Student Success Coaching in Virginia Community Colleges

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STUDENT SUCCESS COACHING IN VIRGINIA COMMUNITY COLLEGES

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ABSTRACT

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Community college students face many barriers when they start college, especially if they are from first-generation families, are low-income, or identify as a minority. Retention and completion for these at-risk students are relatively low compared to those with higher socioeconomic backgrounds (Bettinger & Baker, 2014). To improve these statistics and promote academic persistence, some Virginia Community College System (VCCS) colleges have implemented student success coaching under the Chancellor's College Success Coach Initiative (VCCS, 2011). This entails not only assisting students with academic coaching, but also with career, financial, and personal matters that may affect their academic success. The researcher sought to analyze issues with retention and completion in higher education and the impact of targeted coaching on student success.

Keywords: success coaching, coach, academic coach, career coaching, mentor, advisor, student success, academic success, college retention, college completion, college persistence, community college, higher education, first-generation college student, first-time college student, first-year college student, at-risk student

This dissertation is dedicated to my loving and supporting husband of twenty-years, Tommy Lawhorne, who always has pushed me to keep going; to my son Thomas, who never has known me not to be in school; and to my mother, Betty Grant, who always has believed in me and never ceased being that someone to whom I look up.

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TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

CHAPTER ONE

INTRODUCTION

"Success" for community college students can be measured in many ways, depending on definition. One definition of success of a college student is graduation or completion of a degree or certificate, but some students do not enroll in college with graduation as their end-goal. For others, success may mean to enroll with the intent to transfer or to gain new skills needed for a job. Despite the many definitions of success for these students, they will need guidance and support to achieve their end-goal.

Community college students face many barriers to success when they start college, especially if they are first-year, first-generation, non-traditional, low-income, or are of a minority race or ethnic group. All the students in these categories represent a high-risk population that may face issues achieving college success. They are at a greater risk of dropping out of college (Deil-Amen & Rosenbaum, 2003). First-generation students suffer higher attrition or drop-out rates when compared to their peers, with the national average drop-out rate exceeding 17% (Fentress & Collopy, 2011). First-year students are especially susceptible to dropping out of college (D'Alessio & Banerjee, 2016), as evidenced by an alarming statistic of 40% (Gampert & Jones, 2013). This not only impacts community colleges' student retention and completion rates, but also poses a greater impingement to employment opportunities and hopes of attaining a sustainable living wage for students (Pascarella, Pierson, Wolniak, & Terenzini, 2004).

Low retention and completion rates for community college students suggest more can be done to support students (Tripp, 2008). In an effort to increase retention, a number of colleges have implemented coaching services that include mapping out career pathways, mentoring, assisting with enrollment and financial aid processes, and helping students identify needs and

resources to enrich their academic experience (Neuhauser & Weber, 2011). The overarching goal: facilitating success.

Background

Retention and completion rates for community college students suggest that students need more support at the beginning and throughout their college career, with low retention and completion in higher education presenting a continuing concern (Tripp, 2008). Crosta (2014) noted that most two-year degree programs are rarely completed in two years, if they are completed at all. In a 2012 call to action, staff at the American Association of Community Colleges (AACC) released a report on the concerns of higher education and what community colleges need to do to address those concerns. The results of this report indicated that poverty among American families has increased by seven percent since 2000. The report also noted that the younger generations were being found less educated than their parents and grandparents (AACC, 2012). In reviewing the need for public policy change, Peters (1999) reflected on the state of the United States by saying "it is a highly educated society with several million illiterates; it is a rich country with millions of people living in poverty" (p. 18).

The AACC charged community colleges with increasing completion rates by 50% by the year 2020 (AACC, 2012, p. x). To do this, the AACC stated colleges must restructure both student learning and the student experience with efforts to increase student success. Student success is so much more than the attainment of a credential. Increased education leads to increased social mobility with more employment opportunities, increased wages, more taxes paid, increased spending to support the economy, citizen participation and community involvement, and the creation of mentors and role models for the next generation (Global

Partnership for Education, 2019). With the multiple definitions of success, the results of increased education are compounding.

In their report, the AACC (2012) noted that the United States had fallen to 16th in global ranking for college degree completion rates for 25- to 34-year old's. With two-thirds of all jobs requiring post-secondary credentials, the community colleges are apt to provide training for these credentials to help meet demand. But low retention and completion rates do not help community colleges' efforts (Tripp, 2008). According to the National Center for Public Policy and Higher Education (2010), community college students are entering higher education institutions not ready for college, and they are leaving college not ready for careers. Hlinka (2017) noted that retention issues were related to "the struggle many of these students experienced in transitioning from a high school mind-set of memorization to college-level analysis and integration of thoughts" (p. 158). Deficiency in developmental education has become a hindrance to student success as it has been found to significantly delay the start of core course work, and hinder student transfer (Kozeracki, 2002). Student support services and career planning are currently not sufficient to provide students with the assistance they need to be successful (Neuhauser & Weber, 2011).

Fall of 2017 Integrated Postsecondary Education Data System (IPEDS) statistics reflected an enrollment of 5.9 million students in community colleges (NCES, 2019). Those students consisted of 42% first generation with the majority being under the age of 25. Fifty-six percent of undergraduates were women and 44% men. Fifty percent of two-year college students were White with the remaining 50% representing the growing minority population (NCES, 2019). In 2009, NCES reported single parents made up 13% of the population. The AACC also reported

that an astounding 80% were working while enrolled, and 46% were receiving some type of financial aid to pay for their training (AACC, 2012).

Some community college students may also lack support in the home (Cataldi, Bennett, Chen, & Simone, 2018). Support comes in many forms and ranges from financial to emotional. A relevant study noted that "academic preparation, financial strain, identity issues, and social capital" affected retention (Fentress et al., 2011, p. 3). In researching poverty rates by ethnicity, it was found that in 2016, "the percentage of children under the age of 18 in families living in poverty was higher for Black children than Hispanic children (31 and 26 percent, respectively), and the percentages for both of these groups were higher than for White and Asian children (10 percent each)" (de Brey, Musu, McFarland, Wilkinson-Flicker, Diliberti, Zhang, Branstetter, & Wang, 2019, p. iii). This implies that impoverished minority populations may need more support while in college than other populations.

To address issues with low retention and completion, some colleges have implemented student success coaching (VCCS, 2011). This entails not only assisting students with academic coaching and tutoring, but also with career, financial, and personal matters that may affect their academic success (Mitchell & Gansemer-Topf, 2016). Common services include mapping out career pathways, mentoring, assisting with enrollment and financial aid processes, and helping students identify resources to enrich their academic experience (Richman, Rademacher, & Maitland, 2014). Neuhauser and Weber (2011) reflected that coaching in higher education focuses on learning and study skills, time management, program selection, identification of barriers and supportive services, mentoring and advisement, and job/career obtainment. These focused areas represent support services that most colleges fail to offer (Mitchell & Gansemer-Topf, 2016).

In an experimental study by Ryan (2013), students in a treatment group who had increased interaction and guidance through coaching from college staff had a retention rate 29% higher than students in a control group without the increased assistance. This suggests that coaching may have a significant impact on student retention and completion rates. Crosta (2014) found that when students enrolled full-time in consecutive semesters, their success rates increased. This was compared to students who enrolled only part-time in some semesters or who skipped a semester of college.

In a one-year study at a community college, it was found that 65% of first-year students who received increased advising were retained and achieved a higher grade point average (GPA) compared to their peers who did not receive increased advising (Ryan, 2013). Bettinger and Baker (2014) discovered statistically significant results on the impact of coaching, with a 15% increase in retention and a four-percentage-point increase in graduation rates over four years. Crosta (2014) concurred that retention and completion rates increased for students who persisted (continued with full-time enrollment without a break in semesters). Knowdell's study (2009) presented positive statistical significance resulting from career coaching and counseling. Coaching was found to increase "well-being and self-regulation", which allowed at-risk students to progress through their academic career (Parker, Hoffman, Sawilowsky, & Rolands, 2011, p. 115).

Noted experts in educational research recommend that community colleges offer student success coaching to their at-risk populations. Mitchell and Gansemer-Topf (2016) noted that the research, while still new to this field, is promising. Coaching is proving likely to increase retention and completion rates in higher education (Bellman, Burgstahler, & Hinke, 2015). Coaching is developing goals and plans and strengthening the integrative learning process of

students (Robinson & Gahagan, 2010). If students are more successful in their college careers, they may be more successful in their working careers (Pascarella, et al., 2004). The AACC stated that "our view is unshakeable: Community colleges, an American invention, are one of the nation's greatest assets in the task of creating a better future" (2012, p. 5).

Few empirical studies have examined the impact of coaching on student success. Limitations in the literature reflect that previous studies focused only on students with disabilities, students at four-year institutions, or excluded the large population of non-traditional students (Hlinka, 2017) or students other than first-time (Bahr, 2010). Many studies found by the researcher regarding coaching were qualitative and had small sample sizes. No published studies have been found that measure the impacts of the Virginia community colleges' student success coach program under the Chancellor's College Success Coach Initiative. A quantitative analysis, comparing coached students to their peers without coaching, would provide additional evidence that may support student success coaching in higher education.

Purpose Statement

The purpose of this study was to determine how student success coaching affected the retention and completion of students who participated in the VCCS student success coaching program and received coaching services compared to those who were eligible to participate but opted out of the program. The independent treatment variable was coaching (yes or no). The dependent variables included fall-to-fall enrollment for retention (yes or no) and certificate/degree attainment and/or transfer to a non-VCCS college for completion (yes or no). The analysis of data controlled for variables such as full-time and part-time enrollment, and demographics to include male/female, white/non-white, and select age groups. Students who participated in the student success coach program made up the treatment group while those who

opted out or did not participate, made up the control group. The researcher sought to examine the probability that coaching was affecting student retention and/or completion.

Research Questions

The researcher examined whether indicators of retention and completion were significantly different for students who worked with student success coaches compared to those who did not work with a coach. The researcher controlled for the confounding demographic variables between the treatment and control groups using propensity score matching, then using logistic regression, analyzed the probability that coaching affected student retention and completion. This study was guided by the following research questions:

1. How will student success coaching affect retention?
2. How will student success coaching affect completion?

Definition of Key Terms

At-Risk Students – Students who reflect one or more of four identified resiliency factors: "academic preparation, financial strain, identity issues, and social capital" (Fentress & Collopy, 2011).

Attrition – The decline of student enrollment resulting in lower student retention; the rate at which students drop out of college (Stratton, O'Toole, & Wetzel, 2007).

Career Pathways – A workforce development strategy that entails assisting students to transition from a training program to the workforce with planned stackable credentialing programs leading to employment. "Career Pathways consists of programs and services intended to develop students' core academic, technical and employability skills; provide them with continuous education and training; and place them in high-demand, high-opportunity jobs" (VCCS, 2018b).

Coaching – The process of helping students to set and achieve goals; providing resources, and

      encouraging students to be successful (Robinson & Gahagan, 2010).

Completion – The attainment of a certificate or degree (qualification) by a student (McInnis,

      Hartley, Polesel, & Teese, 2000).

First-generation Student – A college student whose parents have not attended post-secondary

      education (college) (VCCS, 2011; Stratton, O'Toole, & Wetzel, 2007).

First-year Student – A freshman college student who is enrolled in one of their first two

      semesters of college (DeAngelo & Franke, 2016).

Low-income Students - Those students who live below 200% of the poverty level (PDC, 2019).

Minority Students - Those students born of racially- or ethnically-identified populations, that

      may or may not reside in the non-dominant race (VCCS, 2012a). In the year 2019,

      African American/Black, Asian, Hispanic, and American Indian/Alaska Native were all

      identified as minority races.

Non-Traditional Student – A student who meets one of seven characteristics: "delayed

      enrollment into postsecondary education; attends college part-time; works full-time; is

      financially independent for financial aid purposes; has dependents other than a spouse; is

      a single parent; or does not have a high school diploma" (Pelletier, 2010, p. 1).

Pell Grant – A federal program that "provides need-based grants to low-income undergraduate

      and certain post-baccalaureate students to promote access to post-secondary education"

      (U.S. Department of Education, 2012, para. 1).

Persistence – A student measure of retention; enrollment, semester after semester, until program

      completion (Lohfink & Paulsen, 2005).

Retention – "First-to-second-year persistence at the same institution" (Lohfink & Paulsen, 2005, p. 410).

Success Coach – A trained individual in a college who assists students and potential students with: applying to college; applying for financial aid; identifying career goals; planning career pathways; selecting and enrolling in training programs; identifying barriers and resources; and, mentoring to increase program retention and completion, career readiness, and job obtainment (VCCS, 2018a).

Significance to the Field

Post-secondary community colleges have experienced a decrease in student enrollment, retention, and completion in recent years. Although studies exist in which exploration of the underlying problems of why student completion has occurred, there is a lack of research on the development of strategies that successfully address low retention and completion rates in community colleges. Administrators at many colleges have implemented coaching in order to increase student retention and completion (Bettinger & Baker, 2014; Mitchell & Gansemer-Topf, 2016; Richman, Rademacher, & Maitland, 2014), but there were no current studies found by the researcher that provided quantitative analysis on the impact of student success coaching in Virginia's community colleges.

College leaders, policymakers, and other stakeholders may want to know what the return on investment is for implementing student success coaching. In considering coaching, it would be beneficial for college administrators to know if coaching increases full-time equivalent (FTEs), and how many FTEs would be required to cover the cost of a coach. It also would be beneficial to determine if coaching is lacking (not improving completion and retention rates), what can be done to strengthen the program. Leaders and researchers in higher education value

proven results when making data-driven decisions (Cox, Reason, Tobolowsky, Brower, Patterson, Luczyk, & Roberts, 2017). The impact of this doctoral study may provide the answers to the questions posed above, and could result in policymakers increasing student success coaching throughout the Commonwealth of Virginia as a way to increase post-secondary success, provide a trained workforce, and strengthen the economy.

Data

This quantitative study included the analysis of five years of data (2014-2019) from ten of Virginia's community colleges which had participants in the student success coach program. For this program, the VCCS collects and stores the data for students who meet the success coach program eligibility at each college. To be eligible, students must be classified as a first-generation college student, Pell Grant recipient, or a historically underrepresented race or ethnicity, and must have earned less than 14 college credits prior to program enrollment. The students for this study were divided into two groups: those who opted in and participated in the program, which was considered the treatment group; and, those who opted out or did not participate, and continued their education without the assistance of a success coach, the control group.

Success coaches work with an assigned caseload of 100 to 150 students per coach and assist students from college application to graduation. As students complete, transfer, or drop out, coaches can add new students to their caseload. Since its inception in 2012, the student success coach program has served over 5,000 students (VCCS, 2018). The total number of students served, and the total not served presented a sample size of roughly 100,000 students to form both the treatment and control groups. To get a more generalized sample, data for 1,749 students from each group that had the closest matches between groups were used for this study.

The VCCS provided the researcher with de-identified student data from the program from the PeopleSoft Student Information System (SIS).

A quantitative analysis allowed a more unbiased review of the impact of student success coaching among at-risk students. A randomized control study was not feasible for this project for several reasons: There may be students who do not want to participate in success coaching and could be assigned to the treatment group; there is an ethical need to provide the support services to all at-risk students who desire it; and, there would be an increase in time and effort to randomize new groups of students as they enroll at each college. Therefore, a quasi-experimental design with the propensity score matching procedure was more appropriate. This design allowed for the control of variables between a treatment and control group when randomization was not feasible. The researcher examined the impact of the coaching intervention utilizing logistic regression as a predictive analysis to test the relationship among the categorical variables to determine if coaching (independent variable) impacted retention and completion (dependent variables).

To reduce threats to validity, ex post facto data was compiled and de-identified at the system level, and the variables controlled by the researcher through propensity score matching. Students with like variables were matched between the treatment and control groups and then their outcomes analyzed using logistic regression. This included controlling for variables such as gender, age (by groups), race/ethnicity, and enrollment status (full-time or part-time).

Overview of the Methodology

Data collected for this research study included student demographic characteristics, fall semester enrollment status (retention), and completion (certificate or degree attainment and/or transfer to a non-VCCS college). Data was pulled from the Student Information System (SIS).

Purposeful sampling of the at-risk population enrolled in Virginia's participating community colleges resulted in a total sample size exceeding 100,000 ($N = 100,000$), with 1,749 participating in the student success coaching program. Therefore, this study included a sample of 1,749 treatment participants and 1,749 control participants.

For this study, "Coaching" (yes or no) was the independent variable. The dependent variables were "Completion" (certificate or degree attainment and/or transfer to a non-VCCS college) and "Retention" (fall-to-fall enrollment) (both yes or no). Coaches entered data into SIS. Academic progress, funding status, and other student success metrics were recorded.

Analytic Procedures

Data from the ten participating community colleges was collected and compiled. Propensity score matching was used to statistically control demographic (confounding) variables such as gender (male/female), age by groups (18-24, 25-34, 35-54, 55+), race/ethnicity (white/non-white), and enrollment status (full-time or part-time) (Leedy & Ormrod, 2015). Students in both groups (treatment and control) were matched with like students in the opposing group having similar demographic characteristics. Matching lessened the threat to internal validity. Validity also was strengthened by the large sample size. If replicated across the United States, the external validity of this study would be strengthened.

It is important to note that reliability is crucial to ensure the measures used will produce the same results when the study is repeated. To reduce errors, it is of critical importance that student information is entered by college staff and coaches in SIS accurately, and as it occurs. Measures used compared the outcomes of treatment students against control students to determine if the student success coach program influenced retention and completion for those students served compared to their peers. Though the individual results from each community

college were not a focus of this research, a future analysis comparing the outcomes from each college separately may increase the reliability of the study.

Logistic regression in SPSS Statistics software version 25 was used to predict the probability of a positive impact, or probability of success, from the independent variable (coaching) on the dependent variables (retention and completion) (Aczel, Sounderpandian, & Patille, 2006). Logistic regression was used to provide empirical data to support the hypothesis that student success coaching had a statistically significant impact on the retention and/or completion of community college students.

Delimitations

Delimitations included the start date of the project and the data collection and reporting periods. The VCCS started the student success coach program in 2012 with a few select colleges. Over the years, more participating colleges were added, with a tenth added in the fall of 2017. This study included the ten participating colleges within Virginia's 23 community college system, which had coaches from spring of 2014 to spring of 2019. Students that were invited to participate in the program, (the treatment population), were classified as either a first-generation college student, a Pell Grant recipient, or of a historically underrepresented race or ethnicity. The independent variable was coaching, (yes or no). The dependent variables consisted of fall-to-fall retention, (yes or no), and certificate/degree completion and/or transfer to a non-VCCS college, (yes or no). The dependent variables were the only measures of success for this study, representing another delimitation. A delimitation existed for the chosen control variables. Although additional variables of household income, marital status, dependent status, employment status, and many others could be considered, the control variables chosen for this study were done to group the students in the broadest of categories.

Further delimitations included using only data from the colleges that participated in the student success coach program in Virginia, and not considering outside influences regarding why a student dropped out of college, such as employment or family commitments. This study did not account for the frequency of coaching services or individual services received to determine any benefits from such services, nor consider services received from other sources such as tutors or Student Support Services. A final delimitation included the utilization of a strictly quantitative analysis to compare treatment and control group outcomes as opposed to a qualitative analysis to gauge student perceptions of success coaching.

Summary

Student success coaching has been utilized in ten of Virginia's community colleges with the intention to increase student retention and completion for at-risk students. By adding success coaches to each campus (one per 100 - 150), students can receive increased mentoring, advising, and referrals to critical resources to increase the students' chances of academic success. The researcher aimed to analyze the retention and completion of students who participated in the coaching program with their peers that were eligible to participate but who opted out and/or utilized no coaching; and, to determine the probability that coaching affected retention and completion.

The following chapter includes a review of the literature regarding research on coaching. While there were limited studies found on Virginia's student success coach program, researchers have provided extensive background literature on issues with student retention and completion and the need for an intervention to improve student success.

CHAPTER TWO

LITERATURE REVIEW

Retention and completion rates for community college students suggest more can be done to support students, with low retention and completion in higher education presenting a legitimate concern (Tripp, 2008). First-year students are especially susceptible to attrition (D'Alessio & Banerjee, 2016), with an alarming statistic of first-year students dropping out of college at a rate of 40% (Gampert & Jones, 2013). Attrition rates for first-generation students also were found to be higher than attrition rates of students who are not, with the national average drop-out rate for first-generation students exceeding 17% (Fentress & Collopy, 2011). Hlinka (2017) noted that retention was related to "the struggle many of these students experienced in transitioning from a high school mind-set of memorization to college-level analysis and integration of thoughts" (p. 158).

Regarding attrition and completion, Crosta (2014) noted that most two-year degree programs are rarely completed in two years, meaning that students are taking longer to complete programs if they complete at all. The Digest of Education Statistics for 2017 referenced the percent of students graduating from a public community college with a certificate or degree within 150% of normal time, averaged only 20.93% for the period between 2000 to 2013 (Snyder, de Brey, & Dillow, 2019, p. 565). Mullin, Baime, and Honeyman (2015) also noted that even with following students for an extended period of six years, 46% had dropped out and 12.9% were still enrolled and attempting to finish. They further noted that only 8.5% had earned a certificate and 14.4% had earned an associate's degree.

In an effort to increase retention and academic success among first-year students, colleges have implemented coaching services that include mapping out career pathways, mentoring,

assisting with enrollment and financial aid processes, and helping students identify needs, barriers, and resources to enrich their academic experience (Neuhauser & Weber, 2011). Unfortunately, minimal research exists on the impact of coaching on community college student success. The purpose of this literature review was to analyze the research on how coaching affects retention and completion in community colleges.

Research Methods

A review of the literature started with academic coaching in a higher education setting using the Elton B. Stephens Co. (EBSCO) host Education Source database. The keywords used for the search included: success coaching, coach, academic coach, career coaching, mentor, advisor, student success, academic success, college retention, college completion, college persistence, community college, higher education, first-generation college student, first-time college student, first-year college student, and at-risk student. This first step included researching the extra efforts employed to assist students with identifying training programs, securing financial assistance, overcoming barriers, and working towards program retention and completion. Journals providing relevant results included the Community College Journal of Research & Practice, and the Community College Review. Most articles and studies on coaching were found in the Journal of Postsecondary Education & Disability.

A second step was to examine research on community college efforts to address retention and completion in higher education, with retention including consecutive semester enrollment, and completion being the attainment of a certificate or degree. After searching for peer-reviewed articles related to coaching in the Education Source database, Google Scholar was used to identify any possible studies not found in EBSCOhost. The final search for related articles and studies was conducted using ProQuest Dissertations & Theses Global, where one study was

found using student success coaching with one college in a quasi-experimental design (Hall, 2017), and another study, qualitative in nature, was directly related to Virginia's student success coach initiative (Strange, 2015).

Major Findings

Coaching is an extension of college academic advisors and counselors. Higher education institutions employ academic advisors and counselors to assist students with choosing programs of study, identifying funding, and enrolling in classes. One study has shown that the ratio of students-to-counselors is over 1,500 students to one counselor (Bettinger & Baker, 2014). That does not leave enough time for extended interaction or the ability to discuss personal barriers or resources.

Bettinger and Baker (2014) noted that coaching was implemented in four-year institutions in 2000 to provide students with the additional interventions needed to improve study skills, overcome barriers, and identify resources for academic and personal issues. In a randomized study on InsideTrack coaching with 17 cohorts of students at various colleges, Bettinger and Baker (2014) found that coached students maintained over a five-percentage point increase in retention throughout students' first years, and had a 15% increase in retention over four-years when compared to students who did not participate in coaching.

Figure 1 (Tripp, 2008, p. 38) reflects the positive retention results for a group of 1,822 four-year students who utilized coaching versus their peers who received no coaching services. Tripp showcased students who utilized coaching services through a program called InsideTrack and who experienced higher retention rates when compared to their peers. The researcher concluded that InsideTrack, an organization utilizing a student support methodology, was partnering with multiple higher education institutions to implement coaching. Positive results

included an 85% first-year retention rate and a five-percentage point increase in retention after

one year of implementing coaching at New Orleans' Loyola University, and a 33% retention and

graduation increase with the Minnesota Office of Higher Education (2019).

Cumulative retention rates

Note: Lines and percentages represent cumulative persistence rates of InsideTrack Coached students compared to matching noncoached students. Sample size = 1,822 students.
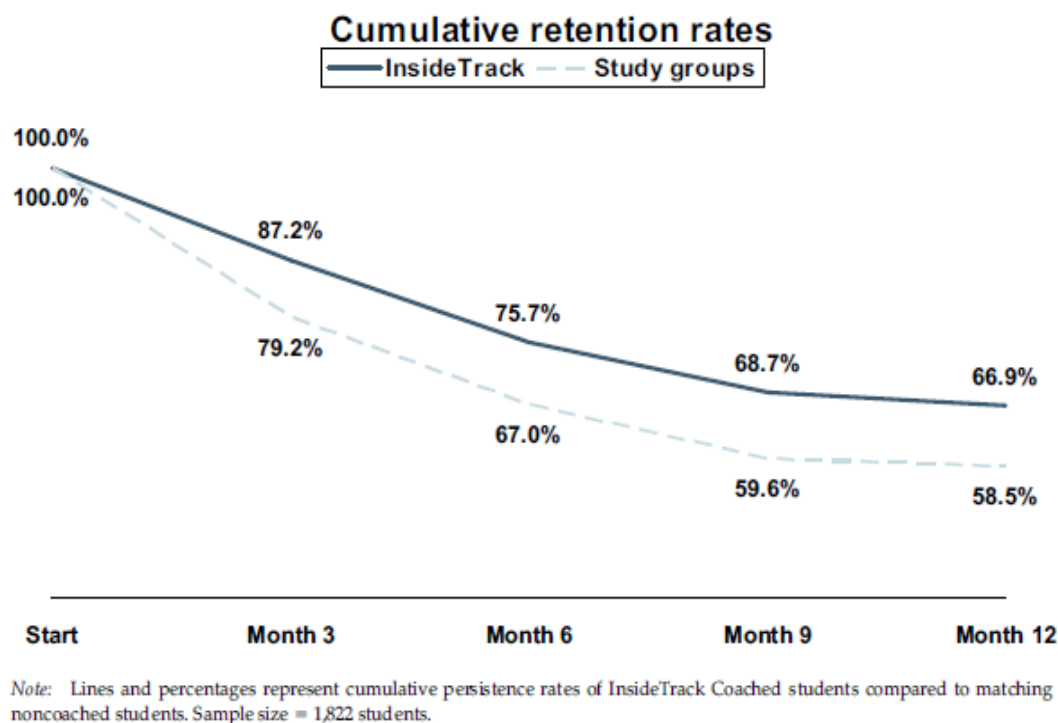
Figure 1. Aggregated student retention results for success coaching program.

Tripp (2008) noted that colleges with coaching "have seen a 20% reduction in student

attrition and a 15% higher retention rate" (p. 41). Bahr's (2010) study, involving 165,921 first-

time college students, evaluated the persistence of community college students based on course

and enrollment patterns, noting that students who maintained full-time enrollment persisted at a

higher rate compared to students who attend only part-time or skip a semester.

Mitchell and Gansemer-Topf (2016) noted that "collecting, analyzing, and interpreting

data (on coaching) is critical for program sustainability and improvement" (p. 253). Their

qualitative study's survey results showed that all participants who utilized a coach during their academic year felt that coaching should be offered to everyone, with over 90% indicating that they received impactful support through coaching. Bellman, Burgstahler, and Hinke (2015) indicated that "academic coaching service improved the study skills, self-confidence, and motivation" of students (p. 107).

Knowdell (2009) stressed that a positive significance of career coaching and counseling was found. Neuhauser and Weber (2011), reflected that coaching in higher education focuses on learning and study skills, time management, program selection, identification of barriers and supportive services, mentoring and advisement, and job/career obtainment. Crosta (2014) claimed that retention and completion rates increased for students who persisted or continued with full-time enrollment without a break in semesters. Coaching was found to increase "well-being and self-regulation" (Parker, Hoffman, Sawilowsky, & Rolands, 2011, p. 115).

Ryan (2013) analyzed students' perceived benefits of coaching. It was noted that students perceived the coach as a "guide" as they started and finished their training programs. The coach helped the students with choosing a career and mapping out a plan to obtain that career. The coach was a person in constant contact with the student throughout the training program to employment. The coach served as an expert in the field of training and employment and provided referrals and resources a student needed to be successful. The coach also helped the student with obtaining and retaining employment. Every participant in the study agreed that the coach helped them in many ways and recommended that every student utilize the services of the coach per Ryan (2013). Ryan (2013) also found that first-year students had increased retention rates after utilizing coaching with 65% for those in the treatment group compared to 40% in the control group. Research articles containing background information on at-risk

students in higher education, including their demographics, and characteristics, will contribute to measuring the effects of coaching in community colleges.

Coaching in Community Colleges

In the spring of 2010, coaching was tested out on first-year students at a community college (Ryan, 2013). In this one-year experimental study at a community college, it was found that 65% of first-year students who received increased advising were retained and achieved a higher GPA, compared to 40% who did not receive increased advising (Ryan, 2013). The researcher found only three other studies in the Education Source database regarding community college students and retention efforts, with two providing analysis on enrollment patterns to predict retention (Bahr, 2010; Crosta, 2014) and one analyzing community college student barriers and their impact on enrollment (Hlinka, 2017).

The most relevant research found included a qualitative dissertation in ProQuest on success coaching in Virginia's community colleges (Strange, 2015), a quantitative dissertation on coaching at one undisclosed community college (Hall, 2017), and an assessment on Virginia's high school career coaching found using Google Scholar (Benson, 2013). Both Strange and Benson provided crucial data on the impacts of Virginia's coaching initiative. Benson (2013) reviewed high school career coaching, which started in 2005. In that study involving surveys completed by coaches, it was found that students met with a coach roughly four times and claimed the most value came from early planning, setting goals, and getting more information about colleges and programs. Strange (2015) performed a qualitative formative program evaluation of student success coaching in Virginia community colleges. Coaches revealed their struggles with providing services but also their duties and successes. It was noted that serving 200 students per coach proved to be a challenge when providing a full array of wrap-around

services to students. In addition to academic advising, these coaches were facilitating faculty-student relations, connecting students with financial resources, providing non-academic resources, presenting in student development courses and offering workshops, and visiting off-site locations to engage the community (Strange, 2015).

Coaching in higher education is becoming a more common theme in the efforts of college staff to support students and promote success. Increased retention and completion are key identifiers of success, and the coach helps the student map out a career pathway and select the most appropriate training program to achieve that "dream" job (VCCS, 2011). But this is only the start. The coach continues with the student throughout their academic career, identifying and addressing barriers, securing funding for training, getting help with tutoring or other obstacles that arise, and completing their program (Neuhauser & Weber, 2011). The coach helps with resume writing and job search and aids the student in securing employment. The coach acts as a guide, holding the hand of the student from start to finish (to ensure completion). With the increase of performance-based funding in higher education, colleges may lean more towards coaching to increase student success rates.

Unfortunately, a limited amount of research was found on the impact of coaching in community colleges and a measure of success by way of increased retention and completion. The researcher could find no peer-reviewed studies on the impact of student success coaching on students in Virginia. Further study on the subject from a quantitative standpoint could evaluate treatment (students who participated in coaching) versus control (students who did not participate in coaching) samples to measure the retention and completion of the two groups to determine if coaching is producing beneficial effects. Results could affect the various ways colleges serve students.

Types of Studies

Researchers of related studies sought to determine what impacts coaching had on students (Neuhauser & Weber, 2011; Richman, Rademacher, & Maitland, 2014), and if coaching improved student persistence (enrollment term after term) and program completion (attainment of a certificate or degree) (Mitchell & Gansemer-Topf, 2016; Tripp, 2008). These researchers sought to confirm if there was a benefit of coaching in academia.

Qualitative Studies

Qualitative literature reviewed consisted of the impact of student characteristics (individualities) via qualitative analysis in efforts of predicting student academic outcomes. Crosta (2014) found that when students enrolled full-time in consecutive semesters, their success rates increased. This was compared to students who enrolled only part-time in some semesters or who skipped a semester of college. Researchers sought to determine why some students persisted while others did not. Results varied, with Fentress and Collopy (2011) indicating that "academic preparation, financial strain, identity issues, and social capital" affected persistence (p. 3).

Ten qualitative approaches used humanistic psychology under a theoretical framework involving phenomenology, or students' lived experiences (Asghar, 2010; Fentress & Collopy, 2011; Neuhauser & Weber, 2011), ethnographies including student behaviors (Deil-Amen & Rosenbaum, 2003), and case studies with student interviews to measure self-regulation and students' perceptions of academic coaching (Mitchell & Gansemer-Topf, 2016; Swartz, Prevatt & Proctor, 2005). Two studies indicated the use of validated instruments proven reliable in other studies, such as the Learning and Study Strategies Inventory (LASSI cluster analysis), to analyze patterns related to student retention and completion (Parker, Hoffman, Sawilowsky & Rolands,

2011; Swartz, Prevatt, & Proctor, 2005). Hlinka (2017) incorporated three theories pertaining to retention, social capital, and cognitive development in a study regarding students' decision-making processes about persistence. Though the sample sizes for all these qualitative studies were small, the researchers presented valid arguments regarding the reasons why college students struggle to be successful in higher education and how they felt coaching helped them.

Crosta (2014), and Bellman, Burgstahler, and Hinke (2015) utilized studies that were objective in nature, and which involved no interaction or outside influence on the study from the researcher. Data, which already had been collected and recorded, were analyzed to determine if there was any observed impact from coaching on the group of students who received it. Several researchers utilized case studies under a relativism ontology (D'Alessio & Banerjee, 2016; Parker, Hoffman, Sawilowsky, & Rolands, 2011; Richman, Rademacher, & Maitland, 2014). The emic approach allowed for subjective perceptions, which was critical to gathering student perceptions in a study by Given (2008).

An instrumental case study consisting of a focus group and individual interviews, conducted within a bounded system to analyze the context and the phenomenon of college students who participated in the coaching program, would best provide qualitative data on student perceptions (Hays & Singh, 2012). Leedy and Ormrod (2015) noted the importance of context and phenomenon in a case study. In their study, the context consisted of the physical environment of the college and related economic and social factors affecting the students. The phenomenon was the impact of success coaching on students who met the program eligibility criteria.

The majority of qualitative studies conducted involved participation by students utilizing purposeful sampling (Crosta, 2014; Fentress & Collopy, 2011; Hlinka, 2017; Mitchell &

Gansemer-Topf, 2016; Neuhauser & Weber, 2011; Richman, Rademacher, & Maitland, 2014).

Students were provided qualitative pre- and post-surveys to capture their perceived benefit from

coaching, increased ability to manage time, creation of action plans and goals, and persistence in

academic programs. Mitchell & Gansemer-Topf (2016) concluded that theoretical foundations

under the humanistic psychology lens provided little guidance for practical applications.

Richman, Rademacher, and Maitland (2014) used case studies to measure self-

determination, executive functioning skills, academic skills, and the benefits and limitations of

coaching with results indicating: improved test scores, higher self-esteem, and increased

executive functioning skills after exposure to coaching. Using structural equation modeling,

Showers and Kinsman (2017) measured factors that positively affected student success, which

included family background status. Surveys were the most common method used in qualitative

studies. Bahr (2010) used a parsimonious model involving observation; Asghar (2010) implored

phenomenological qualitative interviews, focus groups and assessments; Parker, Hoffman,

Sawilowsky, and Rolands (2011) utilized formative evaluation; and, Crosta (2014) used a novel

graphical technique.

Mixed Methods Studies

Mixed methods proved very informative with case studies and observation for qualitative

assessment, and extensive variable analysis and correlation comparison for quantitative analysis

(Crosta, 2014; Richman, Rademacher, & Maitland, 2014). These studies allowed for stories to

be told on student struggles and successes by utilizing surveys and assessments to gauge

students' abilities, perceived value of coaching, and why students opted in, opted out or

withdrew from the study. A mixed-methods study allowing for the thick, rich descriptions of

lived experiences, combined with quantitative data collection appeared to provide greater results as to why students choose to participate in coaching.

Quantitative Studies

Quantitative studies had large sample sizes and compared student data over large geographic regions and within various types of institutions (Crosta, 2014). These studies had greater sample sizes and considered a diverse collection of student variables and characteristics (Bahr, 2010). Quantitative research employed methods of identifying barriers by way of financial status, demographics, and enrollment data, to identify issues with persistence, and utilized linear regression and analysis of variance via t-tests and k-means cluster analyses to showcase statistical results regarding increased retention and completion rates (Bettinger & Baker, 2014). Quantitative data were mostly ex post facto (collected after the fact), and no student interaction occurred. For most quantitative studies, Institutional Review Board (IRB) approval was not needed. Leedy and Ormrod (2015) stated that ex post facto designs are not correlational or experimental and have "no direct manipulation of the independent variable" (p. 194).

Several studies utilized dependent variables or outcomes including retention (fall-to-fall persistence) and completion (certificate or degree attainment) to measure student success (Bahr, 2010; Bettinger & Baker, 2014; Crosta, 2014; Gampert & Jones, 2013; Ryan, 2013; Tripp, 2008). Control variables generally utilized when tracking enrollment in studies included: demographics (race/ethnicity, gender, and age), grades, enrollment status (full-time versus part-time), grade point average (GPA), first-generation (first in their family to attend college), and low-income status (below 200% of the poverty level) (Bahr, 2010; Bettinger & Baker, 2014; Crosta, 2014; Parker, Hoffman, Sawilowsky, & Rolands, 2011; Ryan, 2013).

The most recent study including predictive analysis was found as part of a dissertation, where the researchers, Hall, Porter, Gayles, Mallette, and Umbach (2017), found no statistical difference in persistence or GPA for a group of community college students who utilized coaching compared to those who did not. It was noted that the group of students who participated in the coaching services were moderate-level academic performers (as opposed to low-level or at-risk). While the results did not support the hypothesis that coaching improved student outcomes, the new contribution to the literature helps support the need for student support in community colleges.

Propensity score matching.

Crosta (2014) utilized propensity score matching, which allowed students with various demographics to be matched across both groups to provide a more reliable comparison. Crosta's analysis included enrollment frequency, intensity, interruption, and persistence to predict retention and completion rates. With propensity score matching, Crosta could compare all students enrolled part-time with each other (treatment and control), full-time, and those who skipped semesters with each other, to determine if enrollment affected student success. Confounding variables were statistically controlled for when matching students from the two groups (Leedy & Ormrod, 2015). The independent variable was whether the student utilized coaching services (yes or no). Crosta's study results indicated 68% of new students start in the fall compared to 24% in the spring and eight percent in the summer (2014).

Populations, Samples, and Participants

The largest quantitative study found consisted of 165,921 students over a seven-year period (Bahr, 2010), while related qualitative studies had as little as five participants (D'Alessio & Banerjee, 2016). At least two studies focused on variables involving student demographics,

enrollment, course load, and financial status (Crosta, 2014; Fentress & Collopy, 2011), where five others considered classifications such as student behaviors, including course selection and enrollment patterns (Bahr, 2010; Bettinger & Baker, 2014; Hlinka, 2017; Richman, Rademacher, & Maitland, 2014; Ryan, 2013). Bahr (2010) contended that excluding demographics and utilizing the cluster analytic process proved to increase research validity. The researcher could argue that excluding demographics would leave out a key variable used to identify critical target populations. This study included demographic data such as race and gender, to ascertain whether those variables had any potential impact on retention and completion.

Of importance to note was that 40% of the studies found on coaching consisted of the target population of students having Attention Deficit Hyperactivity Disorder (ADHD) or other learning disabilities (Bellman, Burgstahler, & Hinke, 2015; D'Alessio & Banerjee, 2016; Parker, Hoffman, Sawilowsky, & Rolands, 2011; Richman, Rademacher, & Maitland, 2014; Showers & Kinsman, 2017; Swartz, Prevatt, & Proctor, 2005). Evidence from these studies indicated that students with disabilities may have increased struggles with retention and completion, but the omission or lack of research on the impacts of coaching on first-time, first-generation, and non-traditional students is worth noting (Mitchell & Gansemer-Topf, 2016; Swartz, Prevatt, & Proctor, 2005).

These studies demonstrated that students with learning disabilities experienced an even greater struggle with college retention and completion when compared to students without disabilities, hence the increased focus and attention on this population. However, there is a considerable gap in the literature on the effects of coaching on a myriad of populations such as at-risk, non-traditional, two-year versus four-year, and private versus public institution students. Only 11 studies were found to include coaching on the general student population (Asgha, 2010;

Bahr, 2010; Bettinger & Baker, 2014; Gampert & Jones, 2013; Mitchell & Gansemer-Topf, 2016), with the recent literature consisting mainly of dissertation studies.

Limitations

Limitations in the research involved the exclusion of non-traditional students (Hlinka, 2017), and students other than first-time (Bahr, 2010). The researcher noted limited empirical studies and literature on the impact of coaching on the general student population in higher education, as previously observed by Richman, Rademacher, and Maitland (2014), and Swartz, Prevatt, and Proctor (2005), with extremely limited literature found regarding coaching non-traditional students in community colleges. Pelletier (2010) suggested that non-traditional students have many barriers that differ from those of traditional students, which may increase their attrition or dropout rate. Family and work obligations along with other obstacles may affect non-traditional student retention and completion. The National Center for Education Statistics defines a non-traditional student as one who meets one of seven characteristics: "delayed enrollment into postsecondary education; attends college part-time; works full-time; is financially independent for financial aid purposes; has dependents other than a spouse; is a single parent; or does not have a high school diploma" (Pelletier, 2010, p. 1).

One important factor excluded in the literature reviewed was the impact of developmental courses on community college students. Research results show that first-time students may be more likely to need developmental courses, (specifically math and literacy), prior to taking their scheduled college-level course work. According to Kozeracki (2002), these additional courses delay a student's progression through their academic program. This causes considerable delays in completion and the time a student starts core courses. While this presents another issue altogether, students taking developmental courses may see a benefit from coaching.

In the researcher's review of the related literature, most studies focused purely on the four-year college and university levels (Parker, Hoffman, Sawilowsky, & Rolands, 2011; Richman, Rademacher, & Maitland, 2014). Students at the four-year level may not have the same challenges that are present at a community college composed of non-traditional age, first-generation, and low-income students (Bahr, 2010). Also, community college students may have family obligations, full-time jobs, no family or financial support, or lack of guidance altogether (Pelletier, 2010).

Noted limitations in available research studies also included failures to record what actual coaching services students received, which services may be the most beneficial to students, as well as how often a student met with a coach (Richman, Rademacher, & Maitland, 2014). The frequency of coach interactions may be a major influencer in academic success. There also exists an extremely limited amount of research on the impact of coaching in rural community colleges versus urban colleges (Hlinka, 2017). Students at rural colleges have unique challenges all their own when compared to their peers at larger urban colleges. Lack of transportation, business and industry, and job opportunities may severely limit student options and accessibility.

Some researchers noted that a lack of physical space and funding for coaching limited the college's ability to provide coaching services to students (Mitchell & Gansemer-Topf, 2016). Data and analyses in other studies were comparatively abbreviated and the perceived long-term benefit of coaching could not be determined (Swartz, Prevatt, & Proctor, 2005). Chung and Gfroerer (2003) suggested that there was no research or resources available on career coaches and that "there is limited empirical research to support the effectiveness of such practice" (p. 149). This assumption excludes the recent studies reviewed in this document but does suggest that more research is necessary to determine the true impact of coaching.

Threats to research validity existed in several studies. Swartz, Prevatt, and Proctor (2005) stated that the "timing of the intervention…, use of a nonstandardized outcome measure, and a short baseline length" all presented threats (p. 655). Other implications arose from the "lack of a comparison group" (Bellman, Burgstahler, & Hinke, 2015, p. 107), as well as quantitative studies with specific or narrow student samples (Parker, Hoffman, Sawilowsky, & Rolands, 2011). The researcher acknowledged these issues and aimed to address threats to validity by using a comparable treatment and control group created through propensity score matching to better analyze the impact of coaching on retention and completion. The targeted at-risk student population, exceeding a sample size of 1,000, provided the sample for this study.

Implications

Practical implications from further research with significant statistical results regarding student outcomes may lead to support for increased coaching. Increased support of coaching by students may lead to increased support of coaching by the college. Continuing in that direction, the researcher posits that if the college perceives increased benefits of coaching, it may seek additional funding to support or expand coaching services. Retention and completion (success) rates may increase with increased coaching at community colleges.

Other implications include further study regarding the measured benefits of coaching in community colleges. It is recommended that multiple studies be conducted across the nation with colleges of all sizes comparing a treatment group and control group of students who did and did not utilize the services of a coach. The two groups could then be compared to measure the retention and completion rates to determine whether measurable differences exist between those students who utilize a coach and those who do not.

Theoretical implications exist as well. Hlinka's (2017) study regarding community college student retention was based mainly on the theoretical foundation of Tinto's integration theory. Tinto spent many years studying issues with student retention and persistence (Tinto, 1975, 1997, 2012). Unfortunately, most of his research focused on the issues of four-year university students.

Quantitative studies utilizing logistic regression would allow a measurable study to be conducted for students who do and do not utilize coaching services. It also would be crucial to control the variables for demographics while measuring the dependent variables of retention and completion. As for continued qualitative research, it would be important to record what services each student received to determine which provides more benefit to the student. It also would be beneficial to record coaching frequency to determine the number of times a student would need to meet with a coach before seeing a measured benefit by way of increased retention and completion.

Summary

Retention and completion rates for first-year students is at a troubling low (Ryan, 2013). Students may register for classes and attend the first semester, but do not return for subsequent semesters (Crosta, 2014). Their chances of completing a program and obtaining a certificate or degree are low (Mullin, Baime, & Honeyman, 2015). When considering low-income or first-generation students, success rates decline even further (Hlinka, 2017). Coaching may be a promising intervention that may positively impact student retention and completion.

In the 12 studies found on coaching (or increased student support), a wide range of considerations included student demographics, enrollment patterns, coaching services provided, and the measured effects of coaching on student retention and completion rates. Researchers

sought to determine if coaching had any impact on student success. Studies evaluated increasing study skills, financial awareness, and executive functioning skills with pre- and post-tests and surveys. These studies included a review of the benefits of coaching in academia. Crosta (2014) concluded that persistence, or consecutive semesters of continued enrollment, increased retention, and completion rates. This study will help provide details on the effect of coaching on persistence.

In the review of the literature, the researcher has deduced that college students choose to work with a coach when they are unsure of: which training program to pursue; how to secure funding or financial aid for a program; how to identify barriers and resources for obstacles such as funding, transportation, or childcare; how to obtain assistance with tutoring or program completion, resume writing and job search; and other coaching services. These services were generally accessible to students regularly throughout the semester but may go beyond the capacity of regular academic advisors. Students needed to be self-motivated to pursue coaching (Swartz, Prevatt, & Proctor, 2005).

Chapter Three that follows includes the methodology of this proposed research to include the type of research, population and sample size, variables to be used for evaluation, demographics to be considered, and data collection procedures. The researcher also will disclose the various types of data analysis tools to be utilized for this study. With the intent to strengthen the literature on student success coaching in Virginia, the researcher will present a quantitative analysis using a comparable treatment and control group to evaluate the impact on retention and completion of students who utilized coaching.

CHAPTER THREE

METHODOLOGY

At-risk students are those who are at a higher risk of not completing a certificate or degree at a higher education institution, compared to students who were academically prepared and whose parents attended college (Fentress & Collopy, 2011). The VCCS implemented the student success coach program in 2012 to combat the drop-out rates of at-risk students and increase student retention and completion. Through this program, student success coaches work with select students who are at risk of not completing a certificate or degree (VCCS, 2011). The researcher examined whether indicators of retention and completion were significantly different for students who worked with student success coaches compared to those who did not work with a coach. This study was guided by the following research questions:

1. How will student success coaching affect retention?
2. How will student success coaching affect completion?

Research Design

The purpose of this study was to determine how student success coaching affects the retention and completion of students who participated in the VCCS student success coach program and received coaching services compared to those who were eligible to participate but opted out of or did not participate in the program. The independent variable was coaching (yes or no). The dependent variables included fall-to-fall enrollment (yes or no) and certificate or degree completion (yes or no). The analysis also controlled for four potentially confounding variables via propensity score matching procedures: (a) enrollment status (full-time or part-time enrollment); (b) sex (male or female); (c) race (white or non-white); and, (d) age by group. For this study, fall-to-fall enrollment represented the measure of retention. Certificate and degree

attainment and/or transfer to a non-VCCS college represented the measure of completion.

Students who participated in the student success coach program made up the treatment group

while those who opted out made up the control group.

This study involved quantitative analysis using ex post facto data collected by the VCCS.

The VCCS staff collect student data in their SIS. The SIS contains data on admissions,

biographic and demographic information, financial aid, student academic records, and student

financials (Reynolds Community College, 2019). Figure 2 represents a conceptual framework of

the independent variable (coaching) on the dependent variables (retention and completion), as

controlled for demographic variables.
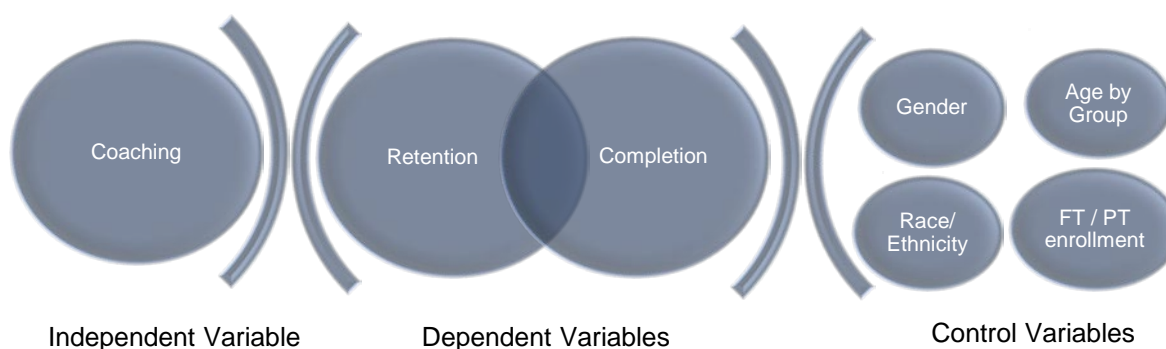
Figure 2. Student success coaching conceptual framework.

Population and Sample

The researcher employed a quantitative analysis of five years of data collected from 10 of

Virginia's 23 community colleges that participated in the student success coach program from

spring of 2014 to spring of 2019. The VCCS staff collected and stored the data for students who

met the success coach program eligibility at each college. The student success coach program in Virginia's community colleges accepts students who meet one or more of the basic eligibility criteria set by the VCCS: first-generation college student, Pell status, historically underrepresented races or ethnicities, and those having earned less than 14 college credit hours prior to program enrollment (Paul D. Camp Community College, 2017). The data were divided into two groups: students who opted in and participated in the program, (which was considered the treatment group), and students who opted out and continued their education without the assistance of a student success coach, (the control group). For this study, any student who participated in the program and met with a coach at least once was considered a treatment group participant.

Student success coaches work with an assigned caseload of 100 to 150 students per coach and assist students from the application process to graduation. Since its inception in 2012, the student success coach program has served over 5,000 students (VCCS, 2018). Assuming approximately half of the students opt-in to participate, this presented an estimated sample size of roughly 10,000 students total to form both the treatment and control groups. Though a larger sample size would better represent the total population, a total of 1,749 students in each sample group after matching was sufficient to provide a generalized or representative population for this study.

Quantitative Analysis

A quantitative study allowed for the analysis of numerical data to predict the impact of student success coaching on retention and completion among at-risk students. A randomized control study was not feasible for this project as data was already available. Therefore, a quasi-experimental design was more appropriate. This design allowed for the controlling of variables

between a treatment and control group when randomization was not feasible (Leedy & Ormrod, 2015). This design also allowed an analysis of the coaching intervention with a deductive approach to determine if coaching (the independent variable) impacted retention and completion (dependent variables).

To reduce threats to validity, participants in ex post facto data (de-identified by the VCCS) were matched with propensity score matching on multiple demographic variables (i.e. gender, age, race, and enrollment status). Students with similar demographic profiles were selected from the treatment and control groups and then their retention and completion outcomes were regressed to estimate the probability that coaching impacted student success.

Data Collection Procedures

Only data collected in the PeopleSoft (SIS) was used for this study. As students enroll at their community college, their application information is uploaded into SIS. This creates a student record. Staff at the VCCS are notified when a student who meets the eligibility criteria for the student success coach program at one of the 10 participating colleges completes a college application. The appropriate community college student success coach then contacts these students to alert them of the services of the program and invites them to participate. It is important to note that the student-to-coach ratio may limit the number of new students invited to participate, thus creating a larger control group population.

VCCS administration agreed to provide the researcher with de-identified student data from the program from the PeopleSoft SIS. The dataset was sent in a Microsoft Excel file and was password protected. The researcher collected the student data from the VCCS to form the treatment and control groups. Each student was assigned a unique identification number. This identification resulted in a range of students from 1 to over 100,000. In addition to the

demographic data collected, certificate and degree attainment, transfer to a non-VCCS college, and enrollment by semester were also collected for each student.

Statistical Analysis Procedures

To strengthen the validity of this study and reduce selection bias, it was critical to control for the confounding variables, namely student demographics, via propensity score matching (Guo & Fraser, 2014). The researcher utilized propensity score matching to balance the covariates and ensure students were compared as equally as possible between the two groups (Leedy & Ormrod, 2015). In this study, it would not make sense to compare the retention and completion of an 18-year-old non-white female enrolled in college part-time, with a 40-year old white male enrolled full-time. There could be many assumptions on why one would be more successful in college than the other.

Propensity score matching sorts participants by their demographics and matches each participant in the treatment group with their equal in the control group to find each participant's "nearest neighbor" (SPSS, 2019). For example, a treatment group student who is a 38-year-old minority female enrolled full-time, was compared to a similar minority female enrolled full-time in the 35-54 age range. These characteristics between the two groups provided similar propensity scores for each matched student. The retention and completion of these two students were then utilized in the study. All students who did not have a mirror match were not included in this study.

SPSS statistical software provides a propensity score matching algorithm, called PS Matching, to find the "nearest neighbor matching (1:1)" (SPSS, 2019). The R Essentials add-on for SPSS was used to conduct such analysis (Bowers, Fredrickson, & Hansen, 2010). The groups were assigned binary treatment indicators (0 = control, 1 = treatment), as were the

demographic covariates (i.e. 1 = male, 0 = female; 1 = white, 0 = non-white; 1 = full-time

enrollment, 0 = part-time enrollment; 0 = 18-24, 1 = 25-34, 2 = 35-54, 3 = 55+ years of age).

The measures for each variable were then converted to scale for the analysis.

Logistic regression was the algorithm used in SPSS to identify the closest possible

matches. SPSS PS Matching output combined the multidimensional covariates into one

covariate called a "propensity score". Each participant was assigned a propensity score, which

was used when comparing the two groups. SPSS provided the total number of treatment and

control students identified, the number matched, the number unmatched, and the number

discarded. Data reduction occurred as many control students did not have a close or equal match

(Pan & Bai, 2015).

Validity was increased by the large sample size (1,749 treatment participants and 1,749

control) but would be strengthened if replicated across the United States. It is important to note

that reliability is crucial to ensure the variables used will produce the same results if the study is

repeated. The researcher controlled for the confounding variables for all students and utilized

propensity score matching to match each treatment student to their equal in the control group. It

also is important to note that some groups may have benefited more or less from coaching. Due

to the propensity score matching, those independent variables such as gender, age, race, and

enrollment status, were combined in the analysis. These variables can, however, be evaluated

independently by running a logistic regression analysis using just one control variable, such as

age by group, to determine which group(s) if any, benefitted more from coaching.

Logistic regression in SPSS Statistics software version 25 with the R package was used

as a predictive analysis to test the relationship among the categorical variables (Bluman, 2009).

In this statistical analysis, odds ratios were created for the retention and completion variables to

determine how the treatment of coaching was affecting both groups. A contingency table was created using the retention and completion data collected from the quasi-experimental treatment and control groups. The alpha level (significance) was set at .05 (Bluman, 2009).

Because there are categorical variables (coded as retention, yes = 1 or no = 0), the logit model, or logistic regression, was used to predict the probability of success from the independent binary variable (coaching) on the dependent binary variables (retention and completion) (Aczel, Sounderpandian, & Patille, 2006). The data collected from the VCCS included a student identifier, gender, race/ethnicity, enrollment status, age at the time of enrollment, date of first enrollment, last date of enrollment (to measure retention), transferred to a non-VCCS college, and certificate or degree attainment. This data was imported into SPSS and the variables named. Dichotomous indicator variables were recoded using the "transform" feature in SPSS so that male was equal to one and female was equal to zero, and so on, in the table.

"Logistic regression is similar to a linear regression but is suited to models where the dependent variable is dichotomous. Logistic regression coefficients can be used to estimate odds ratios for each of the independent variables in the model" (Alexopoulos, 2010, p. 1). The descriptive statistics reflected the probability of student outcomes being affected by coaching by analyzing the Chi-square results (testing the model), alpha (p) level for significance, and Nagelkerke R^2, which explains the variation in the outcome.

Limitations

In a review of the related literature, there existed a limited amount of research on the impact of student success coaching in community colleges. Some researchers noted that the lack of physical space as well as funding for coaching limited their ability to provide coaching services to students (Mitchell & Gansemer-Topf, 2016). Both observations are issues that may

affect the student success coach program. Limitations in the research included studies that

excluded non-traditional students (Hlinka, 2017), excluded students other than first-time (Bahr,

2010), and some that noted a significant lack of empirical studies and literature on the impact of

coaching in higher education (Richman, Rademacher, & Maitland, 2014; Swartz, Prevatt, &

Proctor, 2005).

Limitations for this study included the short period during which data was collected. The

data consisted of five years of retention and completion data. Considering that most community

college students do not complete an associate's degree in two years, it was assumed that newer

students would be less likely to have completion outcomes. This study also was limited by the

number of coaches available at each college and when those coaches started assisting students.

Not all 10 colleges had the student success coach program in operation for the full five years.

Nine colleges had the program from fall of 2013 to spring of 2019. Due to a lack of a case

management system, the number of coaching sessions or frequency of coaching was not

recorded. Students had the opportunity to meet with their coach daily, weekly, or monthly, but

some may have had one interaction with their coach and never returned. There is no way to tell

if one hour with a coach increased retention or completion compared to weekly meetings over

two years of coaching. This study did not include the academic history of the student such as

GPA, SAT scores, or college placement test scores.

Other limitations of the research design excluded the motivation of each student and any

outside factors or variables that possibly influenced a student's success. Students in the control

group may receive additional types of support services from other sources such as parents,

teachers, advisors, or from the department of Student Support Services. Limitations for the

treatment group included not collecting outside factors for dropping out of college, such as job

obtainment, work/life conflicts, illness or other health issues, lack of childcare, incarceration, or other factors that prohibit a student from continuing their education (Pascarella, et al., 2004). These are several of the reasons why students do not complete a certificate or degree.

Bellman, Burgstahler, and Hinke (2015) concluded that executive functioning, student motivation, and self-esteem increased with coaching, while Richman, Rademacher, and Maitland (2014) found that increasing executive functioning and self-determination reduced student barriers. Swartz, Prevatt, and Proctor (2005) noted that "…coaches do not explore serious emotional, cognitive, or behavioral problems" (p. 648). Students may have received other types of support services from other sources not accounted for in this study, such as parents, teachers, advisors, or from the department of Student Support Services. In most cases, there is no way to track a student's reason for discontinuing their education unless it is self-disclosed at the time of exit. Reasons for dropping out of school are not recorded in SIS.

<div align="center">**Summary**</div>

With a sample size of 3,498 students (1,749 treatment and 1,749 control) in 10 Virginia community colleges, the validity of this study was strengthened compared to an analysis in just one college. This was increased with propensity score matching, which closely aligned a control student to a treatment student to best replicate a randomized controlled study, reduce selection bias and to make the best possible comparison between groups. Predictive analysis using logistic regression then provided the probability that coaching negatively or positively impacted retention and completion for the students in the treatment group.

In Chapter Three, the population, methodology, and statistical analysis were described. The variables were made broad enough to capture the student population characteristics needed to form as equal groups as possible for comparison. Chapter Four will present the findings of the

analysis to include the results of the propensity score matching and the final sample size of matched students, as well as the comparison results between the treatment and control groups as it relates to retention and completion.

CHAPTER FOUR

RESULTS

Chapter Four presents the findings of this study. The purpose of this study was to

determine how student success coaching affected the retention and completion of students who

participated in the VCCS student success coach program and received coaching services

compared to those who were eligible to participate but opted out or did not participate in the

program. The independent treatment variable was coaching (yes or no). The dependent

variables included fall-to-fall enrollment for retention (yes or no) and certificate/degree

attainment and/or transfer to a non-VCCS college represented completion (yes or no). The

analysis of data controlled for variables such as full-time and part-time enrollment, and

demographics to include male/female, white/non-white, and age groups. Students who

participated in the student success coach program made up the treatment group while those who

opted out made up the control group. The researcher determined the probability that coaching

was affecting student retention, completion, or both.

Review of the Data

The dataset sent by the VCCS to the researcher came in a password-protected Microsoft

Excel file, which included data on 100,332 individual students who met the following eligibility

criteria: first-generation college student; Pell status, historically underrepresented race or

ethnicity, and have earned fewer than 14 college credit hours prior to program enrollment (Paul

D. Camp Community College, 2017).

There was a row of data for each semester in which each student was enrolled. There

were multiple rows of data for students who returned for subsequent semesters, which resulted in

a total of 253,929 rows or instances of student enrollment. The researcher combined each

instance of student enrollment into one row per student. The dataset provided by the VCCS included the following:

1. A unique ID generated by the VCCS;

2. The semester and year for each instance of student enrollment;

3. Treatment indicator coded as 1 for coached and 0 for not-coached;

4. Age at the time of enrollment;

5. Race, coded as White =1, and non-white (Black, Hispanic, multi-race, Asian, Native-American/Alaskan-Pacific Islander, and Hawaiian) = 0;

6. Gender, coded as male = 1, or female = 0;

7. Zip code of residence;

8. Graduation, or whether the student completed a certificate or degree with 1 = yes and 0 = no;

9. Transfer, or whether a student successfully transferred to a non-VCCS college with 1 = yes and 0 = no;

10. Six-month persistence, or whether the student returned the next semester;

11. One-year persistence, or whether the student was retained a full year; and,

12. Full-time enrollment status, coded as 1 = full-time and 0 = part-time.

The data analysis began with a scrubbing of the data to remove students who were not at least 18 years old (60,512 instances). The researcher also removed instances with incomplete demographic data (263 instances). Next, all 16,505 instances of enrollment in 2012 and 2013 were removed, as there were limited numbers of participating colleges and treatment students in these first years of the student success coaching program. All instances of six-month persistence were removed as one-year (fall-to-fall enrollment) was considered for retention.

When the data scrubbing was complete, the sample included more than 164,000 students, with 5,775 in the treatment group and 158,804 in the control group. Of the total population, 19,536 completed a certificate or degree, and 37,691 transferred to a non-VCCS college after enrollment. In other words, 57,227 students (35%) of the total population completed either a degree or certificate. The total population before propensity score matching consisted of 100,836 females (61%) and 63,655 males (39%), which was somewhat consistent with the reported average of female (56%) and male (44%) community college students (NCES, 2019). Data on gender for 88 students were either unknown or unspecified, and these were therefore removed from the dataset.

Coding

Eight variables were re-coded into dummy variables. First, data were recoded according the following age groups:

- Age of 18 to 24 (n = 105,267), coded as 0;

- Age of 25 to 34 (n = 28,506), coded as 1;

- Age of 35 to 54 (n = 24,452), coded as 2;

- Age 55 and older (n = 5,106), coded as 3.

Ages ranged from 18, (which was an eligibility criterion), to 87.

Second, race was coded as 1 for White (n = 127,082), and 0 for non-white (n = 36,159). Gender was coded as 1 for male and 0 for female. Graduation, Transfer, Persist, and Full-time enrollment status were already coded as 1 for yes and 0 for no. The columns with Graduation and Transfer were then consolidated to form the Completion column where a 1 meant completed and a 0 meant not completed. The column for Persist one-year was renamed Retention where 1 meant retained for one-year and 0 meant not retained. Note that if students were retained for

one-year and were enrolled multiple years, they were counted once for retained and were assumed to not have skipped a semester of enrollment. After removing for unknown demographics, the final total population was reduced to 100,332.

Propensity Score Matching

A randomized controlled study was not feasible as the data were previously collected by the VCCS, so a quasi-experimental design was implemented using propensity score matching. There are two advantages of propensity score matching, according to Leedy and Ormrod (2015). First, it creates balance between the two groups. Second, it can reduce selection bias. Hansen and Bowers (2008) noted that "an exact propensity stratification would make an observational study as well-balanced as if its treatment conditions had been assigned randomly within the strata…" (p. 233). In SPSS, this was done by utilizing the Nearest Neighbor Matching algorithm, which provided a 1:1 match. This means that one control student was matched to one treatment student, based on similar covariates.

Students with like-confounding demographic variables, such as gender (male = 1; female = 0), age by group at time of enrollment (18-24 = 0; 25-34 = 1; 35-54 = 2; 55+ = 3), race/ethnicity (White = 1; non-white = 0), and enrollment status (full-time = 1; part-time = 0), were matched between the treatment and control groups utilizing propensity score matching in SPSS v25.

Figure 3 depicts the total matched population variables as coded 0 or 1. For the total matched population of 3,498 students, 1,219 were non-white, 2,279 were White; 1,956 were female and 1,542 were male; 1,505 students attended college part-time, where 1,993 attended full-time; 2,227 were found not to be retained one year after their initial enrollment and 1,271 were retained one-year; 2,131 did not complete college with a degree or certificate nor

transferred to a non-VCCS college; and, 1,367 completed a degree or certificate or transferred to a non-VCCS school.
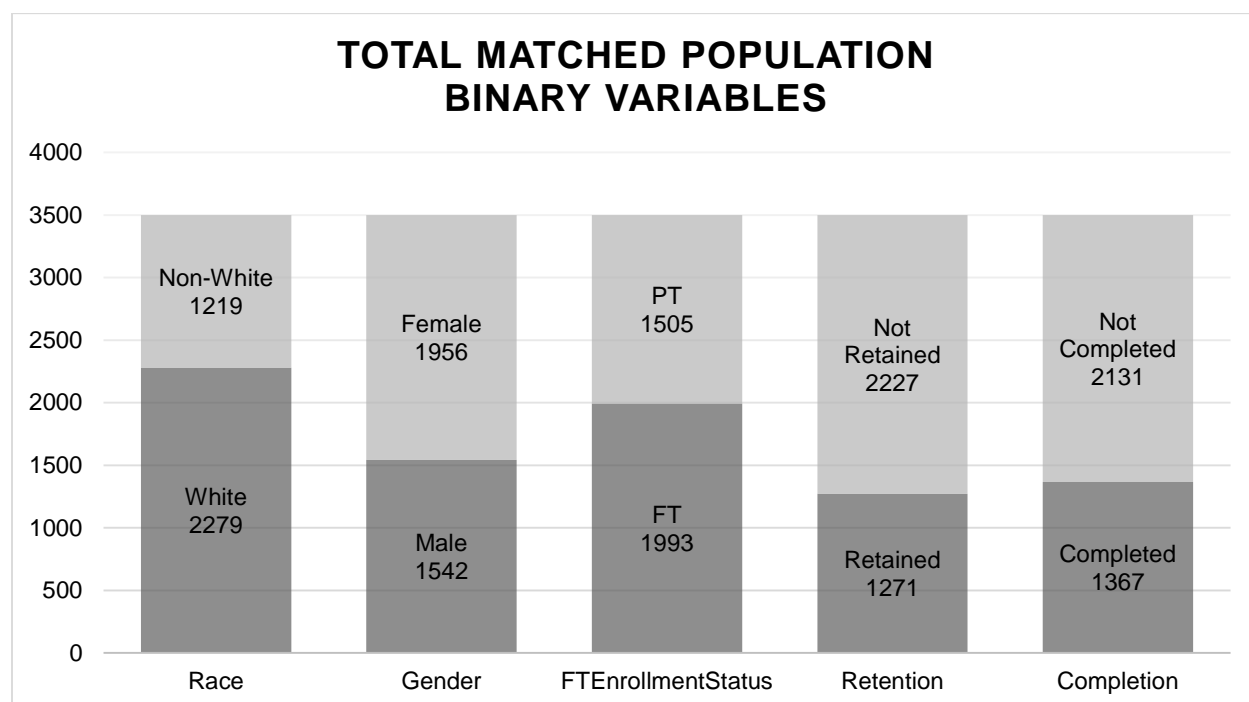
Figure 3. Total matched population - binary variables.

Figure 4 depicts age by group for the total matched population. Of the total matched population with 3,498 students, 2,594 students fell in the age group of 18-24 at the time of enrollment. Students in the age group of 25-34 comprised 531 of the sample; 331 fell in the 35-54 age group; and, 44 students were the age of 55 or older.

TOTAL MATCHED POPULATION AGE BY GROUP

Age Group	Count
18-24	2,594
25-34	531
35-54	331
55+	44
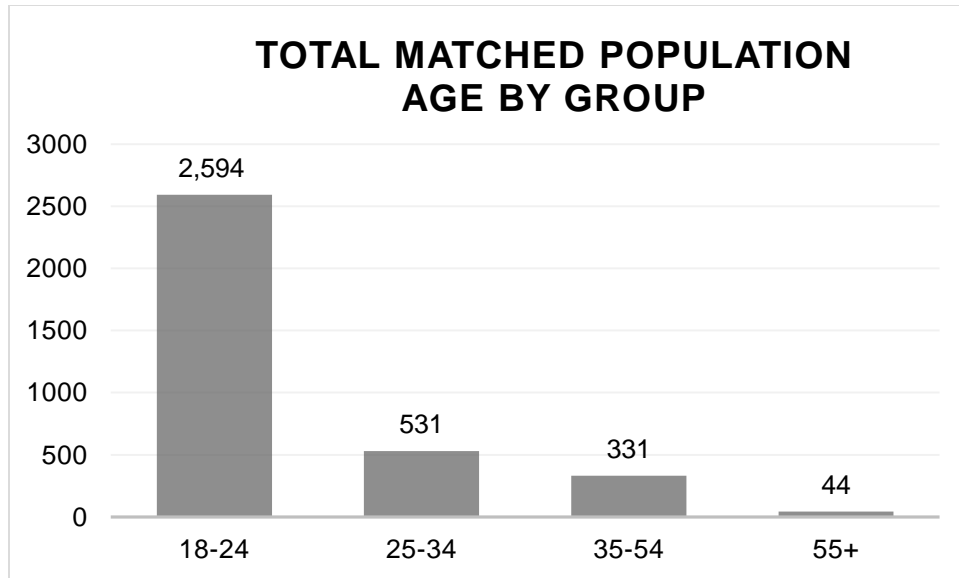
Figure 4. Total matched population age by group.

SPSS version 25 is used to assign each of the students with a propensity score. R-essentials and PS Matching add-ins were required for matching in SPSS. All variables were required to be converted to scale measure for PS matching. A total of 68,936 control students were imported into SPSS and matched to the 1,749 treatment students as reflected in Table 1.

Table 1

Total, Matched, and Unmatched Sample Sizes

Population	Total		Matched		Unmatched	
Subsamples	Control	Treated	Control	Treated	Control	Treated
(all cases)	68,936	1,749	1,749	1,749	67,187	0

Each treatment student was matched to a comparable control student to create balance, which resulted in a final sample of 1,749 treatment students, and 1,749 control students. The

remaining 67,187 unmatched students were removed from the dataset. This presented a total

sample size of 3,498 matched students for the logistic regression analysis.

The researcher used three statistics to judge balance: (a) the overall balance test; (b) the

relative multivariate imbalance, or L1; and, (c) the standardized means difference, or Cohen's d

value. First, the overall balance test was used with 1:1 matching in SPSS. If a statistically

significant p-value exists, then the covariates are imbalanced. The results of this test provided a

p-value of .594, which is not statistically significant and indicated a balance of the covariates

between groups. Also, the Chi-square test for independence reflected that the observed data fit

the expected data with a very small Chi-square test statistic of 2.789. The degrees of freedom

were 4 (see Table 2).

Table 2

Overall Balance Test of the Covariates

	Chi-square	df	p-value
(all cases)	2.789	4.000	.594

Second, to evaluate the covariate balance, the researcher compared the relative

multivariate imbalance, L1, in Table 3. The L1 was reduced from .254 to .115. According to

Thoemmes (2012), a zero indicates a perfect balance, but the end goal is a reduction of L1 or

imbalance after matching. Third, balance is evaluated by assessing the standardized difference

in the mean propensity score in the two groups. The researcher found that the standardized mean

difference or Cohen's d value, represented no large imbalance amongst covariates ($|d|>.25$).

Table 3

Relative Multivariate Imbalance L1

	Before Matching	After Matching
(all cases)	.254	.115

Figure 5 presents a histogram of the distribution of propensity scores showing the overlap of the control and treatment students. This histogram presents unfilled circles as the treatment group and solid circles as the control group. The figure shows the overlap where the treatment and control students had similar demographic variables after matching.
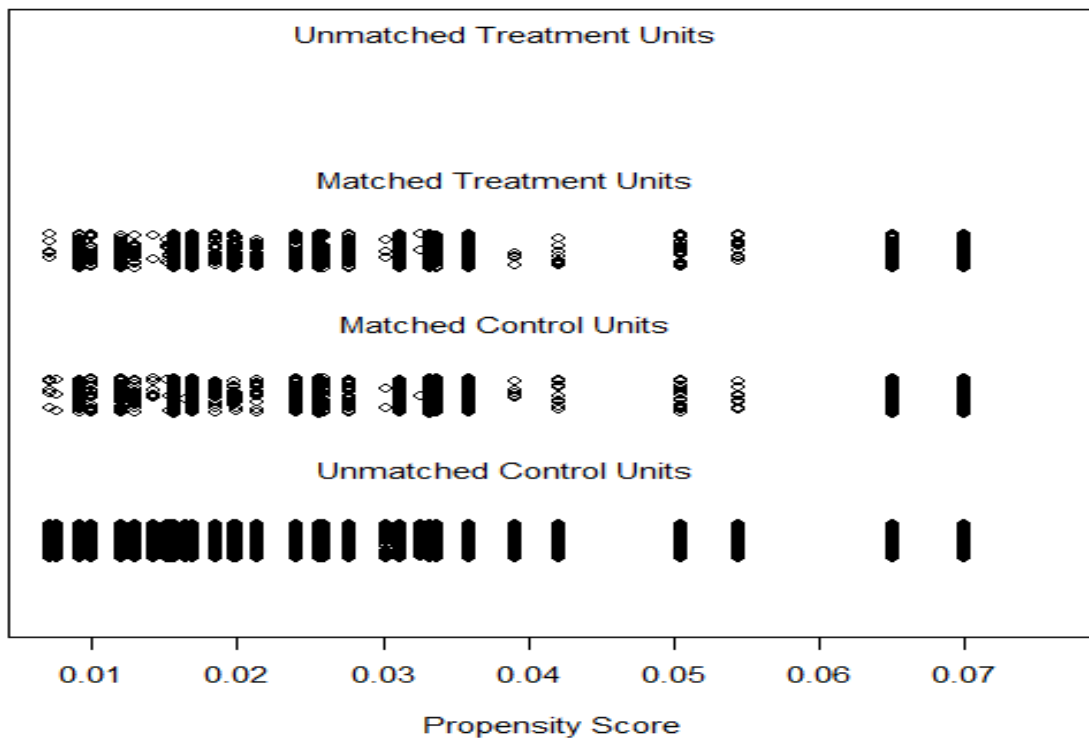
Figure 5. *Distribution of propensity scores.*

Figure 6 references the propensity score matches from the control group to the treatment group. In this figure, All Data references the distribution of the total population, and Matched Data references the 1,749 control students who were matched to the 1,749 treatment students. The closest matches fell under 0.1 in the absolute standardized difference in means.
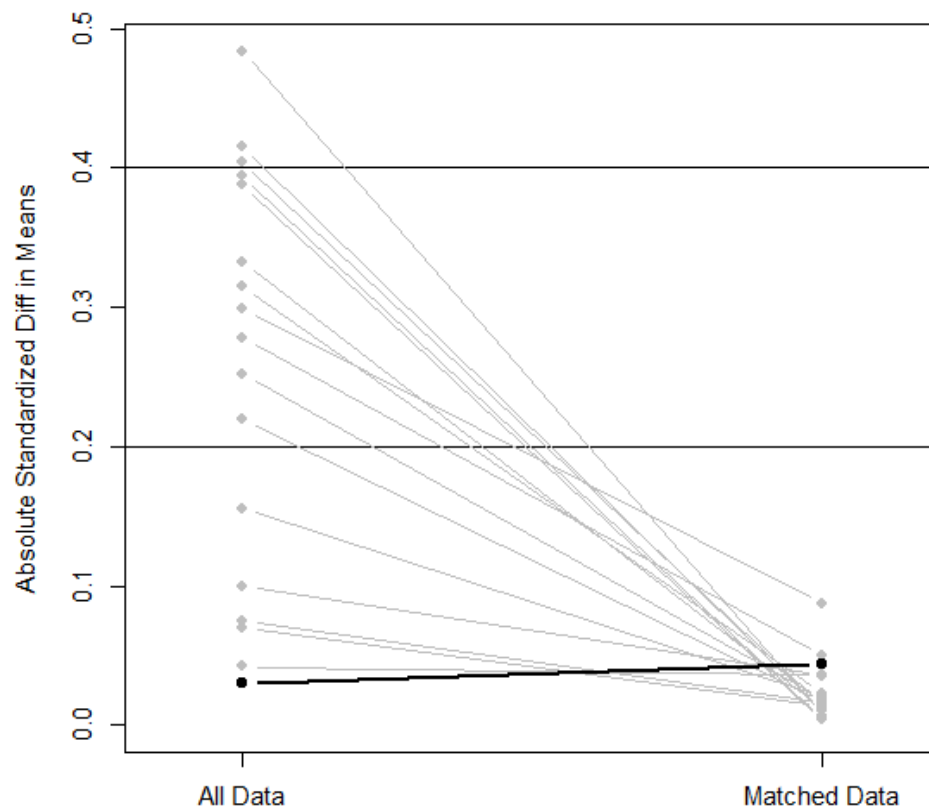

Figure 6. *Propensity score matching.*

Figures 7 and 8 provide histograms referencing standardized differences in the population density before and after matching. Before matching, the population was widely distributed. Figure 7 depicts the standardized differences between the 70,685 students in the dataset.

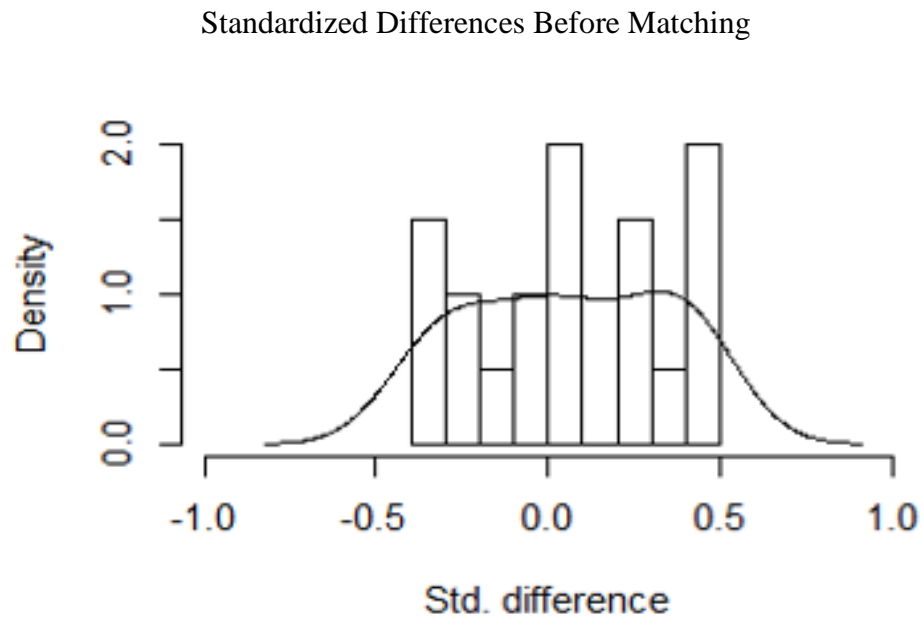Standardized Differences Before Matching

Figure 7. *Standardized differences before matching.*

After matching, the researcher used only students with similar demographic confounding variables to reduce the standardized differences in the population and to create a more balanced group for the study. Figure 8 references the standardized differences after matching with a dense population being closer to zero.

Standardized Differences After Matching
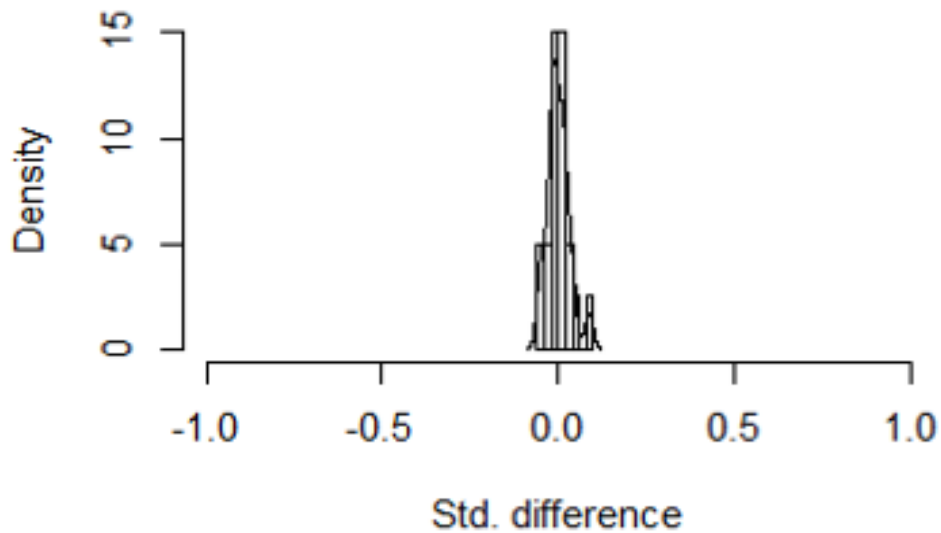
Figure 8. *Standardized differences after matching.*

Figure 9 is a dot plot with standardized mean differences with matching by covariate. The unfilled diamonds represent the total student population before matching. The covariates for the population prior to matching had a range from -0.3 to 0.4. The solid diamonds reference the matched students between the treatment and control groups by covariate (age by group, race, gender, and full-time enrollment status). The researcher found that standardized mean differences, or Cohen's d, were reduced for all covariates, and balance was created after matching with results close to zero.

Figure 9. *Standardized mean differences with matching by covariate.*

Logistic Regression

The researcher used logistic regression for each dependent variable to determine the

impact of coaching. Propensity score matching was utilized to derive balanced samples for this

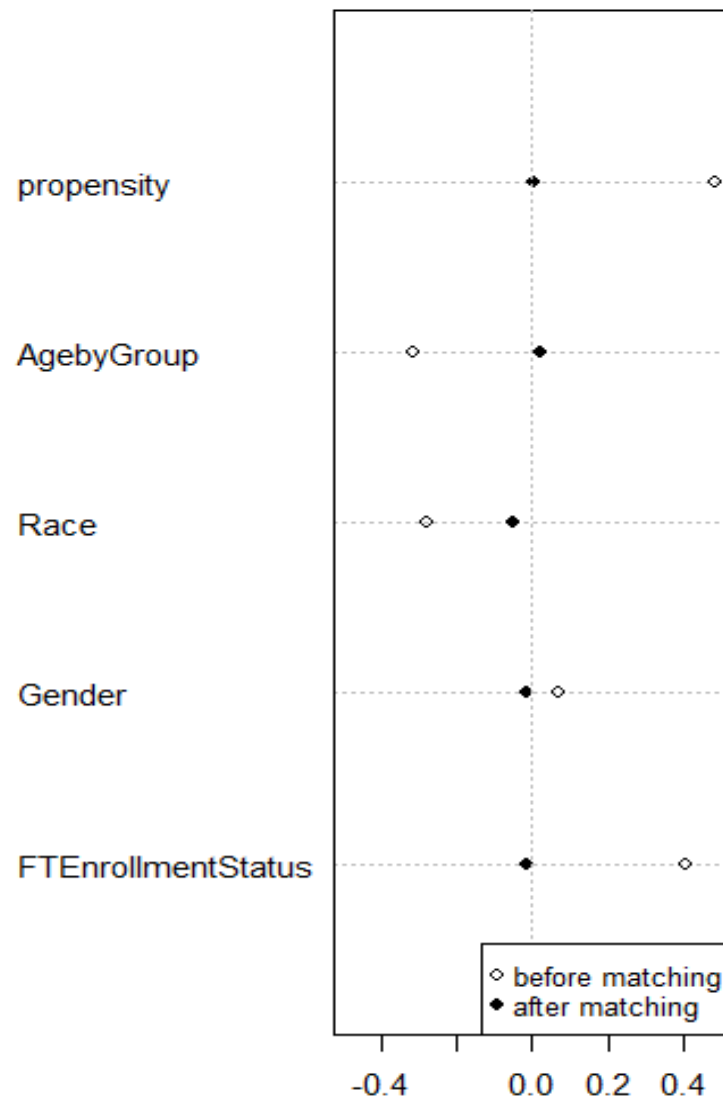study. The researcher then used logistic regression to estimate the probability that coaching was affecting retention and completion. Through its logit link function, logistic regression identified the log odds ratios that may include significant predictive value. These odds ratios indicated whether there were positive or negative impacts from coaching, where <1 or -1 represented a negative impact, 1 represented no impact, and >1 or +1 represented a positive impact from coaching. This study included two dependent variables: retention and completion. These analyses are discussed below.

Retention

The researcher utilized binary logistic regression on each outcome variable separately. Retention was entered in SPSS as the dependent variable and the independent treatment variable of coaching was entered in block 1. The treatment indicator was added as the categorical covariate with a reference category of "first." The predicted values included probabilities and group membership. The confidence interval was set at 95% (alpha level = 0.05) for the Chi-square test, and Exp(B) results, which are the odds ratios in the output.

The SPSS output for retention produced the Omnibus Tests of Model Coefficients, which is a goodness-of-fit test referenced in Table 4. This Chi-square test was statistically significant with p < .001, which indicates that this test is better than the null model, x^2 (1, 3498) – 63.35, p < .001.

Table 4

Omnibus Tests of Model Coefficients for Retention

	Chi-square	df	Sig.
Step	63.353	1	.000
Block	63.353	1	.000
Mode I	63.353	1	.000

The Model Summary in Table 5 presents pseudo r^2 models where Nagelkerke R^2 represents the percent of the variance in the dependent variable that is accounted for in the independent variable with the range being 0 to 1. The Nagelkerke R^2 was .025 or 2.5%.

Table 5

Model Summary for Retention

-2 Log Likelihood	Cox and Snell R Square	Nagelkerke R Square
4522.398	.018	.025

The Classification Table, Table 6, represents the number of observations and predictions made by the model and provides the percent of prediction the model can make for each group. The output for the dependent variable of retention reflected a classification accuracy of 63.6, meaning this model can accurately predict a student being retained 63.6% of the time.

Table 6

Classification Table for Retention

Observed		Predicted		
		Retention		Percentage Correct
		0	1	
Retention	0	2226	0	100.0
	1	1272	0	.0
Overall Percentage				63.6

The variables in the equation results indicated the impact of the independent treatment variable of coaching on the dependent variable of retention. For the coefficients, the log odds increased with an increase of the predictor variable. A positive B-value means a positive increase in retention from the treatment of coaching. Treatment had a B-value of .563, which indicated a positive relationship between coaching and retention. The p-value was less than .001, which was statistically significant.

The logistic regression Exp(B) results represent the odds ratios. Odds greater than 1 (>1) reference a positive relationship between the independent and dependent variables. The logistic regression results of 1.784 showed an increase in odds or the probability that coaching was positively affecting retention. This statistically significant result indicated that the treatment of coaching increased the chances that a student would be retained with $p < .001$ and Exp(B) = 1.784. The predicted probability of retention from coaching was 42.8%, where the control group's predicted probability of being retained was 29.9%.

Completion

The same procedure was repeated for Completion. Completion was entered as the dependent variable, and the independent variable of coaching was entered in block 1. The researcher set the confidence interval at 95% (alpha level = 0.05) for the Chi-square test and Exp(B), which are the odds ratios in the output. The output for the outcome of completion first

produced the Omnibus Tests of Model Coefficients which is a goodness-of-fit test referenced in

Table 7. This Chi-square test was statistically significant with p < .001, noting that this test was

better than the null model x^2 (1, 3498) – 184.55, p < .001.

Table 7

Omnibus Tests of Model Coefficients for Completion

	Chi-square	df	Sig.
Step	184.554	1	.000
Block	184.554	1	.000
Mode I	184.554	1	.000

The Model Summary, Table 8, presents pseudo r^2 models where Nagelkerke R^2

represents the percent of the variance in the dependent variable that is accounted for in the

independent variable with the range being 0 to 1. The Nagelkerke R^2 was .07 or 7%.

Table 8

Model Summary for Completion

-2 Log Likelihood	Cox & Snell R Square	Nagelkerke R Square
4497.373	.051	.070

Table 9 represents the number of observations and predictions made by the model and

provides the percent of prediction the model can make for each group. The output for the

dependent variable of completion reflected this model's classification accuracy of 61.1, meaning

this model can accurately predict a student completing 61.1% of the time.

Table 9

Classification Table for Completion

Observed		Predicted		
		Retention		Percent Correct
		0	1	
Completion	0	1260	870	59.2
	1	489	879	64.3
Overall Percentage				61.1

The variables in the equation results indicated the impact of the independent treatment variable of coaching on the dependent variable of completion. The researcher determined that the log odds for the coefficients decreased with any increase of the predictor variable. A negative B-value means a decrease in completion from the treatment of coaching. Treatment had a B-value of -.957, which indicated a negative relationship between coaching and completion. The p-value was less than .001, which was statistically significant.

The Exp(B) is the odds ratio. Odds equal to 1 have no relationship and odds less than 1 (<1) reference a negative relationship, whereas .381 shows no impact on the odds that coaching is affecting completion. This statistically significant result indicates that the treatment of coaching has no impact on the odds or the probability that students will complete with $p < .001$ and Exp(B) = .384. The predicted probability of completion from coaching is 28%, where the control group's predicted probability of completing is 50.3%.

Summary

In Chapter Four, the researcher described the results of the data analysis to include how propensity score matching was utilized to create a more balanced comparison group, and how logistic regression was utilized to predict the probability that retention and completion were impacting students who were coached. Chapter Five provides a summary of the findings of this

study along with the limitations of this research study and implications for further research on

student success coaching.

CHAPTER FIVE

CONCLUSIONS, IMPLICATIONS, AND RECOMMENDATIONS

The purpose of this study was to determine how student success coaching affected the retention and completion of students who participated in the (VCCS) student success coach program and received coaching services compared to those who were eligible to participate but opted out or did not participate in the program. The independent treatment variable was coaching (yes or no). The dependent variables included fall-to-fall enrollment for retention (yes or no), and certificate/degree attainment and/or transfer to a non-VCCS college for completion (yes or no).

The researcher's design controlled for variables such as full-time versus part-time enrollment, gender, race, or ethnicity (white/non-white), and select age groups (18-24, 25-34, 35-54, 55+). Students who participated in the student success coach program made up the treatment group, while those who opted out made up the control group. The researcher determined the probability that coaching was affecting student retention and/or completion.

Research Questions

The researcher examined whether indicators of retention and completion were significantly different for students who worked with student success coaches compared to those who did not work with a coach. The researcher controlled for the confounding demographic variables between the treatment and control groups using propensity score matching. Then using logistic regression, the researcher calculated the probability that coaching affected student retention and completion. The following research questions guided this study:

1. How will student success coaching affect retention?

2. How will student success coaching affect completion?

Review of the Methodology

The researcher used a quasi-experimental design to determine the probability that coaching impacted retention and completion for the treatment group. A randomized control study was not feasible for this project as data was already available. This design allowed for the controlling of variables between a treatment and control group when randomization was not available (Leedy & Ormrod, 2015). R in SPSS version 25 was used to conduct propensity score matching to create a more balanced group for the analysis. Logistic regression was then utilized by the researcher to determine the probability that coaching impacted the dependent variables of retention (enrollment from fall-to-fall or one-year), and completion (attainment of a certificate or degree, or transfer to a non-VCCS college).

Scrubbing of data allowed the researcher to remove students under the age of 18, as well as students with missing demographic data. Propensity score matching then further reduced the sample by matching each treatment group participant to one with similar confounding variables in the control group. It is important to noted that propensity score matching creates a balanced baseline of the covariates between the treatment and control group. For each treatment group student, one identical (based on similar covariates) student from the control group was matched. Each student was given a propensity score for this analysis where the only difference remaining between the two groups was the treatment effect of coaching (Eyjólfsdóttir, Baumann, Agahi, Fritzell, & Lennartsson, 2019). Only the students who had "mirror matches" where then used for the analysis.

Overview of Findings

The student success coaching program serves the at-risk population enrolled in Virginia's community colleges. Ten community colleges were actively participating in the program at the

time of this study. Success coaches at each college work with an estimated caseload of 100 to

150 students each. With two coaches at most colleges, this represents only 200 to 300 active

students being assisted at any given time. This presents many students who may have been

eligible for the program but were not served.

Before propensity score matching was conducted, the sample included more than 164,000

students, with 5,775 in the treatment group and 158,804 in the control group. Of the total

population, 19,536 completed a certificate or degree, and 37,691 transferred to a non-VCCS

college after enrollment. In other words, 57,227 students (35%) of the total population

completed a degree or certificate. The total population before propensity score matching

consisted of 100,836 females (61%) and 63,655 males (39%).

More than 100,000 students were eligible for the program between spring of 2014 and

spring of 2019, the period of this study. Of those, 1,749 students opted into the treatment group

and received coaching. The total sample for this study was 3,498 after propensity score

matching. With propensity score matching, the researcher was able to compare the 1,749

students in the treatment group to matched students in the control group with the same gender,

race, age, and enrollment status. After controlling for the confounding variables, a more

balanced control group was created for the analysis.

Using what SPSS refers to as "nearest neighbor," propensity score matching resulted in a

1:1 match. Propensity score matching allowed the researcher to match each student in the

treatment group with a similar student in the control group. After each treatment student was

assigned a match, the remaining control students were removed from the analysis.

Approximately 67,187 control students were not matched, and these students were not

considered in the analysis for this study. Data for this new sample, N = 3,498, were used in

logistic regression for each dependent variable, that is, retention and completion. These data are

summarized in Table 10.

Table 10

Retention and Completion Rates by Population

	Treatment Group	Control Group	Total Matched Population	Total Population (before matching)
Retained	43%	30%	36%	18%
Completed	28%	50%	39%	33%
N	1,749	1,749	3,498	100,332

The treatment group included 1,749 students for the period of spring of 2014 through

spring of 2019. Of those, 749 (43%) students persisted one year or were retained, whereas 523

(30%) of the control group students were retained. The results of the analysis suggest that the

probability that a student was retained were greater for those who utilized student success

coaching. The predicted probability of retention from coaching was 42.8%, where the control

group's predicted probability of being retained was 29.9%. Overall student retention increased

by a factor of 1.784 with coaching. To summarize, the first research question guiding this study

was as follows: How will student success coaching affect retention? The results suggest that

student success coaching increases the chance that students will be retained at a higher rate when

compared to their peers.

The second dependent variable in this study was completion. As previously mentioned,

the AACC charged community colleges with increasing completion rates by 50% by the year

2020 (American Association of Community Colleges, 2012, p. x). Although the AACC results

were not available at the time of this study, according to a related report on the effort, it was

noted that 39% of first-time college students in two- and four-year institutions have completed

college with a certificate or degree (American Association of Collegiate Registrars and

Admissions Officers, 2017).

When reviewing the dataset, the researcher noted there were 1,749 students in the

treatment group for the period of spring of 2014 through spring of 2019. Of those, 489 students

(28%) earned a certificate or degree or transferred to a non-VCCS college, representing the

measure of completion for this study. Out of the 1,749 matched control group students, 879

(50%) completed.

Results of the logistic regression suggest that the probability that a student would

complete a certificate or degree, or transfer, was not affected by student success coaching. The

predicted probability of completion from coaching is 28%, where the control group's predicted

probability of being retained is 50.3%. In other words, the control group students were more

likely to complete than the treatment group students. To summarize, the second research

question guiding this study was as follows: How will student success coaching affect

completion? The results suggest that student success coaching does not affect the probability

that coached students will complete at a higher rate when compared to their peers.

Findings Compared to the Literature

The literature reviewed for this study provided evidence that first-year, first-generation,

low-income and minority students have higher dropout rates compared to their peers (D'Alessio

& Banerjee, 2016; Deil-Amen & Rosenbaum, 2003; Fentress & Collopy, 2011; Gampert &

Jones, 2013). This presents an at-risk population that has increased attrition rates and can benefit

from additional assistance navigating their academic career. Unfortunately, there is a lack of

research on the impact of coaching on this population (Mitchell, et al., 2016; Swartz, et al., 2005).

Snyder, de Brey, and Dillow (2019) noted that less than 21% of public community college students earned certificates and degrees, while Mullin, Baime, and Honeyman (2015) found that 46% of community college students dropped out with over 12% still attempting to complete after six years of enrollment. Based on these statistics, it is likely that the students in this study still may be attempting to complete their credentials, with the longest enrollment of a sample participant being five years. It is expected that students in this study who enrolled in college in the fall of 2018 or fall of 2019 should still be enrolled in their degree program and would not have completion data. The researcher highly recommends this study be replicated with a longer baseline or time period exceeding six-years since the first enrollment.

There also is empirical data that supports the theory that coaching increases retention and completion (Bellman, et al., 2015; Bettinger & Baker, 2104; Parker, et al., 2011; Ryan, 2013; Tripp, 2008). Nevertheless, the results of this study reflect higher persistence or retention for the treatment group (43%) when compared to the control group (30%). If this study is replicated in the future with a data collection period greater than five years, it may reflect higher completion rates for those who were retained. The data provided for this study indicated students who enrolled in one fall semester and returned the following fall semester (one-year or fall-to-fall enrollment). While this measure provided retention for this study, it did not capture any instances of a skipped semester. If a student skipped the summer semester or dropped to one class, this data was not captured for this analysis. The raw data also did not report if a student was full-time in one semester and dropped to part-time the next semester.

Most literature found on coaching provided results regarding the impact on persistence or retention; completion was not a factor or variable in most studies. Contrary to the literature, the results of this study indicated that coaching had no impact and even possibly a negative impact on the completion of treatment students, with a higher completion rate for those in the control group (50%) compared to those in the treatment group (28%). Without a case management system and a qualitative study to research the reasons for dropping out, there will not be supportive data regarding why those students had lower completion rates.

There are several assumptions made regarding why the treatment group had lower completion rates and probability of completion. Coaches may have chosen to work with students who enrolled in higher attrition rates or harder to complete programs such as Nursing, or longer two-year or transfer programs as opposed to shorter certificates. If students transferred to another community college, they were not considered completed or a successful transfer to a four-year institution. The academic program was not captured for each student in this study. Coaches may have worked with students who needed additional developmental courses, thereby extending their estimated time to completion. Some students may have not declared majors, may have had employment conflicts, health issues, financial struggles, or personal problems. Virginia also has a large amount of military and their dependents enrolled in community colleges. If a member is relocated or transfers to another college, they are considered withdrawn and lose the ability to successfully complete in the student success coach program.

Research has also shown that students enrolled part-time have lower completion rates. While data was collected regarding enrollment status, this study combined those covariates into the propensity score. It is suggested that this same data be analyzed using the individual covariates (age, gender, race, enrollment status) to determine which groups may be negatively

affecting the completion rates and which groups are benefitting more from coaching. Another factor to consider is transfer. Many students are transferring to other colleges and universities and if this is not properly recorded in the student information system, then a student would be considered not to have completed. As a former coach in a community college, the researcher can attest that students enroll to take a class or two with no intent to complete a certificate or degree.

Rumberger (2001) analyzed why students dropped out, noting a student's financial and economic situation was a factor. Coaches may have decided to work with students who had more financial barriers. Rumberger also referenced high school GPA, minority group, performing poor academically and giving up, indifference with teachers or classmates, lack of engagement, changing schools, job obtainment, language background, immigration status, family structure, and the school or college itself (2001). Conklin (1997) performed a study on why community college students dropped out with the top five results indicating the following:

1. Work schedule conflicts

2. Bad time / inconvenient

3. Personal problems

4. Too hard / bad grades

5. Dislike instructor (p. 757).

All of the aforementioned reasons may have affected the completion of those students who participated in the student success coach program. In addition, many community college students rarely complete their degree in two-years, with several still trying to complete after six-years. This study analyzed only five-years of enrollment data and many coached students may still be pursuing their certificate or degree.

Research Limitations

Limitations for this study included the short time-period during which data were collected. Statistics were extracted from five years of retention and completion records. Considering that most community college students do not complete an associate's degree in two years, it was assumed that newer students would be less likely to have completion outcomes, especially with some studies considering six years before measuring outcomes (Mullin, et al., 2015; Snyder, et al., 2019).

The study also was limited by the number of coaches available at each college and when those coaches started assisting students. Not all 10 colleges had the student success coach program in operation for the full five years. Nine colleges had the program from fall of 2013 to spring of 2019. Coaches also only worked with 100 to 150 students. New students could not be added to the program nor served until another student left the program.

Due to a lack of a case management system, the number of coaching sessions or frequency of coaching was not recorded (Strange, 2015). Students were encouraged to meet with their coach either daily, weekly, or monthly. Some may have had only one interaction with their coach and never returned. There was no way to tell whether one hour with a coach increased retention or completion compared to weekly meetings over two years of coaching.

There also was no record of the program of enrollment or whether coaches chose to select eligible students enrolled in longer associate's degree or transfer degree programs over students with shorter programs such as certificates. With future research using this population, it would be helpful to determine which students were enrolled in shorter career and technical education programs compared to two-year degree programs.

The results of this study suggest that the effect of coaching on retention is statistically significant, in that coaching is increasing the probability of retention for this at-risk population in Virginia's community colleges. Unfortunately, the same cannot be said for completion, where the probability of completing was not found to be increased with coaching. This does not mean that coaching is not impacting student success. There are many reasons why students do not complete a certificate or degree. As noted in the limitations in this study, the research design did not include the motivation of each student nor outside factors or variables that influenced student success.

In their study, Bellman, Burgstahler, and Hinke (2015) concluded that executive functioning, student motivation, and self-esteem, variables in their study, increased with coaching, while Richman, Rademacher, and Maitland (2014) found that increasing executive functioning and self-determination reduced student barriers. Swartz, Prevatt, and Proctor (2005) noted that "…although coaching is similar to counseling in its therapeutic relationship and confidentiality, coaches do not explore serious emotional, cognitive, or behavioral problems" (p. 648). Students may have received other types of support services from other sources not accounted for in this study, such as parents, teachers, advisors, or from the department of Student Support Services.

This study was also limited by using only logistic regression to predict the probability that coaching impacted retention and completion for students who utilized coaching. While the odds ratios provided indicate a positive or negative affect on retention and completion, the study did not provide details regarding why students succeeded or failed to succeed. Other statistical methods, especially analyzing demographic variables, may reveal additional insights into which student populations benefit most from coaching.

It is important to note that many treatment group students were eliminated from the study by the researcher during the data scrubbing process, as they lacked the demographic variables needed to be analyzed in the propensity score matching. Data for several students were missing race, gender, and other variables needed for propensity score matching. The researcher was unable to use matching without all the confounding variables present. The propensity score matching process allowed the researcher to create a quasi-experimental design, closely replicating a randomized control study, where the two groups were balanced, equally matched, and compared.

Research Implications

The statistically significant results regarding the impact of coaching on retention provide additional support for student success coaching in community colleges. These empirical results add to the literature regarding coaching and its impact on at-risk community college students. Practical implications from further research with significant statistical results regarding student outcomes may lead to support for increased coaching. Increased support of coaching by students may lead to increased support of coaching by the college. Likewise, if the college recognizes increased benefits of coaching, the college may seek additional funding to support or expand coaching services. Retention and completion rates may increase with increased coaching at community colleges.

Further research recording how many interactions a coach has with each student may provide details on the number of coaching sessions needed to be impactful. In the qualitative study of Virginia's college success program, Strange (2015) reflected that "the campuses offering more regular workshops for students had better outcomes…" (p. 182), and that students who had more contact with their coaches had more success. An independent review of this data

by college may shed light on the success of each program and identify where improvements can be made.

It also would be beneficial to record the number of coaching sessions that each student receives. Richman, Rademacher, and Maitland (2014) noted that the frequency of coaching was important for student success. Research on the frequency of coaching interactions and the services rendered may improve student success coaching. Further research on which services are more impactful may help guide colleges on which services to offer more and which to eliminate, if any. Throughout the literature, coaching programs have been found to offer insightful guidance for non-academic issues and barriers outside of what normal academic advising entails.

It is interesting to note, that before the logistic regression analysis was conducted, the researcher found that the treatment group had a 43% retention rate and a 28% completion rate compared to the matched control group with a 30% retention rate and 50% completion rate, as previously referenced in Table 10, Retention and Completion Rates by Population. The logistic regression analysis indicated that the probability of retention increased with coaching, but it also affirmed with statistical significance that coaching had no impact on completion. Further research is needed on why retention rates were higher, but completion rates were lower for the coached population compared to the non-coached population. Replication of this study utilizing a new population and/or an extended period may yield different results.

As previously noted, it may also prove insightful to conduct this analysis by college. Ten Virginia community colleges were participating in student success coaching, and some colleges might have different outcomes for their students compared to the average. Strange (2015) concluded that while student success was impacted by coaching, "the outcomes are uneven across the colleges" (p. 217). Qualitative studies where researchers interview students from the

treatment group in this population might provide insight into why they failed to complete college.

Student success coaching has been implemented throughout four-year and now two-year colleges to increase academic student success. Students enroll in college for many reasons, and completion of a certificate or degree, or even transferring to a university, may not have been their intent. Some students enroll to increase their skills in a subject or may secure employment before finishing their training program and find they no longer need that credential. No matter what the end goals are of students, it is of the utmost importance to do whatever we can to support our students and help them through their educational journey.

Summary

The researcher sought to determine how student success coaching in Virginia's community colleges was impacting student retention and completion. It was found that coaching positively impacted both student retention as well as students returning to college again after one year. Increasing retention is one step closer to successful completion or transfer. However, there was no impact found on completion from coaching. Completion rates were lower for students in the treatment group, with a lower predicted probability of completing compared to the control group. While student success coaching continues as a growing trend to promote student success, further research is required to determine why the impact of coaching on student completion was lower than the control group.

Higher education institutions are implementing new methods to support students and to increase student success. Student success coaching, created around the year 2000, is still relatively new and growing. Virginia created its own student success coaching program in 2012 and it is continuing to grow and improve each year. Continued implementation of and

improvements to coaching programs may lead to increased student success and higher retention and completion rates for students. With these on-going implementation and improvement efforts, both community colleges and their students may achieve their respective end goals.

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