2009.

As is common practice at many U.S. community colleges (Bryant, 2001), students who apply and subsequently enroll at Eagle Valley College are not required to provide a high school GPA or high school course transcript; therefore the placement assessment exams administered by the college district are the only consistent institutionally-stored data at Eagle Valley College that provide information on student academic experience prior to enrolling at the college. Given the difficulty in obtaining accurate and consistent high school academic information for entering community college students, college placement assessment scores have been reported within the literature to represent the previous academic experience of beginning community college students (Goldberger & Kazis, 2009; Jenkins, 2007; Zhao, 1999).

This substitution is not without criticism, however. Armstrong (2000) found that although there was a statistically significant relationship between college placement test scores and subsequent college course grades, the coefficients were not high enough to offer practical significance. Instead, Armstrong found that indicators of a student's previous academic performance (e.g., high school GPA, grade in most recently taken high school course in a particular subject, number of years a student took high school courses within a subject) explained a greater amount of the variance in the dependent variables of college course grades and retention; however, because in the current study the researcher was limited by the institutional data available, the decision was made to include placement assessment rankings as they were the most consistent (across students) indicator of previous academic achievement.

Measures

The measures described below were obtained through Eagle Valley College institutional databases. Specifically, data for the first and second research questions are stored in the college's institutional research information system and academic advising information system. As noted in the Data Collection and Management section, the college's institutional research staff obtained these data, compiled them into a single password-protected data file, and transferred the file to the researcher for recoding (as needed) and analysis.

Outcome variables. For the first and second research questions, the outcome (dependent) variables of interest can be generally described as intermediate student outcomes. For the purposes of this study, intermediate

student outcomes are defined as those milestones that students achieve during the process of attaining final outcomes. Specifically, intermediate outcomes that serve as the outcome variables of this study are: first-year fall to spring semester persistence, first-year fall to second-year fall semester persistence, and the proportion of attempted course credit hours successfully completed through the first full year of study.

For all three of these outcomes, persistence and successful credit hour completion includes student participation at the college of study or any other college in the district. This is because students may transfer to another college in the district and continue to persist or successfully obtain credit hours. Further, the transfer rate to an Arizona four-year institution for all first-time, full-time students who started at Eagle Valley College in Fall 2009 was 0.1% (1 student) for Spring 2010 and less than 2% (19 students) for Fall 2010. Given this low rate of Eagle Valley College student transfer to an Arizona four-year institution within the study's timeframe, the researcher can reasonably assume that by including the outcomes of subsequent student persistence and proportion of course credit hours successfully completed at both Eagle Valley and all other community colleges in the district, this study is not significantly underestimating the rate of successful student outcomes by not accounting for transfer to a four-year institution.

Student persistence was coded dichotomously, with 0 indicating the student did not continue enrollment at a district community college and 1 indicating the student did continue enrollment at a district community college. Based on preliminary analysis of the data, the proportion of course credit hours

successfully completed varied substantially among participants, indicating that it was inappropriate to force these data into a dichotomous outcome variable of "successful" and "not successful." Therefore, the outcome of proportion of course credit hours successfully completed at a district community college was treated as a quantitative variable.

In addition to these dependent variables of interest, the second research question also included the outcome of success in at least one subsequent same-subject college-level course for a specific population of students. For this outcome, 0 indicates the student was not successful in at least one subsequent college-level course in the same subject area in which the student placed, and enrolled in, a developmental education course. A 1 on this variable indicates success (grade of A, B, C, or Pass) in at least one college-level course in the same subject area after completion of a developmental education course in that subject. As with the other three outcome variables included in the study, this outcome variable includes subsequent success at any district college. See Table 3 for further description of these variables.

Table 3

Descriptions of Outcome Variables

Variable Name	Description	Type/Scale	Self-reported
Fall to spring semester persistence	Student was enrolled (i.e., attempted hours) at Eagle Valley College in Fall 2009 and enrolled at Eagle Valley, or a district college, anytime during Spring 2010	Dichotomous	No
Fall to fall semester persistence	Student was enrolled (i.e., attempted hours) at Eagle Valley College in Fall 2009 and enrolled at Eagle Valley, or a district college, anytime during Fall 2010	Dichotomous	No
Proportion of course credit hours successfully completed	Calculated from total number of course credit hours *completed* at a district college by the end of the Fall 2010 semester with a grade of A, B, C, or P, divided by total number of all course credit hours *attempted* at a district college by the end of the Fall 2010 semester	Quantitative	No
Success in subsequent same-subject college-level courses (Second Research Question only)	During the Spring 2010, Summer 2010 or Fall 2010 semester, student enrolled and received a grade of A, B, C, or Pass in at least one college-level course in the same subject as a developmental education course that the student previously completed	Dichotomous	No

Predictor variables. For both research questions, the predictor (independent) variables of interest can be described generally as the number and type of activities in which the student participated. Specifically, the independent variables for the first research question included participation in new student orientation and participation in academic advising at the college of study. Given that the study focused on activities that occurred during the first semester of the college experience, participation in these activities is limited to Eagle Valley College only. Participation in new student orientation is a dichotomous variable and participation in academic advising is a continuous variable (number of visits). These variables are further described in Table 4.

Table 4

Descriptions of Predictor Variables

Variable Name	Description	Type/Scale	Self-reported
Participation in new student orientation	Student attended an in-person new student orientation session prior to the first day of classes for Fall 2009	Dichotomous	No
Participation in academic advising	Total number of times (visits) a student met with an academic advisor between March 1, 2009 and January 31, 2010	Continuous	No
Successful completion of three-credit student success course	Student completed the student success course in Fall 2009 with a grade of A, B, or C	Dichotomous	No

The second research question limited the sample to a subgroup of the first

question, focusing on first-time, full-time, degree-seeking students who took all

three placement assessments and *who placed into one or more developmental*

education courses. The second research question contained two dichotomous

predictor variables: student participation in new student orientation and success

(grade of A, B, C, or P) in the three-credit student success course at Eagle Valley

College during the first semester of college study. Participation in the three-credit

student success course was examined in concert with participation in new student

orientation for two reasons: (a) The second research question was limited to

students who placed into at least one developmental education course and it was

this student group for whom college staff most highly recommended enrollment

in the student success course; (b) Eagle Valley College's new student orientation

program and its three-credit student success course have similar learning

outcomes and intent for influencing student goals, but different modes of delivery

(i.e., one-time versus throughout a semester). Both research questions sought to

explore the impact of each activity included in the question as both standalone

and combined student experiences at Eagle Valley College.

Control variables. In addition to the independent variables of interest,

two other variables were included in the study as control variables: Previous

academic experience (represented by a composite *z* score calculated from the

Reading, Math, and English placement assessment rankings) and an indicator of

family income level (student receipt of a Federal Pell Grant or other need-based

financial aid). See Table 5 for further descriptions of these control variables.

Table 5

Descriptions of Control and Additional Variables

Variable Name	Description	Type/Scale	Self-reported
Gender	Student gender as reported to the college in Fall 2009	Categorical	Yes
Race/Ethnicity	Student race/ethnicity as reported to the college in Fall 2009	Categorical	Yes
Age	Student age at start of Fall 2009 semester	Continuous	Yes
Grade Point Average (GPA)	Student GPA at the end of the Fall 2009 semester	Continuous	No
Receipt of need-based aid	Indicates if student received/did not receive need-based aid (federal or private) in Fall 2009. Used as a proxy for family income level/low-income status.	Dichotomous	No
Previous academic experience (represented by a composite placement assessment exam rank)	Calculated by transforming each of the three subject placement rank scores (Reading, English, Math) into a standardized z score form and averaging to create one score per student. Rank scores were initially derived from the college's rescaling of Accuplacer, ASSET, or COMPASS placement assessment exam raw scores	z score; Continuous	No

The impact of socio-economic status (SES) – and specifically receipt of student financial aid – on student persistence has been examined in several studies. Findings indicate that receipt of financial aid and student persistence are related (Adelman, 1999; Calcagno et al, 2008; Fike & Fike, 2008; Jenkins, 2007; Mendoza, Mendez, & Malcolm, 2009). To obtain a more complete picture of a student's family income level, it may be have been more appropriate to use the measure of SES, which is typically compiled from parents' income, level of education, and occupation; however, these data are not collected by Eagle Valley College and do not exist within the college's or district's student information systems. Therefore, the researcher operationalized family income level in this study through inclusion of student receipt of a Federal Pell Grant or any other need-based aid (e.g., private scholarships based on family income level).

Federal Pell Grants are need-based financial assistance provided by the U.S. federal government to low-income college students. A student's eligibility for a Pell Grant is based on the student's expected family financial contribution; the cost of attendance (as determined by the institution); the student's enrollment status (full-time or part time); and whether the student attends for a full academic year or less (Federal Pell Grant, 2011, para. 1). Need-based aid includes any financial assistance based on family or student income level, provided to the student through both private and public sources.

A potential limitation in using receipt of a Pell grant as one of the components of this variable is that it may underestimate the number of low income students in the sample, given that it relies on the assumption that all

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students from low income families applied and received a Pell grant. This is problematic when one considers that students may not apply for federal financial aid such as the Pell, due to undocumented status or for other personal reasons.

A representative from the Eagle Valley College financial aid office confirmed that for the purposes of this study, receipt of a Pell Grant provides a reasonably accurate indicator of students who are from low-income families, given that the study includes first-time and full-time students only (Eagle Valley College Financial Aid Office, personal communication, September 26, 2011). It was noted by the Eagle Valley College Financial Aid representative that if the study was instead looking at part-time, older, or returning students, then the study would run the risk of misrepresenting income status for more than 10% of students; but that was not the case for the present study.

Jenkins (2007) notes that receipt of Pell Grant and score on placement exams were correlated and provided this as justification for omitting receipt of Pell Grant as a control variable in his study. In the present study, receipt of federal aid and the composite z score representing previous academic experience were only marginally negatively correlated, $r(744) = -0.198$, $p < .001$, and thus both variables were used in the analysis.

Finally, other student information captured in the college's information system has been used to provide descriptive analysis of the students included in the study. These variables include student ethnicity, gender, age, and GPA. See Table 5 for descriptions of these additional variables.

Student perceptions of student success course. Data for this area of inquiry were generated through responses to the student survey developed by the researcher. The survey was administered online to all Fall 2009 first-time Eagle Valley College students who completed the three-credit student success course in the Fall 2009 semester and were still enrolled at the college during the Spring 2011 semester. The survey required acknowledgment of informed consent and contained 11 items related to students' experiences during and after participation in the three-credit student success course at Eagle Valley College in the Fall of 2009. The first eight items asked students to respond to statements using a five-point Likert scale and were based on the college's stated goals and objectives for the course. The next two items served as markers to distinguish full-/part-time student status and whether or not a student enrolled in at least one developmental education course in the Fall 2009 semester. The last item was designed to elicit open-ended feedback from the student.

Data Collection and Management

The research study was developed over the course of a year and a half. The researcher initially contacted key leadership team members at the community college district in June, 2009. The researcher then initiated contact with Eagle Valley College in February, 2010. Through subsequent meetings and consultations with the college, the researcher developed the conceptual framework of the study in the context of the researcher's areas of research interest and Eagle Valley College's needs. In April, 2011, the study received approval from both the Eagle Valley College Institutional Review Board (IRB), as well as

the researcher's institutional IRB (see Appendix A). The researcher is not employed with Eagle Valley College or the college's district.

The primary data used in this study were student-level academic and demographic data for students enrolled at Eagle Valley College. These census data were collected for each student as academic and administrative events demanded (e.g., admissions, course registration, grade reporting). Additionally, some data were self-reported by the student on a personal information form and subsequently entered into the system upon application for admission to the college (see Tables 3, 4, and 5).

For both research questions, these student-level academic and demographic data were obtained from the college's institutional research information system, which is an extract of the community college district's student information system. This student information system contains data about all students who have at some point enrolled in classes, all classes offered across the district, and all instructors teaching those classes. Eagle Valley College maintains this institutional research information system weekly with archival data snapshots taken at the beginning, midpoint, and end of each fall and spring semester as well as at the end of each fiscal year (mid-summer). The data used in this study were generated from the end of the semester archival snapshot for the Fall 2009, Spring 2010, Summer 2010, and Fall 2010 semesters. In some cases (e.g., the study's outcome variables) data were obtained from archival snapshots of the district's student information system.

Academic advising data included in the first research question are stored in the college's academic advising tracking information system, which operates independently of the institutional research information system described above. Data on advising visits are stored by student name and college-assigned identification number. To ensure confidentiality, these data were queried by Eagle Valley College staff and combined (at the student-level) with the academic and demographic data obtained from the college's institutional research information system.

All data, including both the census and advising information, were queried by college staff, combined into a single data file, and transferred via a password protected file to the researcher. Prior to this transfer, Eagle Valley College staff removed all student names and college-assigned student identification numbers. The college's staff then generated new identification numbers (unrelated to the college-assigned student identification numbers) to serve as unique identifiers for each student record.

Data for the additional inquiry regarding student perceptions of the three-credit student success course were obtained through an online survey developed by the researcher (see Appendix B) and administered through the college's existing online survey development platform. Students were invited to participate in the survey via an email composed by the researcher but sent from an Eagle Valley College staff member, to ensure that the researcher did not have access to email addresses or student names. Students who were first-time students in the Fall 2009 semester, enrolled in the three-credit student success course during their

first semester, and who were still enrolled at the college during the Spring 2011 semester were invited to complete the survey. Two reminder emails were sent to invited students prior to the survey deadline and one follow-up call, administered by college staff, was placed to all students who met the survey inclusion criteria. An opportunity to enter a drawing to win one of two $50.00 gift cards was offered as an incentive for student participation in the survey.

Responses to each survey item were collected and stored on the college's online survey development software platform, with no connection to respondents' identifying information (e.g., name). After the survey deadline, Eagle Valley College staff transferred the anonymous survey responses to the researcher in an electronic file. These data were used descriptively by the researcher to highlight students' perceptions of the impact of the three-credit student success course on their experiences at the college.

Data Analysis

For this quantitative study, the researcher used the IBM SPSS Statistics software package (SPSS), release 18.0.0 for data analysis. Descriptive statistics including frequencies, means, standard deviations, and ranges were used to describe the sample in terms of participation in specific institutional support activities (e.g., orientation, academic advising, student success course), persisters and non-persisters, and successful completion of courses and course credit hours. Appropriate graphical and tabular summaries were analyzed and reported to provide an overview of the Eagle Valley College data included in the study.

A preliminary analysis of group differences was conducted to see if there were differences in student outcome measures across the various groups within the study (e.g., those who participated in just orientation as compared to those who participated in orientation and academic advising). Using SPSS, the researcher conducted appropriate subsequent inferential statistical analyses, including logistic regression and linear regression, needed for examination of the first and second research questions. These analyses are discussed in greater detail throughout the following sections of this chapter.

Determining the impact of participation in institutional activities on student outcomes. The first research question sought to delineate the impact of participation in new student orientation and participation in academic advising on (a) fall to spring persistence, (b) fall to fall persistence, and (c) proportion of course credit hours successfully completed. Student outcomes (a) and (b) are dichotomous variables; a student either persisted or did not persist in the specified timeframe. For these two outcomes, bivariate and multiple logistic regression analyses were performed with SPSS, using the variables described in Tables 4 and 5 to predict the probability of fall to spring and fall to fall student persistence.

Logistic regression is an appropriate technique to study the relationship between one or more continuous or categorical predictor variables and a dichotomous outcome variable (Cohen, Cohen, West, & Aiken, 2003; Field, 2005; Peng & So, 2002). As a member of the generalized linear model family, logistic regression is similar in concept to multiple regression (Cohen et al., 2003) but it is less restrictive in its assumptions as compared to multiple regression

(Peng & So, 2002). Unlike multiple regression, logistic regression does not assume a linear relationship between the predictor(s) and outcomes, nor does it assume that the residuals are distributed normally or exhibit homoscedasticity (Cohen et al., 2003; Field, 2005; Peng & So, 2002). By definition, outcome variables that are dichotomous do not have a linear relationship with the predictor(s) and the associated probability distribution is binomial (not normal).

For the first research question in the study, bivariate (single predictor) logistic regressions were conducted for each individual predictor and each outcome variable to examine if a significant relationship existed. Next, multiple (multiple predictors) logistic regression analyses were conducted for each outcome variable by including simultaneously all predictors in the regression model. In both the bivariate and multivariate logistic regression analyses, the contributions of individual predictors to outcomes were evaluated using the Wald tests and odds ratios (Peng & So, 2002).

Odds ratios facilitate interpretation of the relationship between each predictor and outcome variable in logistic regression analyses. In the context of this study, odds ratios (e^b) represent the probability of obtaining a successful student outcome divided by the probability of not obtaining a successful student outcome. Odds ratios that are greater than one indicate that as the units of the predictor increase, the odds of obtaining a successful student outcome also increase. Conversely, odds ratios that are less than one indicate that as the units of the predictor increase, the odds of obtaining a successful student outcome decrease.

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To obtain information on the interaction effects of the predictor variables in the first research question, interactions between participation in orientation and participation in academic advising were also examined. Cohen et al. (2003) defined an interaction as "the circumstance in which the impact of one [predictor] variable on [an outcome] Y is conditional on (varies across) the values of another predictor" (p. 674). Operationalized in terms of this study, examining the interaction between participation in orientation and in academic advising sought to answer the question "If a student participates in both orientation and academic advising, is the impact (on persistence) of participating in one of these activities dependent on participation in the other activity?"

The model chi-square statistic and Hosmer-Lemeshow goodness-of-fit statistic (a Pearson chi-square statistic) were used to assess the fit of the overall logistic model (Cohen et al., 2003; Peng & So, 2002). Because there is no commonly agreed upon effect size index in logistic regression, this study reported effect size indices that may be thought of as "pseudo R^2" statistics: Cox & Snell R^2 and Nagelkerke R^2 (Cohen et al., 2003; Peng & So; 2002).

As previously noted, student outcome (c), *proportion of course credit hours successfully completed,* was treated as a quantitative variable and thus bivariate and multiple linear regression analyses were performed within SPSS to examine this outcome variable. Unstandardized regression coefficients, standard errors, standardized regression coefficients, and model effect size statistics (R^2, adj. R^2) were examined and reported using the relevant test statistics and significance (p value).

**Determining the impact of developmental education students'
participation in orientation and a student success course on student
outcomes**. The second research question included a subsample of the students of
the first research question, focusing on only those students who placed into at
least one developmental education course at Eagle Valley College. Like the first
research question, the second research question also sought to delineate the
impact of student participation in certain activities on student outcomes; however,
the second research question was intended to explore the impact of developmental
education student participation in orientation or successful completion of a
student success course on (a) fall to spring persistence, (b) fall to fall persistence,
(c) proportion of course credit hours successfully completed, and (d) success in
subsequent college-level courses.

Student outcomes (a), (b), and (d) are dichotomous. Just as in research
question one, for these dichotomous outcome variables, logistic regression
analyses were performed in SPSS, using the variables described in Tables 4 and 5
to predict the probability of fall to spring student persistence, fall to fall student
persistence, and success in subsequent college-level courses. Similar to the first
research question, linear regression analyses were performed within SPSS to
determine impact on the quantitative student outcome (c; proportion of course
credit hours successfully completed).

Just as in the data analysis described for the first research question, the
interaction effects of the predictor variables for the second research question (i.e.,
participation in orientation, successful completion of the student success course)

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were examined for the subsample of interest (i.e., students who placed into at least one developmental education course in Fall 2009). Similar to the analysis for the first research question as described above, these effects were examined using interaction analysis techniques in both logistic regression and linear regression as appropriate, depending on the outcome variable of interest.

Student perceptions of student success course. The additional survey inquiry generated descriptive data to supplement the study's findings, specifically as they related to the second research question (wherein the focus was on developmental education students and the three-credit student success course was incorporated). Through descriptive summary of survey respondents and the specific item responses, the researcher examined and reported student perceptions of the three-credit student success course's impact on their educational experiences at Eagle Valley College.

Chapter Summary

This chapter defined the population (and sample) of interest, restated the research questions that guided the study, and described the study's design, timeframe, and process of data collection and subsequent analyses. All measures of interest, including outcome (dependent), predictor (independent), and control variables were defined. Literature supporting the appropriateness of the study's methods and operationalization of variables was also presented.

CHAPTER 4

Results

This chapter begins with descriptive summaries of the study's participants, patterns of participation in institutional activities, and student performance on the four outcomes of the study. Additionally, general information on the administration of the study's survey and survey respondent characteristics is provided. Results are then presented from a series of bivariate and multiple logistic and linear regression models to address each research question regarding the effects of student participation in institutional activities on the student outcomes of interest.

Descriptive Statistics

The study included 746 students who were first-time, full-time, degree-seeking students, 24 years old or younger in Fall 2009, took and complied with all three placement assessment exams, and enrolled at Eagle Valley College in Fall of 2009 with less than 15 previously earned college credits. Of those students, 440 placed into at least one developmental education course. The first research question involved the overall sample ($n = 746$) and the second research question focused only on developmental education students ($n = 440$), a subset of the overall sample. Further, for one outcome within the second research question (subsequent success in a same-subject college-level course), the sample included only those who attempted a same-subject college-level course after enrolling in a developmental education course ($n = 222$).

Student characteristics. Overall, of the 746 students included in the study, 41% self-identified as male, 55% identified as female, and 4% did not provide the college with gender information. The majority of students identified themselves as Hispanic (42%) or White (28%), with a significant percentage identifying as "Other" or not specifying their race/ethnicity (18%). Over half of all students in the sample (59%) placed into at least one developmental education course and 55% received some amount of need-based financial aid.

The average student included in the overall sample ($n = 746$) was 18 years old, had previously completed one college credit prior to enrollment at Eagle Valley College in Fall 2009, and earned a 2.44 GPA at the end of his/her first college semester at Eagle Valley College (Fall 2009). The average developmental education student ($n = 440$) was 18 years old, had previously completed less than one college credit hour prior to enrollment at Eagle Valley College in Fall 2009, and earned a 2.30 GPA at the end of his/her first college semester. See Tables 6 and 7 for more detail on the student characteristics of the overall sample (i.e., for the first research question) and the developmental education student subsample (i.e., for the second research question).

Table 6

Descriptive Statistics for Categorical Student Characteristics

Student characteristic	Overall Sample (n = 746)		Development Education Students only (n = 440)	
	n	%	n	%
Gender				
Male	306	41.0	175	39.8
Female	407	54.6	247	56.1
Not reported	33	4.4	18	4.1
Ethnicity				
American Indian	11	1.5	3	0.7
Asian	26	3.5	13	3.0
Black	48	6.4	35	8.0
Hispanic	315	42.2	202	45.9
White	211	28.3	96	21.8
Other/Not Specified	135	18.1	91	20.7
Need-based financial aid				
Received need-based aid	413	55.4	274	62.3
Did not receive need-based aid	333	44.6	166	37.7
Development education				
Placed into at least one developmental education course	440	59.0	440	100.0
Placed into zero developmental education courses	306	41.0	0	0.0

Table 7

Descriptive Statistics for Continuous Student Characteristics

Student characteristic	Overall Sample (n = 746)						Development Education Students only (n = 440)					
	N	*Mdn*	*M*	*SD*	Min.	Max.	*N*	*Mdn*	*M*	*SD*	Min.	Max.
Student Age	745	18.00	18.20	1.02	14.00	24.00	439	18.00	18.35	1.16	14.00	24.00
Previously completed college course credit hours	746	0.00	0.94	2.50	0.00	14.00	440	0.00	0.64	1.96	0.00	13.00
Fall 2009 Grade Point Average	746	2.75	2.44	1.18	0.00	4.00	440	2.61	2.30	1.19	0.00	4.00

Note. Max. = Maximum value; Min. = Minimum value.

Participation in interventions. Student participation in three institutional interventions was examined: new student orientation, academic advising, and the student success course. For both the overall sample and the developmental education student sample, approximately 50% of students attended new student orientation. Almost all students (95%-96%) had at least one visit with an academic advisor before, during, or directly after their first college semester (through January 31, 2010). On average, students visited with an academic advisor 2.5 times and the median number of visits was 2.0. The minimum number of visits to an advisor was zero and the maximum was 10 visits (see Figures 4 and 5). Of the 162 students who enrolled in the Fall 2009 student success course, the majority of these students had placed into at least one developmental education course (*n* = 136). Of these 136 developmental education students, 113 students successfully completed the course with a grade of A, B, or C (see Table 8).
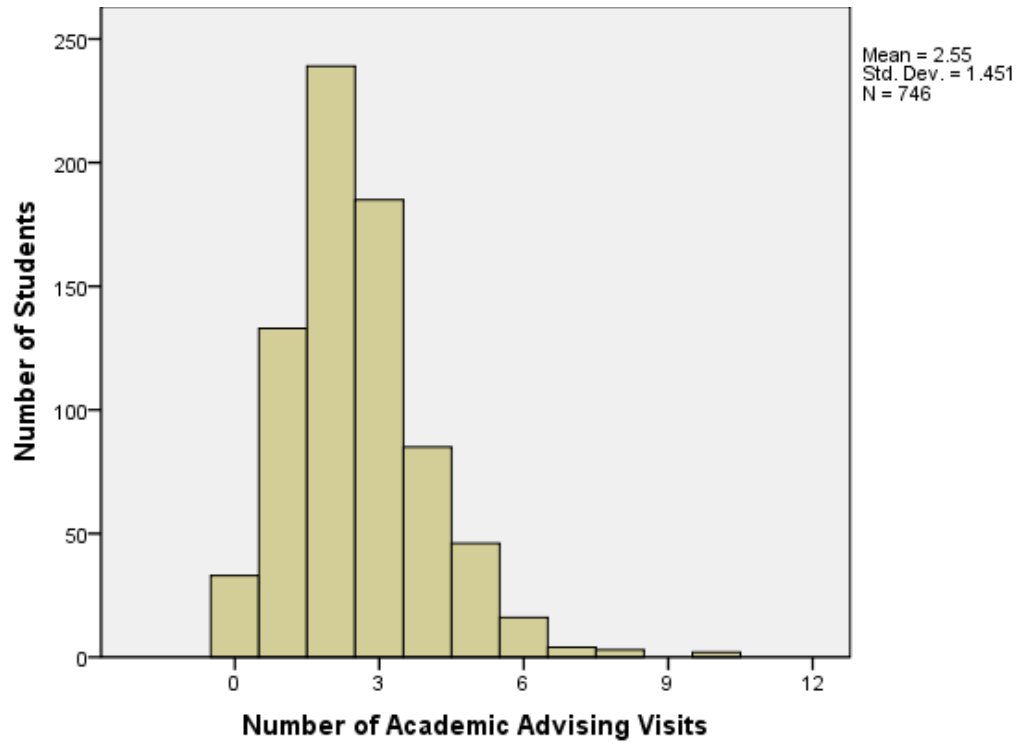
Figure 4. Distribution of number of academic advising visits through January

2010 for the overall sample.
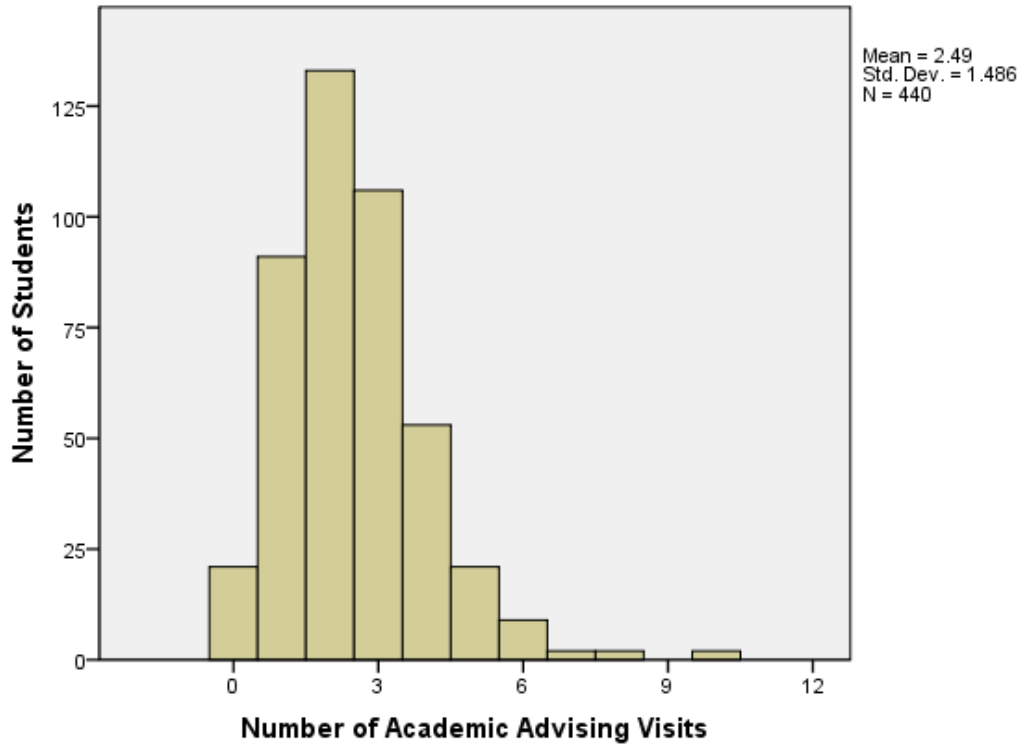
Figure 5. Distribution of number of academic advising visits through January

2010 for students who placed into at least one developmental education course in

Fall 2009.

Table 8

Student Participation in Institutional Interventions

Intervention	Overall Sample (*n* = 746)		Development Education Students only (*n* = 440)	
	n	%	*n*	%
Overall Participation				
Attended new student orientation	369	49.5	222	50.5
Met with an academic advisor at least once	713	95.6	419	95.2
Enrolled in the student success course	162	21.7	136	30.9
Successfully completed the student success course	136	18.2	113	25.7
Participation Level: New Student Orientation and Academic Advising				
Attended new student orientation but did not receive any academic advising	6	0.8	—	—
Met with an academic advisor at least once, but did not attend new student orientation	350	46.9	—	—
Both attended new student orientation and met with an academic advisor at least one time	363	48.7	—	—
Neither attended new student orientation nor met with an academic advisor	27	3.6	—	—
Participation Level: New Student Orientation and Student Success Course				
Attended new student orientation but did not enroll in student success course	—	—	147	33.4
Enrolled in student success course but did not attend new student orientation	—	—	61	13.9
Both attended new student orientation and enrolled in student success course	—	—	75	17.0
Neither attended new student orientation nor enrolled in student success course	—	—	157	35.7

The level, or pattern, of participation in each of the three interventions is further illustrated in Table 8. For the overall sample (n = 746), the most common patterns of participation were: (a) meeting with an academic advisor at least one time but not participating in new student orientation (47%); and (b) both attending new student orientation and receiving at least one hour of academic advising (49%). For the developmental education sample (n = 440), the most common patterns of participation were: (a) attending new student orientation but not enrolling in the student success course (33%); and (b) neither attending new student orientation nor enrolling in the student success course (36%).

Student outcomes. Student performance on four outcomes were examined: Fall 2009 to Spring 2010 persistence, Fall 2009 to Fall 2010 persistence, proportion of course credit hours successfully completed by the end of Fall 2010, and, for developmental education students only, subsequent success in a same-subject college-level course. Table 9 presents student success rates on these outcomes, not taking into account participation in institutional interventions. In the overall sample (n = 746), 86% of students persisted to the Spring 2010 semester and 67% persisted to the Fall 2010 semester. For developmental education students (n = 440), which represent a subset of the overall sample, 85% of students persisted to the Spring 2010 semester, with 66% of students persisting to the Fall 2010 semester.

Table 9

Descriptive Statistics for Categorical Student Outcomes

Student outcome	Research Question 1: Overall Sample			Research Question 2: Development Education Students only		
	N	Success *n*	Success %	*n*	Success *n*	Success %
Fall to Spring persistence	746	643	86.2	440	372	84.5
Fall to Fall persistence	746	503	67.4	440	288	65.5
Subsequently attempted and had success in same-subject college-level course	—	—	—	222	127	57.2

In both the overall sample and the developmental education subgroup, students successfully completed less than half of all course credit hours attempted by the end of Fall 2010. Within the overall sample ($n = 746$), by the end of the Fall 2010 semester, on average students completed 44% of all course credit hours attempted, $M = 0.44$, $SD = 0.27$. Within the developmental education subsample ($n = 440$), on average students completed 40% of all course credit hours attempted during the same timeframe, $M = 0.40$, $SD = 0.26$. See Figures 6 and 7 for visual displays of these data.
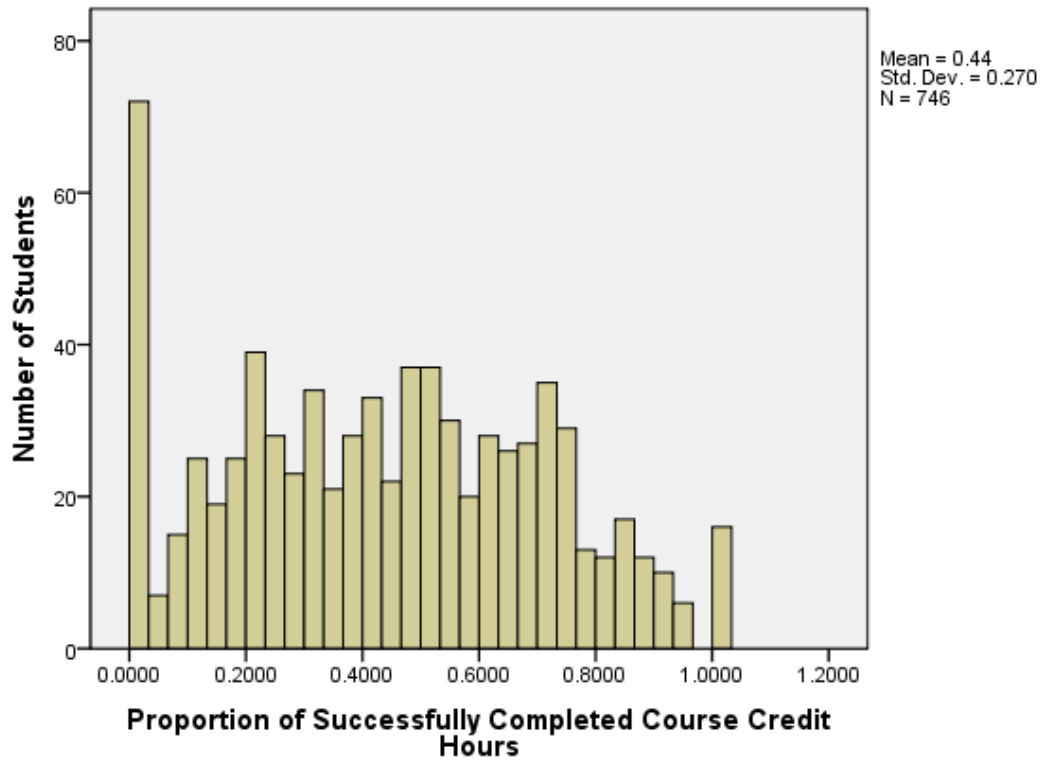
Figure 6. Distribution of proportion of successfully completed course credit hours

by end of the Fall 2010 semester for the overall sample.
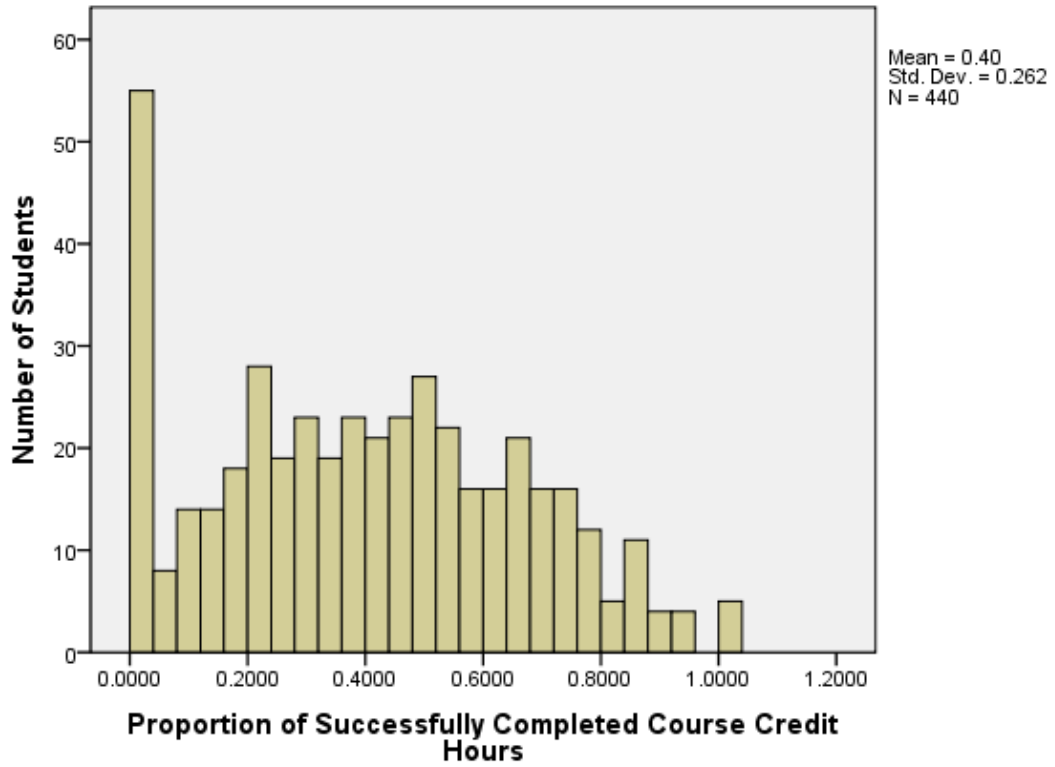
Figure 7. Distribution of proportion of successfully completed course credit hours

by end of the Fall 2010 semester for students who placed into at least one

developmental education course in Fall 2009.

Examination of the fourth outcome, subsequent success in a college-level course within the same subject in which the student placed into developmental education, was limited to only those students who both placed into a developmental education course in at least one subject and subsequently enrolled in a same-subject college-level course. Slightly over half (*n* =222) of all developmental education students in the sample attempted a same-subject college-level course within the study's timeframe. As presented in Table 9, 57% of those students successfully completed that college-level course with a grade of A, B, C, or Pass.

Student reflections on student success course. For the additional inquiry aimed at gathering students' reflections on the student success course taken during the first semester of college enrollment, a survey was sent out to all Eagle Valley College students who had enrolled in the Fall 2009 student success course and who were still enrolled at the college during the Spring 2011 semester (*n* = 104). Prior to administration of this survey, a draft survey was piloted with two Eagle Valley College students who had completed the student success course at the college, but were not enrolled in the course in Fall 2009. These pilot surveys were used to gain feedback on question structure and overall clarity, but responses from the pilot were not included in the final analysis.

Of the 104 students invited to participate in the survey, 61 students (58.7%) were female, 36 (34.6%) were male, and 7 (6.7%) students did not have gender information in the college's database. Of the 104 invited survey participants, 90 students (86.5%) had enrolled in 12 or more credit hours during

the Fall 2009 semester (i.e., full-time students) and 85 students (81.7%) had placed into at least one developmental education course.

A total of 18 students completed the survey, yielding a 17% response rate. Of the 18 survey respondents, 13 students (72.2%) reported that they had enrolled in 12 or more credit hours during the Fall 2009 semester. Four students (22.2%) reported that they had enrolled in less than 12 credit hours and one student (5.6%) did not provide Fall 2009 course credit enrollment information. Thirteen students (72.2%) reported that they enrolled in at least one developmental education course in Fall 2009. Four students (22.2%) reported that they did not enroll in a developmental education course the Fall 2009 semester and one student (5.6%) did not provide development education course enrollment information.

Initial Analysis

An initial examination of differences in performance on the study's outcomes shows that, on average, those who successfully participated in institutional interventions (new student orientation, advising, student success course) had higher success rates in terms of persistence, proportion of course credit hours successfully completed, and subsequent success in same-subject college-level courses. These group means are listed for both sample groups (i.e., overall sample and developmental education sample) in Table 10.

Table 10

Average Student Performance on Each Outcome based on Participation

Student Participation Level	Fall to Spring Persistence Rate	Fall to Fall Persistence Rate	Perc. Course Credit Hrs. Successfully Completed	Perc. Students with Success in Same-Subject College-level Course
Overall Sample (*n* = 746)				
Student Attendance at Orientation				
Attended new student orientation	87.5	69.6	44.6	—
Did not attend new student orientation	84.9	65.3	43.0	—
Academic Advising Visitation				
At least one academic advising visit	86.8	68.0	44.2	—
No academic advising	72.7	54.5	35.4	—
Developmental Education Sample (*n* = 440)				
Student Attendance at Orientation				
Attended new student orientation	86.0	67.1	42.1	58.5[*]
Did not attend new student orientation	83.0	63.8	37.9	55.8[*]
Course Success				
Success in student success course	88.5	70.8	47.4	60.3[*]
No success in student success course	83.2	63.6	37.5	55.6[*]

Note. [*]*n* = 222, the number of developmental education students who attempted a same-subject college-level course after completing developmental education coursework.

Prior to conducting the inferential (regression) analyses, the quantitative variable, *academic advising visits,* was mean-centered to provide meaningful interpretation of the y-intercept (constant). Mean-centering a variable indicates that the y-intercept for that predictor is the outcome variable's value for a student who scores the mean of that predictor variable (e.g., for a student who visited with an academic advisor 2.5 times)

Relationship of Participation in Institutional Activities and Student Outcomes: Overall Sample

As discussed in Chapter 3, multiple approaches to analysis of the data were employed within both research questions, due to the different scales of the outcome variables. In this section, the results for each outcome related to the first research question are discussed in terms of the results of the bivariate and multiple variable regression analyses performed. The results for the second research question are then presented in the next section of this chapter, using the same format. For all analyses throughout this study, the tests of significant differences were performed at the alpha = .05 level.

Student persistence. Results of the bivariate logistic regression analyses indicate that academic advising was positively and significantly associated with both Fall to Spring and Fall to Fall Persistence at the alpha = .05 level, $z(1) = 15.433$, $p < .001$ and $z(1) = 5.615$, $p = .018$, respectively. As indicated by the odds ratios reported in Table 11, for every one additional visit to an academic advisor, a student increased their odds of persisting from the Fall to the Spring semester by

41%. Similarly, for every one additional visit to an academic advisor, a student

increased their odds of persisting from the Fall to Fall semester by 14%.

Table 11

*Bivariate Logistic Regression Results for Individual Predictors: First Research Question (*n = 746)

Predictor	Estimate (*B*)	SE	Wald	Odds Ratio
	Predicting Fall to Spring Persistence			
Need-based financial aid	.318	.213	2.236	1.374
Constant	1.664	.150	123.468	
Previous academic experience	.151	.135	1.255	1.163
Constant	1.836	.107	296.800	
New student orientation	.224	.213	1.100	1.251
Constant	1.725	.144	144.012	
Academic advising	.344	.087	15.433[**]	1.410
Constant	1.913	.114	279.955	
	Predicting Fall to Fall Persistence			
Need-based financial aid	-.311	.159	3.830[*]	0.733
Constant	.904	.121	55.800	
Previous academic experience	.027	.101	.072	1.027
Constant	.728	.078	86.729	
New student orientation	.200	.157	1.639	1.222
Constant	.630	.108	33.942	
Academic advising	.134	.057	5.615[*]	1.143
Constant	.734	.079	87.152	

Note. [*]$p \le .05$; [**]$p < .01$.

Receipt of need-based financial aid, which was used in this study as a proxy for low income status, was also considered to be significant when regressing Fall to Fall persistence on receipt of need-based aid ($z[1] = 3.830$, $p = .05$). Interpreting the odds ratio as reported in Table 11, students from low-income families were 27% less likely to persist to the following Fall semester.

As Table 12 illustrates, similar results were found for the multiple logistic regressions performed for the two persistence outcomes. When controlling for receipt of financial aid, previous academic experience, and participation in orientation, academic advising was shown to be positively and significantly related to Fall to Spring persistence, $z(1) = 7.200$, $p = .007$. Similarly, controlling for all other predictor variables, academic advising was also shown to be positively and significantly related to Fall to Fall persistence, $z(1) = 4.087$, $p = .043$. Interpretation of the odds ratios indicates that controlling for receipt of need-based financial aid, previous academic experience, and participation in orientation, for every additional visit to an academic advisor, students increase their odds of Fall to Spring persistence by 35% and Fall to Fall persistence by 16%.

Table 12

*Multiple Logistic Regression Results: First Research Question (*n = 746*)*

Predictor	Estimate (*B*)	SE	Wald	Odds Ratio	Chi-square Model	Hosmer-Lemeshow Goodness-of- fit	Cox & Snell *R²*	Nagelkerke *R²*
			Predicting Fall to Spring Persistence			Model Fit Statistics		
Need-based financial aid	.337	.221	2.340	1.401	21.212[*]	24.684[*]	.028	.051
Previous academic experience	.178	.142	1.570	1.195				
New student orientation	.188	.230	.672	1.207				
Academic advising	.303	.113	7.200[*]	1.354				
Orientation X Academic advising	.062	.180	.117	1.064				
Constant	1.647	.194	71.973					
			Predicting Fall to Fall Persistence			Model Fit Statistics		
Need-based financial aid	-.347	.163	4.507[*]	0.707	11.699[*]	8.153	.016	.022
Previous academic experience	-.024	.104	.055	0.976				
New student orientation	.165	.158	1.086	1.180				
Academic advising	.152	.075	4.087[*]	1.164				
Orientation X Academic advising	-.031	.114	.072	0.970				
Constant	.852	.147	33.607					

Note. [*]$p < .05$.

Low income status (as measured by student receipt of need-based financial aid) was shown to be negatively and significantly related to Fall to Fall persistence, $z(1) = 4.507$, $p = .034$. Given the detected negative relationship between income status and Fall to Fall persistence, the odds ratio indicated that controlling for previous academic experience, participation in orientation, and advising, the odds of persisting from Fall to Fall semesters is decreased by 29% for students from low-income families. Interaction effects between participation in orientation and academic advising visits were not significant in models for either persistence outcome.

Although the Fall to Spring persistence model chi-square test was significant, $\chi^2(5) = 21.212$, $p = .001$, the model lacked a good fit to the data, as evidenced by the significance of the Hosmer-Lemeshow Goodness-of-fit statistic, $\chi^2(8) = 24.684$, $p = .002$. Further, both the Cox & Snell R^2 (.028) and Nagelkerke R^2 (.051) values are low.

The Fall to Fall persistence model appeared to have good fit to the data: the model chi-square test was significant, $\chi^2(5) = 11.699$, $p = .039$ and the Hosmer-Lemeshow Goodness-of-fit statistic was not significant $\chi^2(8) = 8.153$, $p = .419$. Both the Cox & Snell R^2 (.016) and Nagelkerke R^2 (.022) values are low, however.

Proportion of course credit hours successfully completed by Fall 2010. The third outcome examined in the first research question was *proportion of course credit hours successfully completed* by the end of the Fall 2010 semester. As previously noted, due to the scale of this outcome variable, linear regression

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analyses were performed to examine the association of the predictor and control variables (i.e., participation in orientation, participation in academic advising, receipt of need-based financial aid, previous academic experience) with the proportion of course credit hours successfully completed.

Results of the bivariate linear regression analyses indicate that not controlling for other predictors, receipt of need-based financial aid was negatively and significantly associated with the proportion of course credit hours a student successfully completed by the end of the Fall 2010 semester, $t(744) = -4.056, p < .001$. Interpretation of the unstandardized coefficients reported in Table 13 indicate that for those who are from low-income families, the proportion of course credit hours successfully completed is .080, or 8 percentage points, lower than it is for those who are not from low-income families, $(b = -.080, SE = .020)$.

Table 13

Bivariate Linear Regression Results for Individual Predictors: First Research

*Question (*n = 746)

Predictor	Predicting Proportion of Course Credit Hours Successfully Completed		
	Estimate (*B*)	SE	*β*
Need-based financial aid	-.080	.020	-.147[**]
Constant	.482	.015	
Previous academic experience	.054	.013	.156[**]
Constant	.438	.01	
New student orientation	.015	.020	.028
Constant	.430	.014	
Academic advising	.009	.007	.050
Constant	.438	.010	

Note. [**]*p* < .001.

Previous academic experience was also shown to be positively and significantly associated with proportion of course credit hours successfully completed, $t(744) = 4.301$, $p < .001$. For every standard deviation unit increase in a student's placement exam rank composite z score (the indicator for previous academic experience), the student's predicted proportion of course credit hours successfully completed increases by .156, or 15.6 percentage points ($\beta = .156$).

In the multiple linear regressions performed on the outcome *proportion of course credit hours successfully completed*, as reported in Table 14, the same two predictors shown to have a significant, independent association to this outcome were statistically significant in the full model, controlling for all other predictors. Receipt of need-based financial aid was negatively and significantly associated with the proportion of course credit hours successfully completed by a student, $t(740) = -3.370$, $p = .001$. Interpretation of the significant partial regression coefficients in this model indicate that for low-income students, the proportion of course credit hours completed is .067, or 6.7 percentage points, lower than it is for student who are not from low-income families, ($b = -.067$, $SE = .020$).

Table 14

*Multiple Linear Regression Results: First Research Question (*n = 746*)*

Predictor	Predicting Proportion of Course Credit Hours Successfully Completed		
	Estimate (*B*)	SE	β
Need-based financial aid	-.067	.020	-.124[*]
Previous academic experience	.045	.013	.130[**]
New student orientation	.014	.019	.026
Academic advising	.010	.009	.053
Orientation X Academic advising	-.001	.013	-.002
Constant	.468	.018	
R^2	.042		
Adj. R^2	.035		

Note. $F(5, 740) = 6.453$, $p < .001$. [*]$p < .05$; [**]$p < .001$.

Previous academic experience was shown to be positively and significantly related to proportion of course credit hours earned, $t(740) = 3.519$, $p < .001$. For every standard deviation unit increase in a student's placement exam rank composite z score (the indicator for previous academic experience), the student's predicted proportion of course credit hours successfully completed increases by .130, or 13 percentage points ($\beta = .130$). Participation in new student orientation, academic advising, and the interaction term of orientation and academic advising were not significantly associated with the proportion of course credit hours successfully completed by the end of the Fall 2010 semester.

The overall test of the model was significant, $F(5, 740) = 6.453$, $p < .001$; however, the percent of variance in the proportion of course credit hours successfully completed by the end of Fall 2010 accounted for by the predictors included in the model was only 4%, $R^2 = .042$, adj. $R^2 = .035$.

Relationship of Participation in Institutional Activities and Student Outcomes: Developmental Education Sample

The second research question examined a subsample of the overall sample examined in the first research question. The second research question focused on students who placed into at least one developmental education course during their first semester at the college. The same approaches used to examine the first research question (i.e., bivariate and multiple logistic and linear regressions) were employed for the second research question.

Student persistence. Results of the bivariate logistic regression conducted for each predictor variable indicate that receipt of need-based financial aid,

previous academic experience, participation in new student orientation, and successful completion of the student success course were not independently significantly associated with Fall to Spring persistence or Fall to Fall persistence. Regression coefficients, standard errors, Wald statistics, odds ratios, and significance test results are presented in Table 15.

Table 15

*Bivariate Logistic Regression Results for Individual Predictors: Second Research Question (*n = *440)*

Predictor	Estimate (*B*)	SE	Wald	Odds Ratio
	Predicting Fall to Spring Persistence			
Need-based financial aid	.457	.266	2.950	1.579
Constant	1.432	.197	52.978	
Previous academic experience	-.135	.215	.394	0.874
Constant	1.702	.132	165.783	
New student orientation	.231	.265	.760	1.259
Constant	1.588	.180	77.427	
Successful completion of student success course	.442	.330	1.794	1.555
Constant	1.598	.148	116.894	
	Predicting Fall to Fall Persistence			
Need-based financial aid	-.319	.210	2.301	.727
Constant	.842	.169	24.746	
Previous academic experience	-.211	.163	1.679	.810
Constant	.642	.101	40.756	
New student orientation	.148	.201	.547	1.160
Constant	.565	.141	16.081	
Successful completion of student success course	.327	.237	1.910	1.387
Constant	.558	.115	23.603	
	Predicting Success in Same-subject College-level Course (*n* = 222)			
Need-based financial aid	.415	.283	2.155	1.515
Constant	.025	.225	.013	
Previous academic experience	-.265	.221	1.446	.767
Constant	.264	.138	3.681	
New student orientation	.110	.272	.165	1.117
Constant	.232	.197	1.378	
Successful completion of student success course	.193	.286	.456	1.213
Constant	.223	.168	1.770	

The multiple logistic regression analyses conducted also indicated that receipt of need-based financial aid, previous academic experience, participation in new student orientation, and successful completion of the student success course were not statistically significant predictors in Fall to Spring persistence and Fall to Fall persistence. The interaction terms (i.e., between participation in orientation and successful completion of the student success course) included in each model was also not statistically significant.

For Fall to Spring persistence, the model was not statistically significant, $\chi^2(5) = 5.480$, $p = .360$; the non-significant results of the Hosmer-Lemeshow test, however, indicate that the model fit the data, $\chi^2(8) = 4.619$, $p = .797$. The pseudo R^2 statistics, Cox and Snell R^2 (.012) and Nagelkerke R^2 (.021), indicate that this combination of predictors did not predict the outcome variable well. Regression coefficients, standard errors, Wald statistics, odds ratios, significance test results, and overall model statistics are presented in Table 16.

Table 16

*Multiple Logistic Regression Results: Second Research Question (*n *= 440)*

Predictor	Estimate (B)	SE	Wald	Odds Ratio	Chi-square Model	Hosmer-Lemeshow Goodness-of-fit	Cox & Snell R^2	Nagelkerke R^2
			Predicting Fall to Spring Persistence			Model Fit Statistics		
Need-based financial aid	.448	.271	2.735	1.565	5.480	4.619	.012	.021
Previous academic experience	.014	.227	.004	1.014				
New student orientation	.161	.298	.294	1.175				
Successful completion of student success course	.257	.467	.302	1.293				
Orientation X Successful completion of student success course	.300	.664	.204	1.350				
Constant	1.265	.255	24.578					
			Predicting Fall to Fall Persistence			Model Fit Statistics		
Need-based financial aid	-.374	.215	3.042	.688	6.903	7.422	.016	.021
Previous academic experience	-.203	.173	1.364	.817				
New student orientation	.036	.231	.025	1.037				
Successful completion of student success course	.070	.349	.040	1.072				
Orientation X Successful completion of student success course	.359	.477	.567	1.433				
Constant	.796	.214	13.791					
			Predicting Success in Same-subject College-level Course (*n* = 222)			Model Fit Statistics		
Need-based financial aid	.374	.287	1.700	1.454	4.387	6.781	.020	.026
Previous academic experience	-.191	.237	.645	.826				
New student orientation	.287	.340	.710	1.332				
Successful completion of student success course	.409	.438	.874	1.505				
Orientation X Successful completion of student success course	-.560	.579	.936	.571				
Constant	-.156	.308	.256					

The model results for Fall to Fall persistence are similar in that the model was not statistically significant, $\chi^2(5) = 6.903$, $p = .228$, but the Hosmer-Lemeshow test indicates that the model fit the data, $\chi^2(8) = 7.422$, $p = .492$. The pseudo R^2 statistics, Cox & Snell R^2 (.016) and Nagelkerke R^2 (.021), indicate that this combination of predictors does not predict the outcome variable well.

Subsequent success in same-subject college-level course. The third outcome examined in the second research question was a student's subsequent success in succeeding in a college-level course in the same subject in which he/she placed into and completed a developmental education course. For this outcome only, the sample size was limited to those students who placed into at least one developmental education course and subsequently enrolled in a college-level course in the same subject ($n = 222$).

Results of the bivariate logistic regression indicate that receipt of need-based financial aid, previous academic experience, participation in new student orientation, and successful completion of the student success course were not independently significantly related to a student's success in a subsequent college-level course in the same subject. Regression coefficients, standard errors, Wald statistics, odds ratios, and significance test results are presented in Table 15.

Multiple logistic regression analyses conducted also indicated that receipt of need-based financial aid, previous academic experience, participation in new student orientation, and successful completion of the student success course were not statistically significant predictors in subsequent success in a same-subject college-level course. The interaction term (i.e., between participation in

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orientation and successful completion of the student success course) included in this model was not statistically significant either. Regression coefficients, standard errors, Wald statistics, odds ratios, and significance test results are presented in Table 16.

The overall multiple logistic regression model for subsequent success in a same-subject college level course was not statistically significant, $\chi^2(5) = 4.387$, $p = .495$; the non-significance of the Hosmer-Lemeshow test, however, indicates that the model fit the data, $\chi^2(8) = 6.781$, $p = .560$. The pseudo R^2 statistics, Cox & Snell R^2 (.020) and Nagelkerke R^2 (.026) are both low, indicating that subsequent success in a same-subject college level course is not strongly predicted by this combination of predictors. These model statistics are also presented in Table 16.

Proportion of course credit hours successfully completed. The fourth outcome examined in the second research question was the proportion of course credit hours that a student successfully completed by the end of the Fall 2010 semester. Results of the bivariate linear regression analyses indicate that for students who are from low-income families, the proportion of course credit hours completed is .054, or 5 percentage points, lower than it is for those who are not from low-income families, ($b = -.054$, $SE = .026$, $t(438) = -2.118$, $p = .035$).

Students who successfully complete the student success course are predicted to successfully complete a proportion of course credit hours that is .099, or 9.9 percentage points, higher than students who do not successfully complete the student success course, ($b = .099$, $SE = .028$, $t(438) = 3.527$, $p < .001$). Table

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17 presents the unstandardized regression coefficients, standard errors,

standardized regression coefficients, and tests of significance.

Table 17

*Bivariate Linear Regression Results for Individual Predictors: Second Research Question (*n *= 440)*

Predictor	Predicting Proportion of Course Credit Hours Successfully Completed		
	Estimate (B)	SE	β
Need-based financial aid	-.054	.026	-.101[*]
Constant	.434	.020	
Previous academic experience	.006	.020	.015
Constant	.400	.012	
New student orientation	.041	.025	.079
Constant	.379	.018	
Successful completion of student success course	.099	.028	.166[**]
Constant	.375	.014	

Note. [*]$p < .05$; [**]$p < .001$.

In the multiple linear regressions performed on the outcome *proportion of course credit hours successfully completed*, after controlling for previous academic experience, participation in new student orientation, and successful completion of the student success course, receipt of need-based financial aid was negatively and significantly associated with the proportion of course credit hours successfully completed by a student, $t(434) = -2.147$, $p = .032$. For students from low-income families, the proportion of course credit hours completed is .055, or 5.5 percentage points, lower than it is for those who are not from low-income families, ($b = -.055$, $SE = .026$).

Controlling for all other predictors in the model, participation in new student orientation was positively and significantly associated with the proportion of course credit hours successfully completed, $t(434) = 2.043$, $p = .042$. Students who participate in new student orientation are predicted to successfully complete a proportion of course credit hours that is .058, or 5.8 percentage points, higher than students who do not participate in orientation ($b = .058$, $SE = .028$). Due to the fact that participation in orientation was not related to the proportion of credit hours earned in the bivariate regression analysis, it is likely that the significant relationship of orientation and proportion of credit hours in the full model is caused by a suppressor effect.

Successful completion of the student success course was also shown to be positively and significantly related to proportion of course credit hours successfully completed, controlling for all other predictors in the model, $t(434) = 3.779$, $p < .001$. Students who successfully complete the student success course

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are predicted to successfully complete a proportion of course credit hours that is

.160, or 16 percentage points, higher than students who do not successfully

complete the student success course, (b = .160, SE = .042). The interaction term

that included participation in new student orientation and successful completion

of the student success course was not significant. Table 18 presents the

unstandardized regression coefficients, standard errors, standardized regression

coefficients, and tests of significance for this model.

Table 18

*Multiple Linear Regression Results: Second Research Question (*n = *440)*

Predictor	Predicting Proportion of Course Credit Hours Successfully Completed		
	Estimate (*B*)	SE	*β*
Need-based financial aid	-.055	.026	-.102[*]
Previous academic experience	.024	.021	.058
New student orientation	.058	.028	.111[*]
Successful completion of student success course	.160	.042	.267[**]
Orientation X Successful completion of student success course	-.090	.056	-.120
Constant	.377	.026	
R^2	.053		
Adj. R^2	.042		

Note. $F(5, 434) = 4.841$, $p < .001$. [*]$p < .05$; [**]$p < .001$.

The overall model was significant, $F(5, 434) = 4.841, p < .001$; however, only 5% of the variance in the proportion of course credit hours successfully completed by the end of Fall 2010 was accounted for by the predictors included in the model, $R^2 = .053$, adj. $R^2 = .042$.

Student Perceptions of Student Success Course

Out of the eight Likert scale survey items, seven had 100% response rates ($n = 18$). One item had a 94% response rate ($n = 17$). Two of the eight survey items received the highest percentage (61%, respectively) of *strongly agree* responses, indicating that respondents believed that the course: (a) Introduced them to specific people/places on campus that respondents then utilized to obtain information, and (b) Facilitated respondents' thinking about how they would achieve their career goals. These two survey items also received the highest percentage of combined *strongly agree* and *agree* responses (100% and 88.89%, respectively). Table 19 presents the Likert items and their respective responses.

Table 19

*Student Success Course Survey Item Responses (*n *= 18)*

Survey Item	Percentage of Respondents at Each Response Level					
	Strongly agree	Agree	Neutral	Disagree	Strongly disagree	No response
1 The class changed the way I study for college coursework.	33.33	50.00	11.11	0.00	5.56	0.00
2 The class helped me to think about how I will achieve my career goals.	61.11	27.78	5.56	0.00	5.56	0.00
3 The class changed the way I thought about myself as a college student.	38.89	38.89	16.67	0.00	5.56	0.00
4 The class helped me to form study groups.	33.33	27.78	22.22	5.56	11.11	0.00
5 The class introduced me to specific people/places on campus (e.g., tutoring, advising, career services) that I have used to get information.	61.11	38.89	0.00	0.00	0.00	0.00
6 The class encouraged me to become involved in [College Name] activities outside of the classroom.	50.00	16.67	22.22	0.00	11.11	0.00
7 I still keep in touch with friends that I met in my in [Course Prefix/Number] class.	33.33	16.67	33.33	5.56	5.56	5.56
8 I feel comfortable contacting my [Course Prefix/Number] instructor with questions or concerns that I have as a [College Name] student.	33.33	38.89	22.22	5.56	0.00	0.00

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Survey items that yielded responses more evenly distributed across *strongly agree, agree,* and *neutral* response categories indicated that students felt less strongly that the course assisted them in forming study groups, changed the way they thought about themselves as college students, and facilitated a comfort level in contacting their student success course instructor with questions or concerns. The two survey items that received the greatest percentage (11.1%) of *strongly disagree* responses were related to the course's encouragement of student involvement outside of the classroom and facilitating the formation of study groups; it should be noted, however, that in terms of the course encouraging students to become involved outside of the classroom, 50% of respondents indicated that they *strongly agreed* that the course encouraged them to become involved in college activities outside of the classroom, and only 11% of respondents *strongly disagreed* with that statement. Only one survey item, related to keeping in touch with friends met in the student success course, had less than a 100% response rate; one student (5.56%) did not respond to this survey item.

Fourteen out of the 18 respondents (78%) provided a response to the open-ended survey item, "What do you know now that you wish you had known your first semester at Eagle Valley College?" These responses are listed in Table 20. Of the 14 respondents, three indicated that there was nothing that they wish they would have known their first semester at the college. Of the 11 remaining responses, five related to heuristic (informal) knowledge about campus life; four

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can be characterized as knowledge about study/academic skills; one related to

knowledge of student/campus services; and one related to knowledge of campus

activities.

Table 20

*Student Success Course Survey Free Response (*n = *14)*

Question: What do you know now that you wish you had known your first semester at [College Name]?

Student Responses:
Heuristic Knowledge – Campus/Academic Life
    I wish I knew about the tool called Safeassign by Blackboard.
    I wish I had learned more about the financial part about college.
    I wish I knew about rate my professor.
    I wish that I had known not to take the [Student Success Course].
    It's best to take your core classes first.
Study/Academic Skills
    I wish I would [have] been a non procrastinator.
    Studying hard is the key to success.
    How to organize my notes better.
    Ask any questions I have even if it may sound stupid.
Student/Campus Services
    Where to go for help when I need it.
Campus Activities
    More about the [Student Club].
Nothing
    Nothing really, I take everything as it comes.
    Nothing.
    I learned everything I needed in my first semester.

Chapter Summary

      This chapter began with descriptive summaries of participants, their level of participation in institutional activities, and overall performance on the four student outcomes of the study. Results of the analyses conducted to examine each research question of the study were then presented. Chapter 5 will provide a discussion of these results and present a conclusion, as well as suggestions for future research.

CHAPTER 5

Discussion and Conclusion

The purpose of this study was to explore one community college's attempt to address low student persistence rates at their institution through implementation of institutional interventions. This study examined the impact of these institutional support services on student outcomes that included student persistence and successful course and credit hour completion during the first full academic year and additional semester at Eagle Valley College or any other college in the district.

The study also included two student characteristic variables – a composite placement rank (as an indicator of previous academic performance) and receipt of need-based financial aid (as an indicator of low-income status) – to examine if the association between participation in institutional interventions and successful student outcomes held above and beyond the influence of these student characteristics. Grounded in the theoretical framework of student engagement theory, this study considered each institutional intervention as an opportunity for students to become more engaged with the college which would, per the theory, lead to increased chances of successful student outcomes.

Interpretation of the Results

The study was guided by two research questions: The first included the sample of all first-time, full-time, degree-seeking students who took all three placement assessment exams and complied with the course placement recommendations. This sample is referred to as the *overall sample* in this chapter.

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The second research question included a subsample of this overall group and focused only on students from the overall sample who placed into at least one developmental education course. This sample is referred to as the *developmental education sample* in this chapter.

The results that were presented in Chapter 4 are further elaborated on in the following sections. Each independent variable of this study is discussed separately, followed by an overall conclusion regarding interpretation of the study's findings. To aid in this discussion, Table 21 presents an overview of the predictors found to have statistically significant predictive utility for the outcomes examined in the study.

Table 21

Overview of Statistically Significant Associations

Outcome Variable	Bivariate Regression Significant Predictors	Multiple Regression Significant Predictors
Overall Sample (*n* = 746)		
Fall to Spring persistence	Academic Advising	Academic Advising
Fall to Fall persistence	Financial Aid; Academic Advising	Financial Aid; Academic Advising
Proportion of credit hours successfully completed by end of Fall 2010	Financial Aid; Previous Academic Experience	Financial Aid; Previous Academic Experience
Developmental Education Sample (*n* = 440)		
Fall to Spring persistence	—	—
Fall to Fall persistence	—	—
Success in subsequent same-subject college-level coursework (*n* = 222)	—	—
Proportion of credit hours successfully completed by end of Fall 2010	Financial Aid; Student Success Course	Financial Aid; Student Success Course; Orientation

It is noted here, and further elaborated on in this chapter, that although this study found statistically significant associations between institutional interventions and specific student outcomes, within all cases of significance, the effect sizes, and hence the *practical* significance, were low. Effect sizes are estimates of the strength of the relationship between the predictors and outcome variables. These findings must therefore be interpreted cautiously as they relate to implications for policy or program decision-making on a broad scale. It may be more appropriate to consider the descriptive findings of this study and the implications of these findings as suggestive of areas for further examination.

Low-income status. In this study, student receipt of need-based financial aid was used as a proxy for low-income status, which is associated with low-SES. For the overall sample, students from low-income families had a lower chance of persisting to the following Fall semester (i.e., Fall to Fall persistence) as compared to students who were not from low-income families. Low-income status was also negatively associated with the proportion of course credit hours successfully completed in both the overall sample and the developmental education sample: Students from low-income families successfully completed, on average, a lower proportion of course credit hours by the end of the Fall 2010 semester. This negative relationship between income-status and proportion of credit hours successfully completed was the only statistically significant association found in both the overall and developmental education student samples.

The measure *receipt of need-based financial aid* was used in this study as an indicator of low-income status. This study was not designed to examine, specifically, the relationship between student receipt of need-based aid and student outcomes. Thus, this study's findings on the control variable *receipt of need-based financial aid* should not be interpreted in the context of student performance related to amount of aid received, but rather in the context of student performance related to low-income status. Given the educational challenges for low-income students—challenges that extend beyond the financial burden of attending a postsecondary institution—the negative relationship found in this study between *receipt of need-based financial aid* (low-income status) and successful student outcomes was expected and is consistent with existing literature (Adelman, 1999; Calcagno et al., 2008; Fike & Fike, 2008; Jenkins, 2007; Mendoza, Mendez, & Malcolm, 2009).

One possible explanation for this finding is that students who are from low-income families may be employed for a greater number of hours, which could negatively impact their academic progress due to more limited time and energy available to devote to educational activities. In this study, however, there was little difference in the number of hours employed based on income status: Based on self-reported employment information, both for low-income and non low-income students, approximately 20% worked full-time while attending Eagle Valley College and 30% worked part-time.

It is interesting that low-income status was not significantly associated with the short-term outcome, Fall to Spring persistence, in either the overall or

developmental education sample. A potential interpretation of this finding is that a student's income level becomes a more significant factor in student success as a student progresses through their college experience. Perhaps there is a delayed impact on a student's ability to persist that is not evident after only one semester of study. This observation highlights an area for further inquiry on supporting students from low-income families as it relates to short-term and long-term outcomes, as discussed in the Recommendations and Suggested Areas for Future Inquiry section of this chapter.

Previous academic performance. Previous academic performance was significantly associated only with the proportion of course credit hours successfully completed by the end of the Fall 2010 semester for the overall sample. No other significant associations between previous academic performance and student outcomes (i.e., to persistence or success in subsequent college-level courses) were detected in the overall or developmental education student sample.

This was perhaps the most unexpected finding of the study. Given the well-established connection in the literature between previous academic performance and college success (Adelman, 1999; Armstrong, 2000; Bailey & Alfonso, 2005; Bean & Metzner, 1985; Calcagno et al., 2008; Cox, 2009; Jenkins, 2007; Summers, 2003), it was surprising that this variable was shown to be significantly associated with only one outcome, within only one research question. A potential contributor to this finding was the measure used to represent a student's previous academic performance. Performance on a placement

assessment exam may not represent a valid measure of previous academic performance; a placement assessment exam rank originates from a single test-taking experience. Even if a student took a placement assessment exam several times (as was permitted at Eagle Valley College), the placement exam score is still only derived from, at best, a limited number of data-points within a short time frame (i.e., several months prior to enrollment at the college).

Conversely, high school GPA captures students' previous academic performance data collected over a longer period time; the high school GPA generally is based on four years of course-taking and course-performance. This study therefore lends support to Armstrong's (2000) finding that using placement exam scores as measures of previous academic performance does not often yield findings of practical significance.

Participation in new student orientation. In this study, participation in new student orientation was not significantly associated with any of the examined outcomes. Although orientation does appear to have a statistical relationship to the proportion of credit hours successfully completed by the end of the Fall 2010 semester in the full regression model for developmental education students, the fact that it did not have an association to this outcome in the bivariate regression analysis is consistent with suppression (i.e., that the relationship between the predictor variables in the model is suppressing one or more of the predictor variables' actual relationship with the outcome variable; Cohen et al., 2003). Due to this likelihood of a suppressor effect, in combination with the fact that orientation is not strongly related to the outcome in the full model, orientation was

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considered not to be a significant predictor of proportion of course credit hours successfully earned by the end of Fall 2010 in this study.

This finding should not be surprising from the perspective of the overall college experience; it is unlikely that one half-day of any type of institutional intervention would have a significant impact above and beyond student characteristics and other institutional and environmental factors that students encounter during their educational experiences. In this way, the present study's findings are similar to Perrine and Spain's (2008), in which participation in a week-long orientation had little influence on students' persistence rates, number of course credits earned, and GPA, once student characteristics (e.g., gender, age, race, college entrance exam scores, high school GPA) were controlled for.

What was surprising was the fact that the statistical interaction between orientation and the student success course was not statistically significant for any of the tested outcomes of the study. Although participation in new student orientation may not have a significant association to student outcomes in and of itself, it has been reported that students believe these programs, in combination with other student support strategies, have a positive impact on their educational experiences (Hollins, 2009; Orozco et al., 2010); the non-significant orientation by student success course interaction in this study, however, indicates that the relationship between participation in orientation and student outcomes did not vary across students who did or did not participate in the student success course.

Based on the findings of this study, the conclusion that orientation programs have no effect on student persistence should not be made. Although no

direct associations to the student outcomes of this study were detected, there may be other benefits to participation in orientation that were not measured or accounted for in the present study.

The purpose of a new student orientation program is to welcome students to the college and provide a transition experience between their previous academic experience and their new college experience (Busby, Gammel, & Jeffcoat, 2002; Perigo & Upcraft, 1989). Participation in orientation may offer less directly obvious, but equally important, benefits to student success. For example, perhaps orientation programs initiate the process of identifying as a college student and play a role in a student's development of understanding themselves in this new role. This identify development may be a transitional outcome of orientation programs that may impact a student's subsequent decision to participate in educationally purposeful activities at the college. Given that approximately 50% of all students at Eagle Valley College choose to participate in an orientation program, which is higher than the national average of 27% (Center for Community College Student Engagement, 2009), this institutional intervention warrants further inquiry.

Academic advising. Interpretation of the findings for the first research question indicate that for students in the overall sample, every additional visit to an academic advisor was associated with a greater chance of both Fall to Spring and Fall to Fall persistence. Academic advising, however, had no statistically significant association with the proportion of course credit hours successfully completed by the end of the Fall 2010 semester for students in the overall sample.

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Academic advising was not included as a variable in the developmental education student subsample.

It was interesting that academic advising was a statistically significant predictor of persistence, but not of proportion of course credit hours successfully completed. A possible interpretation of this finding is that although advising is related to the facilitation of a student's desire and ability to reenroll at a district college, it does not necessarily relate to greater academic success in terms of the proportion of credit hours completed. More specifically, academic advisors at the college may place a greater emphasis on the pattern of necessary course-taking and course requirements needed for progression (and thus, persistence) at the community college, as compared to providing tools for *success* in those courses. This is a reasonable assumption, given that a primary function of academic advising is to guide students in selecting the courses and sequences of courses that maximize student attainment of educational and career goals (Boroch et al., 2010; Cohen & Brawer, 2008; King, 1993; Seidman, 1991).

Worthy of note, approximately 96% of all students in the overall sample utilized academic advising services at least one time either before or during their first six months at Eagle Valley College. Given that previous research has indicated that academic advising is especially important in institutions (like Eagle Valley College) where course placement based on academic assessments is not mandatory (Boroch et al., 2010, Cohen & Brawer, 2008), it is encouraging that Eagle Valley College first-time, full-time, degree-seeking students do indeed visit

with an academic advisor at least once before or during their first six months of enrollment.

Participation in the student success course. Predictive relationships between participation in the student success course and student outcomes were only examined for the developmental education student sample. Students who earned a grade of A, B, or C in the student success course successfully completed, on average, a higher proportion of course credit hours by the end of Fall 2010 than students who did not enroll or did not earn an A, B, or C in the course. Although students who successfully completed the student success course had higher success rates on the other outcomes examined in this study (i.e., persistence and subsequent success in a same-subject college-level course) as compared to students who did not successfully complete the course (as reported in Table 10), these differences were not statistically significant. It should also be noted that although success in the student success course is inherently related to a student's overall proportion of credit hours successfully completed (i.e., it is included in the grand total of credit hours attempted and completed), the correlation between these two variables in the regression model was low, $r(438) = .166$.

Following the general model of student success courses, Eagle Valley College's course focuses on orienting students to college and on facilitating the development of the non-academic skills (e.g., study skills, note/test-taking skills, critical thinking, time-management) believed to be important to achieving positive student outcomes. One explanation for the study's finding of a positive and

significant association between the student success course and the proportion of course credit hours successfully earned is that students who successfully completed the course had a greater opportunity to develop and practice non-academic skills through the course's lessons and related assignments. Perhaps these students were subsequently more effective in applying these skills to their coursework, which resulted in greater success in terms of credit hours earned.

The association between success in the student success course and proportion of credit hours successfully completed is interesting in that the same association was not found with persistence. This is the opposite finding from that of academic advising within the overall sample group: Advising was found to have association with persistence, but not with proportion of credit hours successfully completed.

Zeidenberg et al. (2007) found that, for developmental education students specifically, enrollment in a student success course improved students' chances of earning a college credential as compared to enrollment in developmental coursework alone (i.e., without enrolling in a student success course). Given that earning a credential is more directly related to the proportion of course credit hours successfully completed than persistence alone, the finding of the present study is consistent with the work of Zeidenberg et al.

The Eagle Valley College student success course also focused on creating opportunities for students to develop information networks, which are networks of people through which students gain meaningful institutional knowledge. The formation of information networks is believed to be related to student persistence

(O'Gara et al., 2009). All students who took the Fall 2009 student success course and responded to the survey of this study ($n = 18$) indicated that they either *strongly agree*(*d*) or *agree*(*d*) that the course introduced them to specific people and places on campus (e.g., tutoring, advising, career services) that they used to get information (i.e., information networks). This survey item was the most highly rated item: It was only for this item that 100% of students indicated they *agree*(*d*) or *strongly agree*(*d*) with the statement. Thus, students believed that the student success course assisted them in creating information networks; however, this did not translate, in this study, into significant differences in rates of persistence when compared to students who did not take or who were not successful in the course.

Conclusion

As illustrated in Table 10, students who participated in the institutional interventions examined within this study (i.e., new student orientation, academic advising, student success course) had higher rates of persistence, successfully completed more credit hours, and, for developmental education students, had higher success rates in subsequent college-level coursework. This study explored whether these differences in attainment of student outcomes were related to participation in institutional activities. Overall, as discussed, there were some statistical associations found with regard to participation in academic advising and successful completion of the student success course, as well as some based on student characteristics such as low-income status and previous academic experience.

Results relating to institutional interventions for which there were significant differences in outcomes based on participation should be interpreted cautiously. In all cases in which there was a significant finding, the effect sizes were small. For example, even though student participation in academic advising was found to be positively associated with persistence, the effect size indices utilized in the study and reported in Chapter 4 indicate that this factor (i.e., the number of times a student visited with an academic advisor) was not strongly associated with any one outcome. This is an important caveat to interpretation of "significant" results; a statistically significant finding does not imply practical significance. To generate meaningful conclusions regarding program or policy decision-making for these interventions, further research is warranted and is discussed in the next section of this chapter.

Recommendations and Suggested Areas for Future Inquiry

Areas for additional research on the relationship between participation in institutional interventions and student outcomes are highlighted by the findings of this initial study. Each recommendation and suggestion for future research based on the present study's findings is discussed separately in the following sections of this chapter.

Independent analysis of each intervention. The present study explored student characteristics and participation in specific institutional interventions both as individual and combined predictors of various student outcomes. Given that individual characteristics (i.e., low-income status, previous academic performance) and participation in institutional interventions (i.e., new student

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orientation, academic advising, student success course) were found to be statistically associated with different patterns of student outcomes, research that examines each individual characteristic and institutional intervention may lend more definitive explanation as to why a particular characteristic or intervention is related to some, but not all, student outcomes. Suggestions for approaches to this suggested research are provided below.

Low income status. As noted, the present study appears to suggest that the association between low-income status and student outcomes is evident after one year of college study. Based on the results of this study, a potential area of further inquiry is the relationship between income level and short-term outcomes (e.g., first-to-second semester persistence, GPA) as compared to outcomes that occur later in a student's educational career (e.g., yearly persistence, total course credit hours successfully earned, student transfer, graduation). Results of this suggested inquiry may subsequently inform policy and practice with regard to supporting low-income students at appropriate points in their educational career at the college.

Another area of suggested inquiry related to income-status and student outcomes is evaluation of the accuracy of data collected to measure income-status. Although as discussed in Chapter 3, receipt of need-based financial aid was noted by Eagle Valley College personnel to be a reasonably accurate measure of a student's income status in the present study, it was also noted that it may not be an accurate measure for part-time or older students. Further, a more accurate representation of a student's socio-economic status would include information on

parental education, income level, and occupation, which is not generally collected at the community college. A suggested next step is to obtain more comprehensive information on a student's socio-economic status that may be used in future research.

Previous academic experience. The measure of previous academic performance was based on a placement exam assessment rank. As an initial step in investigating how previous academic experience relates to subsequent student outcomes, the measure of previous academic experience employed must be validated. In the case of Eagle Valley College, a suggestion for future research includes measurement of the accuracy of placement exam scores as they relate to more comprehensive measures of previous academic performance. Obtaining high school GPAs and transcripts that contain past course-enrollment and grade information may provide researchers and the college with a better sense of how related placement assessment exam ranks are to high school performance. This would inform future research seeking to include a measure of student academic experience prior to enrollment.

New student orientation. As discussed, the fact that orientation was not shown to be significantly associated with any of the outcomes examined in this study should not be interpreted to mean that orientation is not at all related to student persistence or completion of courses or course credit hours; this finding does, however, beckon further inquiry on this institutional activity. If the college's purpose in offering orientation is to assist students in making the transition to college life, formative assessments on the impact of orientation should be

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conducted. Research that incorporates the student's perspective (e.g., focus groups, interviews) on their experience with the new student orientation program may inform the design of future studies on this institutional activity. As suggested, examining orientation from the perspective of identity development may yield findings that inform the district policy that currently encourages all first-time, full-time, degree-seeking students to participate in this institutional activity.

Academic advising. The relationship between academic advising and successful student outcomes, above and beyond student income status, previous academic experience, and participation in other institutional activities, warrants further research for several reasons. First, the measure used in this study was "visits" to an academic advisor. Although a typical academic advising visit is estimated to last one hour (Eagle Valley College, personal communication, October 5, 2011), the actual time of each visit was not collected for the purposes of this study. Further, the quality of advising interaction (i.e., topics discussed, information requested/received) was not measured in this study. Finally, there was no measure available in the present study to detect underlying characteristics that students who seek academic advising may inherently posses; perhaps students who seek out more academic advising are already motivated to succeed in college by other factors or personal characteristics.

These three limitations in the present study may be alleviated by a more intensive examination of the academic advising function at the college. Future research may include examination of academic advising using multiple methods,

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including data analyses on type and quality of advising visits, as well as qualitative analyses involving students who utilize advising services. Qualitative inquiry similar to Padilla's (1999, 2009) student success modeling may highlight barriers to student success that academic advising does or does not mitigate at the college. Through these inquiries, a better understanding of how students use the college's academic advising function would be obtained.

Student success course. Given that students indicated they believed that the course assisted them in connecting to people and places on campus that provided information, a potential next step would be examining how students then used that information. Although having the knowledge of where to go for help is important, recognizing the behavior that ultimately results from that information is necessary to understand it in the context of facilitating positive student outcomes. A combination of qualitative (e.g., interviews, focus groups) and quantitative (e.g., student-level usage data for campus services) approaches to this inquiry may be useful.

Another area of suggested inquiry is examination of the delivery mode of the student success course. At Eagle Valley College, all three-credit student success courses are guided by the same general syllabus and course handbook; however, as with any classroom experience, there are instructor effects that should be considered, as well as in some cases, additional support structures offered to students in the form of peer mentors or tutors. Further inquiry that delineates between the approaches used in course delivery may provide insight into best practices for, and maximized impact of, the course.

Further, this study found there to be a relationship between successful completion of the student success course and proportion of credit hours successfully completed for developmental education students; however, the same relationship was not found with persistence. Conversely, for the overall sample, academic advising was found to be related to persistence, but not to the proportion of credit hours successfully completed. Given these findings and the fact that the present study did not examine participation in academic advising and the student success course in combination, researchers may wish to examine these two institutional activities as isolated and combined (i.e., through an interaction term) predictors of both persistence and credit hour completion to see if these patterns of relationships to student outcomes hold. This inquiry may provide findings that subsequently inform the delivery of academic advising and the student success course at the college.

Finally, if future research indicates that the student success course model is indeed contributing to successful student outcomes, the college may consider investigating how segments of the course may be integrated into the subject-specific curriculum offered at Eagle Valley College with the goal of reaching a greater proportion of the college's student population.

Comparison of developmental education students and non-developmental education students. This study considered the association of participation in institutional activities and student outcomes separately for developmental education students (i.e., the subsample for the second research question); however, an analysis that would allow for comparisons to be made

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between developmental education students and non-developmental education students may provide additional information to the college regarding appropriate institutional interventions for each student group.

To yield meaningful, actionable results, research on developmental education student participation in institutional interventions would also take into consideration the level and subject of the courses in which a student is enrolled. This may be important in that there are several "levels" of developmental education coursework and placement in these courses may also impact student outcomes such as persistence and course credit hours earned. Quantitative analyses incorporating this approach and a larger set of control variables may yield implications for policy and practice both within the classroom and across institutional interventions.

Additionally, the present study did not examine the role of academic advising specifically for developmental education students. Given that previous literature emphasizes the importance of the academic advisor in supporting student success for developmental education students, specifically (Bahr, 2008; Boroch et al., 2010; Makela, 2006; Orozco et al., 2010; Summers, 2003), this represents an area for further inquiry. Perhaps there are differences in how students who place into developmental education coursework perceive and utilize the academic advising function at the college. These difference may subsequently influence the association between student utilization of academic advising services and student outcomes.

Inclusion of students who more accurately represent the college's student population. This study was intentionally bound to include students who were similar to the students impacted by the district-wide policy. As discussed in Chapter 3, students who were over 24 years of age or who had earned 15 or more college credit hours prior to enrollment were omitted from the study. Further, students attending the college on a less than full-time basis, who account for approximately 75% of Eagle Valley College's total student body, are not included in the district-wide initiative and thus were not included in the present study.

Bounding the present study in this way allowed for application of findings to a well-defined group of community college students; however, given the large proportion of students who initially enroll at the college (and district) who do not fall into this well-defined group, it is recommended that future research be conducted on how participation in institutional activities is associated with student outcomes for part-time students, older students who may be "first-time" college students, and students who enroll with a significant amount of college credits earned. Such research, which may subsequently inform both policy and practice at the college and district level, should be carried out with a larger sample of students to facilitate the creation of comparison groups that are representative of the entire college student body.

Using institutional data for research at the community college. An important conclusion based on the present study is that institutional data collected by the institution as normal educational practices and events warrant (e.g., enrollment, registration, course-taking) may inherently introduce challenges when

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used for research purposes. For example, census data collected from students that provide important information on student background (e.g., gender, race/ethnicity, employment status) are not required by the college and therefore important data necessary for controlling for student characteristics may be missing. Although statistical procedures for handling missing data may be employed to mitigate this challenge, there may be other underlying factors that differ between students who choose to self-report information and those who do not.

In the present study, the limitations of using institutional data were most evident in the measures of income status and previous academic experience. Ideally, the researcher would have collected information that provided a more complete picture of socio-economic status; however, these variables (e.g., parental occupation, educational level) were not available from the institutional data set. With regard to previous academic experience, as discussed, the type of data collected by the institution was not designed to be a measure of previous academic experience and thus certain cautions must be taken when interpreting results obtained using these data as a measure of students' level of academic preparedness.

Thus, although institutional databases provide information on student behavior while at the college, a consideration in using these data for research is that these data may not provide accurate representations of constructs largely determined by events and circumstances that occur prior to enrollment or are otherwise outside of the college's purview. This may seem like an obvious observation; however, it is noted here given the recent emphasis on using

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institutional data to inform college policy and practices (Caison, 2007; Morest & Jenkins, 2007; Walleri, 2003). A more realistic approach in conducting research at the community college that yields meaningful results is the utilization of both institutional data and additional data that are collected by the researcher. Through this combination of data sources, the researcher and institution both contribute to the possibility of achieving actionable findings based on appropriate measures.

Summary

Primarily relying on institutional data, this study examined if participation in institutional activities was related to successful student outcomes for first-time, full-time, degree-seeking community college students. Findings of the study indicate that certain patterns of participation in institutional activities are predictive of student outcomes, but that student characteristics also appear to have predictive utility with regard to student outcomes (regardless of participation in institutional interventions). Further, the effect size, and thus practical significance, of each tested association was low, warranting cautious interpretation of the study's findings as they relate to policy or program decision-making.

Suggestions for further research were introduced and challenges in using institutional data for research at the community college were discussed. Ideally, institutional data should be used in combination with data that are collected specifically for research purposes. This would provide a more comprehensive picture of the community college experience, leading to more precise recommendations for the college's and district's programs and policies.

It can be concluded that student participation in certain institutional interventions appear to be related to positive student outcomes; however, it is recommended that the findings of this study be used for further exploration to determine in what ways the college or district might further utilize or modify these interventions to improve student outcomes such as persistence and successful course and credit hour completion rates.

References

Adelman, C. (1999). *Answers in the tool box: Academic intensity, attendance patterns, and bachelor's degree attainment* (Report No. PLLI-1999-8021). Washington, DC: U.S. Department of Education, National Center for Education Statistics.

Adelman, C. (2005). *Moving into town – and moving on: The community college in the lives of traditional-age students*. Washington, DC: U.S. Department of Education, National Center for Education Statistics.

Adelman, C. (2009). *The spaces between numbers: Getting international data on higher education straight*. Retrieved October 25, 2011, from http://www.ihep.org/assets/files/publications/s-z/(Report)_The_Spaces_Between_Numbers-Getting_International_Data_on_Higher_Education_Straight.pdf

Alfonso, M., Bailey, T. R., & Scott, M. (2005). The educational outcomes of occupational sub-baccalaureate students: Evidence from the 1990s. *Economics of Education Review, 24*, 197-212.

American Association of State Colleges and Universities (AASCU). (2010). *Policy matters: Top 10 higher education state policy issues for 2010*. Washington, DC: AASCU State Relations and Policy Analysis Research Team.

American Graduation Initiative. (2009). *The President's remarks in Warren, Michigan, and facts on the American Graduation Initiative*. Retrieved October 25, 2011, from http://www.whitehouse.gov/the_press_office/Excerpts-of-the-Presidents-remarks-in-Warren-Michigan-and-fact-sheet-on-the-American-Graduation-Initiative/

Armstrong, W. B. (2000). The association among student success in courses, placement test scores, student background data, and instructor grading practices. *Community College Journal of Research and Practice, 24*, 681-695.

Astin, A. W. (1984). Student involvement: A developmental theory for higher education. *Journal of College Student Personnel, 25*, 297-308.

Attewell, P. A., Lavin, D. E., Domina, T., & Levey, T. (2006). New evidence on college remediation. *Journal of Higher Education, 77*, 886-924.

Attinasi, L.C., Jr. (1992). Rethinking the study of the outcomes of college attendance. *Journal of College Student Development, 33*, 61-70.

Bahr, P. R. (2008). 'Cooling out' in the community college: What is the effect of academic advising on students' chances of success? *Research in Higher Education, 49*, 704-732.

Bailey, T. R., & Alfonso, M. (2005). *Paths to persistence: An analysis of research on program effectiveness at community colleges.* (New Agenda Series Volume 6, Number 1). Retrieved October 25, 2011, from http://www.achievingthedream.org/_images/_index03/CCRC_Report_Paths_to_Persistence.pdf

Bailey, T. R., Crosta, P. M., & Jenkins, D. (2006). *What can student right-to-know graduation rates tell us about community college performance?* (CCRC Working Paper No. 6). Retrieved October 25, 2011, from http://ccrc.tc.columbia.edu/Publication.asp?uid=498

Bailey, T., Jenkins, D., & Leinbach, T. (2005). *Graduation rates, student goals, and measuring community college effectiveness* (CCRC Brief Number 28). Retrieved October 25, 2011, from http://ccrc.tc.columbia.edu/Publication.asp?UID=336

Barefoot, B. O. (2005). Current institutional practices in the first year college. In M. L. Upcraft, J. N. Gardner, & B. O. Barefoot (Eds.), *Challenging and supporting the first-year student* (pp. 47-63). New York: John Wiley & Sons.

Baum, S., Ma, J., & Payea, K. (2010). *Education pays 2010: The benefits of higher education for individuals and society.* Washington, DC: College Board.

Bean, J. (1980). Dropouts and turnover: The synthesis and test of a causal model of student attrition. *Research in Higher Education, 12*, 155-187.

Bean, J. P., & Metzner, B. S. (1985). A conceptual model of nontraditional undergraduate student attrition. *Review of Educational Research, 55*, 485-540.

Berkner, L., He, S., Mason, M., & Wheeless, S. (2007). *Persistence and attainment of 2003-04 beginning postsecondary students: After three years. First look* (NCES 2007-169). Retrieved October 25, 2011, from http://nces.ed.gov/pubs2007/2007169.pdf

Berube, A. (2010). *Educational attainment.* In The Brookings Institution, *The state of metropolitan america: On the front lines of demographic transformation* (pp. 104-117). Retrieved October 25, 2011, from http://www.brookings.edu/metro/StateOfMetroAmerica.aspx

Bettinger, E., & Long, B.T. (2004). *Shape up or ship out: The effects of remediation on students at four-year colleges* (NBER Working Paper No. 10369).

Boggs, G. R. (2009). Accountability and advocacy: A national framework for measuring community colleges. *Community College Journal, 79*, 9-11.

Boroch, D., Hope, L, Smith, B., Gabriner, R., Mery, P., Johnstone, R., et al. (2010). *Student success in community colleges: A practical guide to developmental education*. San Francisco, CA: Jossey-Bass.

Boswell, K. (2004). Bridges or barriers? Public policy and the community college transfer function. *Change, 36*, 22-29.

Bowen, W. G., Chingos, M. M., & McPherson, M. S. (2009). Crossing the finish line: Completing college at america's public universities. *Trusteeship, 17*, 24-29.

Bryant, A. N. (2001). ERIC review: Community college students: Recent findings and trends. *Community College Review, 29*, 77-93.

Busby, R. R., Gammel, H. L., & Jeffcoat, N. K. (2002). Grades, graduation, and orientation: A longitudinal study of how new student programs relate to grade point average and graduation. *Journal of College Orientation and Transition, 10*, 45-57.

Caison, A. L. (2007). Analysis of institutionally specific retention research: A comparison between survey and institutional database methods. *Research in Higher Education, 48*, 435-451.

Calcagno, J. C., Bailey, T., Jenkins, D., Kienzl, G., & Leinbach, T. (2008). Community college student success: What institutional characteristics make a difference? *Economics of Education Review, 27*, 632-645.

Calcagno, J. C., & Long, B. T. (2008). *The impact of postsecondary remediation using a regression discontinuity approach: Addressing endogenous sorting and noncompliance.* Retrieved October 25, 2011, from http://www.tc.columbia.edu/centers/ncpr/?Id=Research&Info=State+Data+Analysis

Campbell, D. T., & Stanley, J. C. (1963). *Experimental and quasi-experimental designs for research.* Boston, MA: Houghton Mifflin Company.

Carnegie Foundation for the Advancement of Teaching. (2011). *Classifications descriptions, size, and setting classification*. Retrieved October 25, 2011, from http://classifications.carnegiefoundation.org/descriptions/size_setting.php

Carnevale, A.P, Smith, N., & Strohl, J. (2010). *Help wanted: Projections of jobs and education requirements through 2018.* Retrieved October 25, 2011, from http://cew.georgetown.edu/jobs2018/

Center for Community College Student Engagement. (2007). *Committing to student engagement: Reflections on CCSSE's first five years (2007 CCSSE Findings).* Austin, TX: The University of Texas at Austin, Community College Leadership Program.

Center for Community College Student Engagement. (2009). *Making connections: Dimensions of student engagement (2009 CCSSE Findings).* Austin, TX: The University of Texas at Austin, Community College Leadership Program.

Center for Community College Student Engagement (2011). *Relationship between CCCSE and NSSE.* Retrieved October 25, 2011, from http://www.ccsse.org/center/about_cccse/relationship.cfm

Chait, R., & Venezia, A. (2009). *Improving academic preparation for college: What we know and how state and federal policy can help*. Retrieved October 25, 2011, from http://www.americanprogress.org/issues/2009/01/pdf/academic_prep.pdf

Chickering, A. W., & Gamson, Z. F. (1987). Seven principles for good practice in undergraduate education. *AAHE Bulletin, 39*, 3-7.

Clark, B. R. (1960). The 'cooling out' function in higher education. *American Journal of Sociology*, *65*, 569-576.

Cohen, A., & Brawer, F. (2008). *The American community college* (5th ed.). San Francisco, CA: Jossey-Bass.

Cohen, J., Cohen, P., West, S. G., & Aiken, L. S. (2003). *Applied multiple regression/correlation analysis for the behavioral sciences* (3rd ed.). Mahwah, NJ: Lawrence Erlbaum.

Cox, R. D. (2009). I would have rather paid for a class I wanted to take: Utilitarian approaches at a community college. *Review of Higher Education, 32*, 353-382.

Cunningham, A. F. (2002). *The policy of choice: Expanding student options in higher education.* Retrieved October 25, 2011, from http://www.ihep.org/Publications/publications-detail.cfm?id=65

D'Amico, M. M., & Morgan, G. B. (2010). *Turning data into information: Helping community colleges use existing data to advance student success*. Retrieved October 25, 2011, from http://education.uncc.edu/ceme/sites/education.uncc.edu.ceme/files/media/pdfs/CEME%20Report_D'Amico,%20Morgan%208-19-10.pdf

Deil-Amen, R., & Rosenbaum, J. E. (2002). The unintended consequences of stigma-free remediation. *Sociology of Education, 75*, 249-268.

Derby, D. C., & Smith, T. (2004). An orientation course and community college retention. *Community College Journal of Research and Practice, 28,* 763-773.

Digest of Education Statistics. (2009). *Associate's degrees conferred by degree-granting institutions, by race/ethnicity and sex of student: Selected years, 1976-77 through 2007-08*. Retrieved October 25, 2011, from http://nces.ed.gov/programs/digest/d09/tables/dt09_282.asp

Dowd, A. C. (2005). *Data don't drive: Building a practitioner-driven culture of inquiry to assess community college performance.* Retrieved October 25, 2011, from http://www.luminafoundation.org/publications/datadontdrive2005.pdf

Duggan, M. H., & Williams, M. R. (2011). Community college student success courses: The student perspective. *Community College Journal of Research and Practice, 35,* 121-134.

Duncan, A. (2009). Historic opportunity for action. *The New England Journal of Higher Education, 24*, 27.

Federal Pell Grant. (2011). *Federal Pell Grant program purpose and description*. Retrieved October 25, 2011, from http://www2.ed.gov/programs/fpg/index.html

Field, A. (2005). *Discovering statistics using SPSS.* London, England: SAGE Publications Ltd.

Fike, D. S., & Fike, R. (2008). Predictors of first-year student retention in the community college. *Community College Review, 36*, 68-88.

Fontana, L., Johnson, E., Green, P., Macia, J., Wright, T., Daniel, Y., et al. (2006). A strategic model to address issues of student achievement. *Journal of College Student Retention: Research, Theory & Practice, 7*, 201-216.

Fraenkel, J. R., & Wallen, N. E. (1996). Causal-comparative research. In J. R. Fraenkel & N. E. Wallen (Eds.), *How to design and evaluate research in education* (pp. 340-365). New York: McGraw-Hill, Inc.

Gerlaugh, K., Thompson, L., Boylan, H., & Davis, H. (2007). National study of developmental education II: Baseline data for community colleges. *Research in Developmental Education,* 20, 1-4.

Glass, J. C., & Garrett, M. S. (1995). Student participation in a college orientation course, retention, and grade point average. *Community College Journal of Research and Practice, 19,* 117-132.

Goldberger, S., & Kazis, R. (2009). What counts as community college success? Better ways to answer the question. *Change, 41*, 33-39.

Goldin, C., & Katz, L. F. (2008). How America once led and can win the race for tomorrow. In C. Goldin & L. F. Katz (Eds.), *Race between education and technology* (pp. 324-353). Cambridge, MA: Harvard University Press.

Goldrick-Rab, S. S. (2010). Challenges and opportunities for improving community college student success. *Review of Educational Research, 80*, 437-469.

Gutierrez, A., & Dantes, J. (2009). Practical model for the community college. *Community College Journal of Research and Practice, 33*, 958-961.

Halpin, R. (1990). An application of the tinto model to the analysis of freshman persistence in a community college. *Community College Review, 17*, 22-32.

Harris, B. W. (1998). Looking inward. Building a culture for student success. *Community College Journal of Research and Practice, 22*, 401-418.

Hoachlander, G., Sikora, A. C., & Horn, L. (2003). *Community college students: Goals, academic preparation, and outcomes* (Report No. NCES-2003-164). Retrieved October 25, 2011, from http://nces.ed.gov/pubs2003/2003164.pdf

Hollins, T. N. (2009). Examining the impact of a comprehensive approach to student orientation. *Inquiry, 14*, 15-27.

Jarrell, C. L. (2004). Creating a foundation for student success: From research to practice. *Community College Journal of Research and Practice, 28*, 513-524.

Jenkins, D. (2007). Institutional effectiveness and student success: A study of high- and low-impact community colleges. *Community College Journal of Research and Practice, 31*, 945-962.

Karp, M. M. (2008). *Toward a community college research agenda: Summary of the national community college symposium*. In the U. S. Department of Education Office of Vocational and Adult Education's *National community college symposium*. Symposium conducted in Washington D.C.

Karp, M. M., Hughes, K. L., & O'Gara, L. (2010). An exploration of tinto's integration framework for community college students. *Journal of College Student Retention: Research, Theory & Practice, 12*, 69-86.

King, M. C. (1993). Academic advising, retention, and transfer. *New Directions for Community Colleges, 82*, 21-31.

Kuh, G. D. (2006). *Student engagement: A means to many desirable ends*. Invited testimony to the U.S. Department of Education Secretary's Commission on the Future of Higher Education. Retrieved October 25, 2011, from http://www2.ed.gov/about/bdscomm/list/hiedfuture/4th-meeting/kuh.pdf

Kuh, G. D., Cruce, T. M., Shoup, R., Kinzie, J., & Gonyea, R. M. (2008). Unmasking the effects of student engagement on first-year college grades and persistence. *Journal of Higher Education, 79*, 540-563.

Kuh, G. D., Kinzie, J., Schuh, J. H., Whitt, E. J., & Associates. (2005). *Student success in college: Creating conditions that matter.* San Francisco, CA: Jossey-Bass.

Lincoln, C. (2009). Achieving the community-college dream. *Change, 41*, 26-33.

Makela, J. P. (2006). *Advising community college students: Exploring traditional and emerging theory.* Retrieved October 25, 2011, from http://occrl.illinois.edu/publications/inbrief/2006

Marti, C. N. (2009). Dimensions of student engagement in american community colleges: Using the community college student report in research and practice. *Community College Journal of Research and Practice, 33*, 1-24.

Mayhew, M. J., Vanderlinden, K., & Kim, E. K. (2010). A multi-level assessment of the impact of orientation programs on student learning. *Research in Higher Education, 51*, 320-345.

McClenney, K., Marti, C. N., & Adkins, C. (2006). *Student engagement and student outcomes: Key findings from CCSSE validation research.* Retrieved October 25, 2011, from http://www.ccsse.org/center/resources/docs/publications/CCSSE%20Valid ation%20Summary.pdf

Mendoza, P., Mendez, J. P., & Malcolm, Z. (2009). Financial aid and persistence in community colleges: Assessing the effectiveness of federal and state financial aid programs in Oklahoma. *Community College Review, 37*, 112-135.

Metz, G. (2002). *Challenges and changes to Tinto's Persistence Theory.* Paper presented at the Annual Meeting of the Mid-Western Educational Research Association, Columbus, OH.

Miller, M. T., Dyer, B. G., & Nadler, D. P. (2002). New student satisfaction with an orientation program: Creating effective learning transitions. *Journal of College Orientation and Transition, 10*, 51-57.

Mills, M. T. (2010). Tools of engagement: Success course influence on student engagement. *Journal of the First-Year Experience & Students in Transition, 22*, 9-32.

Morest, V. S., & Jenkins, D. (2007). *Institutional research and the culture of evidence at community colleges* (Report No. 1 in Culture of Evidence Series). Retrieved October 25, 2011, from http://ccrc.tc.columbia.edu/Publication.asp?uid=515

Mullendore, R. H., & Banahan, L. A. (2005). Designing orientation programs. In M. L. Upcraft, J. N. Gardner, & B. O. Barefoot (Eds.), *Challenging and supporting the first-year student* (pp. 391-409). New York: John Wiley & Sons.

Muraskin, L. & Lee, J. (2004). *Raising the graduation rates of low-income college students.* Retrieved October 25, 2011, from http://www.pellinstitute.org/publications-Raising_the_Graduation_Rates_December_2004.shtml

National Center for Education Statistics. (2010). *Fast facts: Postsecondary degree completion*. Retrieved October 25, 2011, from http://nces.ed.gov/fastfacts/display.asp?id=40

National Center for Education Statistics. (2011). *Fast facts: Postsecondary enrollment*. Retrieved October 25, 2011, from http://nces.ed.gov/fastfacts/display.asp?id=98

National Center for Public Policy and Higher Education. (2008). *Measuring up 2008: The national report card on higher education*. Retrieved October 25, 2011, from http://measuringup2008.highereducation.org/print/NCPPHEMUNationalRpt.pdf

O'Gara, L., Karp, M. M., & Hughes, K. L. (2009). Student success courses in the community college: An exploratory study of student perspectives. *Community College Review, 36*, 195-218.

Orozco, G. L., Alvarez, A. N., & Gutkin, T. (2010). Effective advising of diverse students in community colleges. *Community College Journal of Research and Practice, 34*, 717-737.

Padilla, R. (1999). College student retention: Focus on success. *Journal of College Student Retention, 1*, 131-145.

Padilla, R. V. (Ed.). (2009). *Student success modeling: Elementary school to college.* Sterling, VA: Stylus Publishing, LLC.

Parsad, B., & Lewis, L. (2003). *Remedial education at degree-granting postsecondary institutions in fall 2000: Statistical analysis report* (Report No. NCES-2004-010). Retrieved October 25, 2011, from http://www.eric.ed.gov/

Pascarella, E. T., & Terenzini, P. T. (2005). *How college affects students: A third decade of research* (Vol. 2). San Francisco, CA: Jossey-Bass.

Peng, C., & So, T. (2002). Logistic regression analysis and reporting: A primer. *Understanding Statistics, 1*, 31-70.

Perigo, D., & Upcraft, M. (1989). Orientation programs. In M. L. Upcraft, J. N. Gardner, & Associates (Eds.), *The freshman year experience: Helping student survive and succeed in college* (pp. 82-94). San Francisco, CA: Jossey-Bass.

Perrine, R. M., & Spain, J. W. (2008). Impact of a pre-semester college orientation program: Hidden benefits? *Journal of College Student Retention, 10*, 155-169.

Phillippe, K. A., & Sullivan, L. G. (2005). *National profile of community colleges: Trends and statistics* (4th ed.). Washington, DC: Community College Press, American Association of Community Colleges.

Provasnik, S., & Planty, M. (2008). *Community colleges: Special supplement to the condition of education 2008* (NCES 2008-033). National Center for Education Statistics, Institute of Education Sciences, U.S. Department of Education. Washington, DC.

Reindl, T. R. (2007). *Hitting home: Quality, cost, and access challenges confronting higher education today*. Retrieved October 25, 2011, from http://www.eric.ed.gov/

Robinson, D. A. G., Burns, C. F., & Gaw, K. F. (1996). Orientation programs: A foundation for student learning and success. *New Directions for Student Services, 75*, 55-68.

Rosenbaum, J. E., Deil-Amen, R., & Person, A. E. (2006). *After admission: From college access to college success.* New York: Russell Sage Foundation.

Rothkopf, A. J. (2009). The success of our future workers – and the American economy. *Change, 41*, 39-41.

Schuetz, P. (2008). A theory-driven model of community college student engagement. *Community College Journal of Research and Practice, 32,* 305-324.

Scrivener, S., Sommo, C., & Collado, H. (2009). *Getting back on track: Effects of a community college program for probationary students.* Retrieved October 25, 2011, from http://www.mdrc.org/publications/514/overview.html

Seidman, A. (1991). The evaluation of a pre/post admissions/counseling process at a suburban community college: Impact on student satisfaction with the faculty and the institution, retention, and academic performance. *College and University, 66*, 223-232.

Spady, W. (1970). Dropouts from higher education: An interdisciplinary review and synthesis. *Interchange, 1*, 64-85.

Stovall, M. L. (1999). *Relationships between participation in a community college student success course and academic performance and persistence* (Doctoral dissertation). Retrieved from ProQuest Dissertations and Theses database. (Document 304531899)

Summers, M. D. (2003). Attrition research at community colleges. *Community College Review, 30*, 64-84.

Syed, S., & Mojock, C. R. (2008). Assessing community college student learning outcomes: Where are we? What's next? *Community College Journal of Research and Practice, 32*, 843-856.

Taylor, P., Fry, R., Wang, W., Dockterman, D., & Velasco, G. (2009). *College enrollment hits all-time high, fueled by community college surge.* Retrieved October 25, 2011, from http://pewsocialtrends.org/assets/pdf/college-enrollment.pdf

Tierney, W. (1992). An anthropological analysis of student participation in college. *Journal of Higher Education, 63*, 603-618.

Tinto, V. (1975). Dropout from higher education: A theoretical synthesis of recent research. *Review of Educational Research, 45*, 89-125.

Tinto, V. (1993). *Leaving college: Rethinking the causes and cures of student attrition* (2nd ed.). Chicago, IL: University of Chicago Press.

Tinto, V. (1997). Classrooms as communities: Exploring the educational character of student persistence. *Journal of Higher Education, 68*, 599-623.

Tinto, V. (2006). Research and practice of student retention: What next? *Journal of College Student Retention: Research, Theory & Practice, 8*, 1-19.

Velasquez, P. (1996, Oct/Nov). *Resisting the normative implications of tinto: Student and institutional characteristics supporting the persistence of Chicanos in higher education.* Paper presented at the 21st Annual Meeting of the Association for the Study of Higher Education, Memphis, TN.

Walleri, R. D. (2003). The role of institutional research in the comprehensive community college. *Journal of Applied Research in the Community College, 11*, 49-56.

Wirth, R. M., & Padilla, R. V. (2008). College student success: A qualitative modeling approach. *Community College Journal of Research and Practice, 32*, 688-711.

Zeidenberg, M., Jenkins, D., & Calcagno, J. C. (2007). *Do student success courses actually help community college students succeed?* (CCRC Brief No. 36). Retrieved October 25, 2011, from http://ccrc.tc.columbia.edu/Publication.asp?uid=667

Zhao, J. C. (1999, May/June). *Factors affecting academic outcomes of underprepared community college students.* Paper presented at the 39th Annual Forum of the Association for Institutional Research, Seattle, WA.

APPENDIX A

INSTITUTIONAL REVIEW BOARD APPROVAL FORMS

TO:	Beckert, Kimberly, Education
FROM:	██████ Institutional Review Board
PROTOCOL TITLE:	Impact of Participation in Institutional Activities on First-time, Full-time, Degree-seeking Student Outcomes at a Community College
FUNDING SOURCE:	NONE
PROTOCOL NUMBER:	2011-03-107
FORM TYPE:	NEW
REVIEW TYPE:	EXEMPT

Dear Principal Investigator,

The ██████ IRB reviewed your protocol and determined the activities outlined do constitute human subjects research according to the Code of Federal Regulations, Title 45, Part 46.

The determination given to your protocol is shown above under Review Type.

You may initiate your project.

If your protocol has been ruled as *exempt*, it is not necessary to return for an annual review. If you decide to make any changes to your project design which might result in the loss of your exempt status, you must seek IRB approval prior to continuing by submitting a modification form.
If your protocol has been determined to be *expedited or full board review*, you must submit a continuing review form prior to the expiration date shown above. If you make any changes to your project design, please submit a modification form prior to continuing.

We appreciate your cooperation in complying with the federal guidelines that protect human research subjects. We wish you success in your project.

Cordially,
██████ IRB

Office of Research Integrity and Assurance

To:	Alfredo De Los Santos
	ADMIN A 20
From:	Mark Roosa, Chair
	Soc Beh IRB
Date:	04/12/2011
Committee Action:	**Exemption Granted**
IRB Action Date:	04/12/2011
IRB Protocol #:	1104006302
Study Title:	Impact of Participation in Institutional Activities on First-time, Full-time, Degree-seeking Student Outcomes at a Community College

The above-referenced protocol is considered exempt after review by the Institutional Review Board pursuant to Federal regulations, 45 CFR Part 46.101(b)(1) (2) .

This part of the federal regulations requires that the information be recorded by investigators in such a manner that subjects cannot be identified, directly or through identifiers linked to the subjects. It is necessary that the information obtained not be such that if disclosed outside the research, it could reasonably place the subjects at risk of criminal or civil liability, or be damaging to the subjects' financial standing, employability, or reputation.

You should retain a copy of this letter for your records.

APPENDIX B

STUDENT SURVEY

SUBJECT: Want to win a $50.00 Best Buy gift card?

Dear Fall 2009 [Course Prefix/Number] Student:

Would you like to win a $50.00 Best Buy gift card? I'd like to invite you to participate in a short, 11 question survey about your experience in the [Course Prefix/Number] "Strategies for College Success" class you took during your first semester at [College Name]. It should only take 10-15 minutes of your time.

Your participation is voluntary. By participating, you can enter a drawing to <u>win one of two $50.00 Best Buy gift cards</u>.

To participate in this survey, please click on the link below, which will take you to an informed consent page and then the survey itself. <u>You must complete the survey by **May 6, 2011**</u> to be <u>entered into the gift card drawing.</u>

Thank you,
[Researcher Name], [University Name] graduate student studying [Course Prefix/Number]

<u>LINK TO SURVEY</u>

<SURVEY: PAGE ONE (INFORMED CONSENT)>

The purpose of this survey is to better understand how you feel your participation in [College Name]'s [Course Prefix/Number] "Strategies for College Success" class impacted other college experiences. In this survey, you will be asked to answer 11 questions, which should take no more than 15 minutes of your time. This survey has been sent out to the students who completed a three-credit [Course Prefix/Number] class at [College Name] during the Fall 2009 semester.

There are no foreseeable risks or discomforts to your participation in this survey. By participating, you will be providing valuable information that will help [College Name] better serve the needs of its students. The information you provide may impact future decisions about the [Course Prefix/Number] course and help future [College Name] students.

If you choose to participate in the survey, you will have the opportunity to enter a drawing to win a $50.00 Best Buy gift card. Two $50.00 Best Buy gift cards will be awarded to randomly selected students who participate in the survey by **May 6, 2011**. Instructions for how to enter this drawing are provided at the end of the survey.

This survey will not ask you for your name, student ID, or email address. Please do NOT enter these or any other pieces of identifying information on the survey. All information you provide will be handled in a confidential manner and this survey is anonymous; your answers will not be attached to any identifiable information. The results of this study may be used in reports, presentations, or publications, but your name will not be known.

Your participation in this survey is voluntary. We hope you will answer all of the questions, but you can skip questions if you wish. If at any time during the survey you would like to withdraw, you may do so with no negative consequences. If you begin the survey but wish to withdraw without submitting your answers, you may click on the "I prefer not to complete this survey" button on the last page. By clicking on this button, your responses will not be recorded.

If you have any questions concerning this research study, please contact [Researcher Name] at [Researcher Email Address]. If you have any questions about your rights as a participant in this research, or if you feel you have been placed at risk, you can contact:

[Eagle Valley College District   [Researcher's University
IRB Contact Information]   **OR**   IRB Contact Information]

If you would like to take the survey, please click on the button below. By clicking on the button below, you are indicating your consent to participate in this study and certifying that you are at least 18 years of age.

CONTINUE TO SURVEY

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<SURVEY: PAGE TWO>

There are 11 total questions on this survey. Please answer honestly—There are no "right" or "wrong" answers. Remember, your name *will not* be associated with the responses you provide.

Now that you have been enrolled in college for a few years, think back to the [Course Prefix/Number] Strategies for College Success class you took in the Fall of 2009 at [College Name]. Using the scale below, <u>please click on the circle that best describes how you feel about the following statements.</u>

> 1 = strongly agree
> 2 = agree
> 3 = neutral
> 4 = disagree
> 5 = strongly disagree

1. The class changed the way I study for college coursework.
2. The class helped me to think about how I will achieve my career goals.
3. The class changed the way I thought about myself as a college student.
4. The class helped me to form study groups.
5. The class introduced me to specific people/places on campus (e.g., tutoring, advising, career services) that I have used to get information.
6. The class encouraged me to become involved in [College Name] activities outside of the classroom.
7. I still keep in touch with friends that I met in my [Course Prefix/Number] class.
8. I feel comfortable contacting my [Course Prefix/Number] instructor with questions or concerns that I have as an [College Name] student.

> CONTINUE TO LAST THREE

<SURVEY: PAGE THREE>

Continuing to think back to your first semester (Fall 2009) at [College Name], please answer the following three questions:

9. During my first semester (Fall 2009) at [College Name], I enrolled in:
   a. 12 or more credit hours
   b. Less than 12 credit hours
10. During my first semester (Fall 2009) at [College Name], I enrolled in one or more developmental education courses.
    a. Yes
    b. No
11. What do you know now that you wish you had known your first semester at [College Name]?

> SUBMIT ANSWERS

OR

○ **I prefer not to complete this survey**

<SURVEY: COMPLETION/LANDING PAGE>

Thank you for participating in this study. If you would like to enter the $50.00 Best Buy gift card drawing, please:

1) Write down the code number displayed below.

2) Email [Eagle Valley College Staff Email Address]
   In the email, please **list the code number** and state that you **have completed the [Course Prefix/Number] survey and would like to enter the Best Buy gift card drawing**.

The two winners will be contacted via email by May 27, 2011

Please note that this code number is not connected to your responses in any way; your responses will remain anonymous.

CODE NUMBER: BGC9XK