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The Relationship Between Academic Self-Efficacy and Academic Achievement of First-Time First-Year Students Enrolled at a Technical College

Heather Marie Hoppe
Coastal Carolina University

THE RELATIONSHIP BETWEEN ACADEMIC SELF-EFFICACY AND ACADEMIC ACHIEVEMENT OF FIRST-TIME FIRST-YEAR STUDENTS ENROLLED AT A TECHNICAL COLLEGE

by

Heather Marie Hoppe

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STATEMENT OF DISSERTATION APPROVAL

The dissertation of **Heather M. Hoppe**

has been approved by the following supervisory committee members:

Sheena Kauppila, Ph.D.	, Chair	**5/4/2022** Date Approved
Kerry Schwanz, Ph.D.	, Member	**5/4/2022** Date Approved
Melissa Batten, Ph.D.	, Member	**5/4/2022** Date Approved

and by **Kristal L. Curry, Ph.D.**
Chair of the Department of Education, Policy, Research and Evaluation

and by **Holley Tankersley, Ph.D.**

Dean of the Spadoni College of Education and Social Sciences

ABSTRACT

Student persistence, retention, and completion are continued concerns in higher education. While external influences contribute to persistence and retention, the focus of this research study was to determine the academic self-efficacy and self-regulated factors that influence the academic achievement of first-time first-year students who persist from the fall to spring semester at a Southeastern technical college. One hundred four first-time first-year students who persisted from fall 2021 to spring 2022 completed an Academic Self-Efficacy Survey. There were five significant predictors identified in the analysis. The three self-regulated learning tasks: "I can finish homework assignments by deadlines," "I can organize my schoolwork," and "I can arrange a place to study without distractions" had a significant, positive relationship with academic achievement. The self-regulated learning task, "I can plan my schoolwork," had a significant, negative relationship with academic achievement. The final significant relationship was that of the self-reported Black/African American students. Black students had a significant, negative relationship with academic achievement and a significantly lower average GPA as compared with other self-reported race/ethnicity students.

The research results provide an opportunity to engage the Southeastern technical college (SETC) in promoting student persistence and academic achievement by incorporating academic self-efficacy into many facets of the college. Understanding levels of academic self-efficacy gauged through self-regulated learning provides knowledge that can be used to retain students toward completion and meet the mission of the institution.

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CHAPTER 1

INTRODUCTION

For over 20 years, I have worked in higher education, assisting students towards meeting their academic goals. It has been disheartening to observe the low persistence, retention, and graduation rates, specifically at community and technical colleges (National Student Clearinghouse [NSCH], 2021; Smith, 2019b). Higher education researchers and professionals do not have the complete scope of what propels students to progress, and they often make decisions based on empirical data. While many factors prohibit student progression, such as lack of finances, preparedness, discipline, contentment, control of life events, and institutional resources (Costa, 2013; Therriault & Krivoshey, 2014), there are also social-cognitive factors, such as goals, outcome expectancies, and self-efficacy, that play a role in student academic achievement and progression (Chemers et al., 2001; Hackett et al., 1992; Zimmerman et al., 2017).

The basic concept of self-efficacy, the belief in one's ability to complete a task (Bandura, 1986, 1997) is not a new social-cognitive factor. Self-efficacy has been studied in areas where social cognitive theory interplays with self-regulated tasks that affect an individual's persistence (Zimmerman et al., 2017). The belief of a person's competence influences the choices they make and the actions they choose to pursue: "Individuals engage in tasks they feel competent and confident and avoid those they do not" (Pajares, 1996, p. 544). Self-efficacy's influence on task accomplishment makes it noteworthy when analyzing academic achievement, given that academic self-efficacy has been a powerful predictor of academic achievement and persistence (Chemers et al., 2001; Majer, 2009; Wigfield & Eccles, 2002; Zimmerman et al., 1992).

Student performance offers the most reliable guide to gauge self-efficacy (Wigfield & Eccles, 2002). Within higher education research, academic achievement (GPA) is one of the most important indicators of college success and persistence (Feldman & Kubota, 2015; Nakajima et al., 2012; Schunk & Pajares, 2006; Zimmerman, 2000). Majer (2009) was able to determine a significant positive relationship between levels of self-efficacy for education and academic achievement at the end of an academic year. Studies suggest high levels of self-efficacy could translate to more significant effort and result in college persistence (Ramos-Sanchez & Nichols, 2007). Bandura (1997) suggests that perception of one's efficacy is instrumental in the push to exercise control over the events that affect one's life and is correlated with an individual's level of accomplishment (Pajares, 1996; Sachitra & Bandara, 2017; Schunk, 1995). Previous findings have demonstrated that students' self-efficacy beliefs in their ability to achieve academic-related tasks explain their decisions to persist towards their degree (Bandura, 1986; Liao et al., 2014; Schunk, 1989; Zimmerman, 1985). One of the seminal higher education retention scholars, Tinto (2016) states about self-efficacy:

> When it comes to students' belief of their ability to succeed in college, a strong sense of self-efficacy promotes goal attainment, while a weak sense undermines it. Whereas people with high self-efficacy will engage more readily in a task, expend more effort on it and persist longer in its completion even when they encounter difficulties. (p. 2)

Understanding the effects academic self-efficacy can have on academic achievement and persistence can assist higher education professions to identify interventions and strategies to improve persistence, tenacity, and achievement (Chemers et al., 2001).

Problem Statement

Student persistence, retention, and completion are continued concerns in higher education. From fall 2019 to the fall 2020 semester, two-year public institutions saw a decline of 2.1% in retention rates (51.6%) compared with public four-year institutions, whose retention increased by 0.7% (76.3%) (NSCH, 2021). Two-year public institution students are 24.7% less likely to be retained and 28% less likely to graduate than four-year college and university students based on the 2019-2020 data reported to IPEDS (2021). Low academic achievement and high attrition rates in two-year public institutions (NSCH, 2021; Smith, 2019b) contradict their educational mission and purpose, which is to assist students to meet their academic goals. In is important to note that students who enroll in two-year institutions have varied academic goals, not all of which result in an earned degree. The Voluntary Framework of Accountability (VFA), which measures the full breadth of the community college mission and the diversity of students' goals, reports that "a challenge when measuring community college student outcomes is that not all students who enroll intend to earn a credential" (American Association of Community Colleges, 2019, p. 5).

In addition to declines in retention, enrollment at community and technical colleges has also been decreasing. Community and technical colleges educate low-income and underprepared students whose primary focus may be to transfer to a four-year institution, earn a two-year degree, or gain skills to enter the workforce (Stuart et al., 2014). The nationwide average population of students is 27% Hispanic, 13% Black/African American, 44% White, 57% female, and 43% male and are on average 28 years of age. They attend college part-time (65%), are first-generation college students (29%), and are single parents (15%) (American Association of Community Colleges, 2019). Their enrollment and completion are vital to be gainfully employed

and to meet the growing demands of the workforce in healthcare, personal care services, hospitality, social assistance, and manufacturing (Bureau of Labor Statistics [BLS], 2018; Gauthier, 2018).

The National Student Clearinghouse Research Center (a nonprofit and nongovernmental organization that provides educational reporting, data exchange, verification, and research services) reports that community college enrollment was down 3.2% from previous years in the fall of 2018 (Smith, 2019a). While four-year institutions experienced stable or slightly lower enrollments, two-year public institutions experienced more significant declines of 9.5% in the spring of 2021 (NSCH, 2021). The decline in enrollment implies that both new first-time (directly from high school), nontraditional (slightly older), and continuing students are not reenrolling, which makes the study of persistence and retention even more essential. In addition, a decline in total enrollment affects the financial stability of two-year public colleges in which approximately 60% of the budget is based on tuition dollars (Li & Kennedy, 2018). A loss of revenue has several implications, one of which is the ability to provide services to aid in retention.

Staggeringly low retention and enrollment rates are not the only concern community and technical colleges face as they strive to achieve their mission, meet their projected budgets, and improve the quality of life and income for the community they serve. The U.S. Bureau of Labor and Statistics reports that individuals with an associate degree have median weekly earnings of $157 more per week ($8,164 more per year) compared with those who have earned only a high school diploma (Torpey, 2021). Given the open admission of community and technical colleges, enrollment consists of a majority of racially minoritized students with low socioeconomic status. Compared with four-year institutions, community and technical colleges experience low

retention and completion rates, which affect their student populations in their ability to improve their income levels. While the cost to attend college continues to increase, the return on investment remains higher for those who earn a college degree than those who earn only a high school diploma (Abel & Dietz, 2014). The return on investment in higher education is not only equated to potential higher earnings, but can also lower the use of welfare programs, reduce crime, and yields a more engaged civil society (Blagg & Blom, 2018).

While external influences contribute to persistence and retention, the focus of this research study is to determine the academic self-efficacy and self-regulated factors that influence the academic achievement of first-time first-year community and technical college (CTC) students who persist from the fall to spring semester. Given that self-efficacy focuses on personal capabilities and forecasts the goals individuals will set for themselves (Bandura, 1997), a correlation exists between academic achievement, self-regulation, and academic self-efficacy that requires further study.

Theoretical Framework

Self-efficacy is derived from the theoretical framework of social cognitive theory (Schunk & Pajares, 2006). The social-cognitive approach emphasizes human achievement dependent upon one's behaviors, personal factors, and environmental conditions (Bandura, 1986, 1997). As a framework to study academic self-efficacy in community and technical colleges, social cognitive theory is most connected to human achievement within academia. Social cognitive theory encompasses learners who obtain information to assess their level of self-efficacy from their performance, experiences, others' influences, and physiological reactions. Learner self-efficacy beliefs influence task choice, effort, persistence, resilience, and achievement (Bandura, 1997; Schunk, 1995). Students with high levels of self-efficacy are more

apt to perform a task, work harder, persist longer when confronted with adversity, and achieve at high levels.

Self-efficacy beliefs are also related to an enhanced ability to use effective decision-making and problem-solving strategies, plan and manage one's time more effectively, anticipate more optimistic expectations, and set higher goals. This concept supports the cyclical model of self-regulation (Chemers et al., 2001). Zimmerman et al. (2017) asserted that student self-efficacy beliefs influence and are influenced by self-regulatory processes (such as goal-setting, time management, self-monitoring, and self-judgment) in the cyclical model of self-regulation (p. 313). The cyclical model of self-regulation exhibits the phases of forethought, performance, and self-reflection. In the forethought phase, self-efficacy beliefs in one's abilities take shape before the start of the performance phase of self-control, including time management. Then, through the lens of self-reflection, individuals evaluate their thinking and behavior and create beliefs in their abilities, which then leads back to the forethought phase.

The framework for this study is based on the performance phase, where self-efficacy beliefs intercede with efforts to learn motivation strategies, such as self-control. Self-control involves the use of task strategies, self-instruction, time management, and help-seeking, which are seen as malleable (Beatson et al., 2018; Moore & Schulock, 2009; Zimmerman et al., 2017). A student’s self-efficacy beliefs can affect whether a student uses learning and motivational strategies to improve performance. Researchers have shown that high achievers are more likely to use learning and motivation strategies than low achievers (Zimmerman et al., 2017). Thus, self-regulated learners are distinguished by their use of self-control strategies to improve their performance. Given the three phases of the cycle and that the self-control phase has elements that

can be influenced by interventions, it is essential to study student levels of self-efficacy and the ability to self-regulate their learning through self-control.

Purpose of the Study

The purpose of the study is to determine if academic self-efficacy, specifically self-regulated learning, is significantly related to the academic achievement of first-time first-year technical college students who persist from fall to spring semester. Students who enter a community or technical college as a pathway to transfer or gain skills for immediate work in the industry are likely to have varied levels of self-efficacy. Thompson and Verdino's (2019) study of self-efficacy in a community college found students to have average academic self-efficacy, neither low nor high, and suggests further research on self-efficacy in the vicarious experiences and verbal persuasion domains to improve student persistence and academic success.

A quantitative research approach will be used to determine the factors that are significantly related to academic achievement and how academic self-efficacy relates to academic achievement. A survey will be administered to first-time first-year students at a Southeastern technical college who persisted from fall 2021 to spring 2022. Descriptive statistics will be used to analyze demographic, control variables. A linear multiple regression analysis will be run to examine the relationship between academic self-efficacy and achievement through various self-regulated learning tasks for first-time first-year students, controlling for demographic characteristics.

Assumptions, Limitations, and Delimitations

An educational study in 2021 would not be complete if COVID-19 were not referenced. COVID-19 (Coronavirus Disease) shut down education in mid-March 2020. The effects of the

virus have yet to be thoroughly researched. However, enrollment in Community and Technical College (CTCs) decreased on average 10% for the fall 2020 semester during which 46% of individuals chose not to continue their education because of COVID or concerns of susceptibility to contract COVID (Mann, 2021). Students expressed their concerns about their abilities to perform given a year of online education and the additional family constraints due to COVID (Mann, 2021). The impact COVID has had on postsecondary education has yet to be thoroughly studied and may indirectly affect the data obtained in this research.

The delimitation of this study is the lens through which persistence and retention are studied at two-year institutions. Four-year institutional studies regarding persistence and retention far outnumber the studies on two-year institutions, which makes the identification of comparable studies difficult given the research variables (Liao et al., 2014; Marti, 2008; Nakajima et al., 2012). Two-year public institutions are open-door admission institutions to include 27% of the total higher education enrollment based on fall 2021 National Student Clearinghouse Research Center (2021) term enrollment data. The open-door admission at two-year institutions has removed many of the academic, financial, social, and geographic barriers to attain a college education, which results in a study of students from different background characteristics than those of traditional four-year institutions (Bailey et al., 2004).

Significance of the Study

After high school, two-year public institutions may be the next educational step for students who wish to pursue their education. The lower standard for admission at these institutions opens the door for students with varied educational backgrounds, such as those who left high school without a diploma or those who left high school and completed their GED (General Education Development) exam. While previous high school grade point average

(GPA), direct placement into college level course work, and first-semester college GPA have been proven predictors of academic success (Stewart et al., 2015), these indicators may not be the same for students enrolled at two-year institutions. Community and technical college students attend part-time, lack support, need financial aid, and may need course remediation. These factors adversely affect student progression (Hawley & Harris, 2005; Hseih et al., 2007; Nakajima et al., 2012; Stewart et al., 2015).

To better understand student progression, a study of students' belief in goal attainment should be assessed. The social cognitive factors that propel students can be identified to provide a lens into the internal locus of the student and insight beyond academic achievements, lack of support, or financial need. Bean and Eaton (2001) suggest that the factors affecting retention are individual and that individual psychological processes form the foundation for the establishment of retention initiatives.

Institutions of higher education work to assist students to meet their educational goals and aim to improve retention and completion rates. Nakajima et al.'s (2012) research indicates that self-efficacy is a significant predictor of student persistence in community college students. Given that self-efficacy has been proven to be malleable and can change over time (Beatson et al., 2018; Moore & Schulock, 2009; Zimmerman et al., 2017), students with identified low levels of self-efficacy could be taught how to improve self-regulated performance tasks, such as time management and self-instruction to improve self-efficacy. The results of an academic self-efficacy survey administered to students could guide college staff to apply best practices related to assist students to achieve their educational and career goals. If students are identified to have low academic self-efficacy, structured opportunities could be made available to strengthen their beliefs about their capabilities and desired level of performance to meet their educational goals

(Bandura, 1997; Zimmerman et al., 2017), resulting in persistence and academic achievement (Chemers et al., 2001; Majer, 2009; Wigfield & Eccles, 2002; Zimmerman, 1992).

Definition of Terms

Within the context of the study, the terms below are defined to provide conceptual understanding to support the premise of the study.

Self-Efficacy

Bandura (1986) defines self-efficacy as the "beliefs in one's capabilities to organize and execute the course of action to manage prospective situations" (p. 2). This study will examine self-efficacy within academic performance, which interprets prior attainment on academic tasks to formulate an individual's skill level (Schunk, 1989; Zimmerman et al., 1992).

Academic Self-Efficacy

Bandura (1997) defines perceived self-efficacy not by the number of skills a person possesses but by what they believe they can do with the skills in different circumstances. In academic settings, academic self-efficacy is defined by the individual's belief that a student can achieve educational goals (Chemers et al., 2001). Satici and Can (2016) identified academic self-efficacy as a student's personal belief in their capacity to achieve educational duties at specified levels. Thus, efficacy plays a part in human competence and contributes to what a person believes he can accomplish. To ensure specificity with academic achievement and self-efficacy, the focus of this study will be on the performance phase of Zimmerman et al.'s (2017) relation of self-efficacy beliefs to self-regulation. Specifically, the self-control strategies used within academic self-efficacy will be studied and will focus on student success within community and technical colleges.

Individuals with high levels of academic self-efficacy view complex tasks as manageable and do not give up easily. In instances where students with higher levels of academic self-efficacy are compared with those with low levels of academic self-efficacy, students with higher levels of academic self-efficacy study more and manage difficult academic tasks more effectively (Satici & Can, 2016).

First-Time First-Year (FTFY) Student

A first-time student (undergraduate) is defined by the Integrated Postsecondary Education Data System (IPEDS) as a student who has no prior postsecondary education and attends any institution for the first time at the undergraduate level (IPEDS, 2021). First-time students include those enrolled in academic or occupational programs in the fall term who attended college for the first time in the prior summer term and students who entered with advanced standing. College students with advanced placement earn college credits before they graduate high school (National Center for Education Statistics, 1986). These students are defined as dual enrollment students or those who completed CollegeBoard Advanced Placement (AP) exams and scored high enough to earn college credit.

The definition of a first-year student is no longer an 18-year-old recent high school graduate. Instead, first-year community college students tend to be, on average, 25 years old, attend part-time, and may need remediation. Their goal may not be to earn a degree but to gain additional knowledge (Hawley & Harris, 2005).

Academic Achievement

In the context of this study, academic achievement references the cumulative grade point average (GPA) earned at the end of the fall 2021 semester by first-time first-year students. High academic achievement will be defined as students who earn a 2.0 or higher cumulative grade

point average. Likewise, low academic achievement will be defined as students who earn less than a 2.0-grade point average cumulative grade point average, which would result in an academic warning status at most community and technical colleges.

Persistence and Retention

The National Student Clearinghouse (2021) defines retention as continued enrollment within the same institution from the first year's fall semester to the second year's fall semester. While the National Student Clearinghouse defines persistence as continued enrollment at any institution from the fall semester of the first year to the fall semester of the second year, this study will define persistence as enrollment from one semester to the next or fall to spring semester at the same institution.

Community and Technical College (CTC)

The Community College Research Center (CCRC) defines community colleges as two-year, public postsecondary institutions mainly funded by state and local sources (Fink & Jenkins, 2020). Community and technical colleges are defined as a combination and hybrid of transfer-oriented junior college and the vocational or technical college. Community and technical colleges are in the business to provide services to support the community's needs to help students be successful and attain knowledge toward preparation for transfer to four-year colleges and universities and to learn an occupational trade (Steinmann et al., 2004). Thus, the development of community and technical colleges meets both the community need to provide occupational and service training and the transfer opportunity to prepare students for entry into four-year colleges and universities. Technical colleges function very similarly to community colleges in that they are both typically two-year public postsecondary institutions funded by state and local sources.

The difference is that technical colleges offer more career and technical programs, such as cosmetology, culinary arts, health sciences, and skilled trades (Riskey, 2021).

Conclusion

Persistence and retention rates of college students are continued concerns for two-year public institutions since community and technical college students have the lowest completion rates among postsecondary students (NSCH, 2021). Students attend community and technical colleges to meet their educational goals but often do not persist. Although the study of academic self-efficacy of community college students is elusive and almost nonexistent (Liao et al., 2014), academic self-efficacy has proven to have an influence on persistence and academic achievement (Chemers et al., 2001; Majer, 2009; Wigfield & Eccles, 2002; Zimmerman, 1992), which warrants further study. In addition, self-efficacy has been proven to correlate strongly with students' perception of their capabilities to tackle the demands of college life (Chemers et al., 2001). Thus, it is important to study the impact of self-efficacy in relation to academic achievement of community and technical college students because outcomes could have implications for higher education professionals (Majer, 2009).

This chapter introduces the study of persistence and retention of community and technical college students and the need to further study academic self-efficacy, self-regulation, and academic achievement. The following chapter will review the relevant literature concerning self-efficacy within social cognitive theory and self-regulated learning. The literature review will expand upon self-efficacy beliefs, academic self-efficacy, and academic achievement and how they can contribute to student persistence and retention in community and technical colleges.

CHAPTER 2

LITERATURE REVIEW

Tinto (2016) stated that colleges and universities need to listen to their students, take them seriously, and be sensitive to how their perceptions of their experiences may vary based on their races, income levels, and cultural backgrounds. In this way, colleges and universities can further improve persistence and completion to address the inequalities in student outcomes. The combination of skills, traits, experiences, and practices is what contributes to college student persistence (Tinto, 2016). Higher education professionals are encouraged to understand how students' experiences shape their motivation to persist and how self-efficacy, sense of belonging, and perceived value of the curriculum influence persistence (Berkeley, 2017; Tinto, 2016).

The purpose of the study is to determine if academic self-efficacy and self-regulated learning strategies are significantly related to academic achievement of first-time first-year technical college students who persist from fall to spring semester. This quantitative study will examine student demographics and academic self-efficacy and their relationship with technical college GPA. Thus, the literature review will begin by the examination of research related to self-efficacy, the effects of self-efficacy beliefs, academic self-efficacy, and academic achievement. Social cognitive theory and Zimmerman's cyclical model of self-regulated learning are reviewed as the theoretical basis for self-efficacy and self-regulated learning. Further examination into the importance of self-regulated learning within academic self-efficacy and achievement will ensue.

The next section of the literature review will further examine the research variables to answer the questions within the study and determine if academic self-efficacy is linked academic

achievement. This will include an assessment of persistence and retention, academic achievement, and the demographics of community and technical college students. The final section will briefly address the self-efficacy measure used in this study.

Self-Efficacy

The concept of self-efficacy dates back to the 1950s, beginning with the analysis of self-concept, which is “the belief in one’s collective self-perceptions that are formed through experiences with, and interpretations of the environment” (Shavelson & Bolus, 1982). It is heavily influenced by reinforcement and evaluations by others and includes “the feelings of self-worth that accompany competency beliefs” (Schunk & Pajares, 2006, p. 3). Bandura began to define self-efficacy in the 1980s with work into the 1990s based on self-concept as “the belief in one's capabilities to organize and execute the courses of action required to manage prospective situations" (Bandura, 1986, p. 2). Thus, self-efficacy contributes to what individuals believe they are capable of accomplishing (Bandura, 1997, p. 37). For the purposes of this study, we are examining the impact of self-efficacy on students’ course of action within academia. Academic self-efficacy is defined as the “convictions for successfully performing given academic tasks at designed levels” (Bong & Skaalvik, 2003).

Bandura defines self-efficacy not by the number of skills people possess but by what they believe they can do with the skills under different circumstances. Self-efficacy beliefs are measured based on the activity and the individual's perceived competence (Bandura, 1997, p. 42). Bandura argued self-efficacy has motivational effects through the goal setting process. Self-efficacy leads to higher goals to be set and provides the foundation for human motivation, which is instrumental for the exercise of control over the events that affect one's life. Self-efficacy beliefs are correlated with an individual's level of accomplishment.

Effects of Self-Efficacy Beliefs

Since the early 1990s, researchers have studied the effects of student self-efficacy in education (Bers & Smith, 1991; Pajares, 1996; Pintrich & Garcia, 1991; Zimmerman et al., 1992). In a qualitative, narrative review study, van Dinther et al. (2010) reviewed literature in relation to factors that affect students' self-efficacy in higher education. The results of their study determined that students' self-efficacy plays a predictive and actionable role in student achievement and learning. Further, the study confirmed that self-efficacy is vital to academic performance and can be altered to have a positive impact on student progression and education.

Academic Self-Efficacy and Academic Achievement

As previously stated, Bandura (1997) defined perceived self-efficacy not by the number of skills a person possesses but by what the person believes he can do with the skills. Academic self-efficacy is a student's personal belief in their capacity to achieve educational tasks at specified levels (Satici & Can, 2016). Efficacy plays a part in human competence and contributes to what people believe they can accomplish. Individuals with high levels of academic self-efficacy view complex tasks as manageable and do not give up easily.

Academic self-efficacy is the level to which students have the confidence to perform academic activities, such as problem-solving, goal setting, or information processing, that influence effort, persistence, and perseverance (Schunk & Pajares, 2006). Students with high self-efficacy and academic self-efficacy experience less stress; this results in fewer health problems and better adjustment to higher education (Chemers et al., 2001). Self-efficacy was strongly related to "students' perceptions of their capacities to respond to the demands of college life" (Chemers et al., 2001, p. 62). Students with higher levels of self-efficacy study more and manage complex academic tasks more effectively than those with low levels of academic self-

efficacy (Satici & Can, 2016); thus, self-efficacy is related to persistence, tenacity, and achievement in educational settings.

In Phan's (2007) research on reflective thinking, learning approaches, and self-efficacy, the outcomes indicate academic self-efficacy is a factor of reflective thinking and academic performance in educational psychology. In addition, it has been found to be a strong pathway to learning approaches, reflective thinking, and academic performance. Learning methods, such as rehearsal, elaboration, and organization, influence academic performance via self-efficacy, habitual action, and understanding (Schunk, 2012). It is Bandura's (1997) theoretical belief that self-efficacy plays an essential role in human action.

Hsieh et al. (2007) examine students' retention and underachievement against students' motivation to learn. The motivation to learn was found to be a strong predictor of students' achievement. Motivation is reinforced when students believe they can succeed. Students with high levels of self-efficacy may tend to have more positive learning habits such as deeper cognitive processing, cognitive engagement, persistence when faced with difficulties, tenacity, and use of self-regulatory strategies such as time management, all of which contribute to students' college coursework success.

Robert (2018) found that once students were admitted into an associate in science nursing program, their motivation and self-efficacy levels continued to develop and increase, which led them to achieve their academic goal to become a nurse. The nursing students’ motivational processes were apparent as they persisted toward admission into their desired degree program. Student motivation continued to increase as their acceptance moved to course completion.

Students’ past experiences shape how they perceive their capacity to have some control over their environment. Self-efficacy is learned, not inherited, and is not generalizable, which

means that it applies to all tasks and situations differently. A student may feel capable in one task and not another. College students, specifically those students enrolled at community and technical colleges, may enter college confident in their abilities but may encounter challenges that weaken their belief in their self-efficacy. This is particularly true with first-year students as the demands of college increase (Tinto, 2016).

In addition, the three processes that mediate self-efficacy (cognitive, motivation, and affective) affect a college student's self-efficacy. Students with high levels of academic self-efficacy make greater use of cognitive strategies in learning, manage their time and learning environments more effectively, and monitor and regulate their efforts (Beatson et al., 2018). The relationship between non-cognitive variables (such as student perceptions) and cognitive variables (what people use to process information) controls are reversed in a study by Beatson et al. (2018) to understand how achievement influences self-efficacy. Specifically, the study was created to understand if the receipt of summative enactive mastery information in the form of a midterm grade (cognitive variable) was related to a student's sense of self efficacy (non-cognitive variable).

Beatson et al. (2018) demonstrated that enactive mastery feedback received by students in their midterm examination would positively affect their self-efficacy through three different aspects: academic success, help-seeking, and academic organization. The study demonstrated that enactive mastery feedback in the form of a midterm grade given to a class of accounting students was likely to affect students' beliefs in their ability to achieve academically in the course and alleviate the feelings of becoming stressed and overwhelmed. In addition, enactive mastery led to more confidence by students in students' ability to succeed, effectively seek help, and engage in strategies that lead to success. The authors suggested that to improve students'

sense of self-efficacy, instructors might want to use instructional approaches that maximize positive student enactive mastery experiences early in a course to build their confidence to succeed, effectively seek help, and engage in strategies that lead to success. This concept would involve faculty engagement in the classroom.

In the academic setting, students who lack academic self-efficacy are unable to perform well and are less likely to persist (Thompson & Verdino, 2019). Research about community and technical college students can expand knowledge concerning the relationship between academic self-efficacy, persistence, and academic achievement. The intent of this study is to use an assessment to determine the relationship between academic achievement and academic self-efficacy through self-regulated learning tasks. This information could be valuable for higher education professionals to assist students towards their educational goals.

Social Cognitive Theory

To understand self-efficacy, it is important to view it through social cognitive theory. Social cognitive theory is an interchange through different aspects of one's life in which personal factors shape one's thoughts, beliefs, environment, and behaviors and vice-versa (Bandura, 1986, 1997; Beatson et al., 2018; Wigfield & Eccles, 2002). Within social cognitive theory, learners obtain information to evaluate beliefs that influence an individual's task choice, effort, persistence, resilience, and achievement, which is self-efficacy (Bandura, 1986, 1997; Wigfield & Eccles, 2002). Self-efficacy is an aspect of human behavior that is malleable, which means that self-efficacy beliefs can be changed (Beatson et al., 2018; Moore et al., 2009; Zimmerman et al., 2017).

Within social cognitive theory, actions perceived as successful typically raise self-efficacy, whereas those perceived as failures lower it (Bandura, 1986, 1997). In addition,

feedback received from parents, teachers, or peers can alter confidence in abilities. Feedback focused on skill ability can directly affect skill development (Schunk & Scwartz, 1993). Individual physiological and emotional states, such as stress, anxiety, fatigue, and mood, also influence capabilities and hold a higher level of a direct effect on self-efficacy. Bandura (1997) suggests that self-efficacy development evolves in elementary school and has significant consequences for motivation and achievement later in life, such as enrollment in college.

The social cognitive approach emphasizes human achievement dependent upon one's behaviors, personal factors, and environmental conditions (Bandura, 1986, 1997). Based on a study of community college students who persisted to the second semester, multiple experiences of earned success may be necessary to maintain academic confidence (Bickerstaff et al., 2017). As a framework to study academic self-efficacy in community and technical colleges, social cognitive theory is the theory most connected to the human functions of academia. Within social cognitive theory, learners obtain information to assess their level of self-efficacy from their performance, experiences, others' influences, and physiological reactions.

Sources of Self-Efficacy

Bandura (1997) suggested that learners acquire information to assess their individual self-efficacy from four sources: enactive mastery (actual performance), vicarious (modeled) experiences, verbal (social) persuasion, and physiological indicators. The most reliable influence on self-efficacy is derived from how students interpret their performances in situations or enactive mastery, such as "I am confident that I can write essays" or "I can pass this exam." Performances are tangible indicators of students' abilities (Zimmerman et al., 2017). If performances are deemed successful, self-efficacy will increase; if performances are deemed

unsuccessful, self-efficacy will decrease. Successful performances influence achievement to propel motivation and the tenacity to learn (Schunk & DiBenedetto, 2014).

In addition, a study of university students in Turkey (Satici & Can, 2016) revealed that the individual's level of success is an important factor to increase the perception of academic self-efficacy. Individual success is an important factor to raise academic self-efficacy perceptions. Students who perceive themselves as successful will perform academically higher than students who perceive themselves as unsuccessful.

Enactive mastery experiences (e.g., passing an exam or course) provide evidence of capability. Enactive mastery experiences were the most powerful sources of a strong sense of self-efficacy for students in higher education (van Dinther et al., 2010). The more students receive confirmation of their enactive mastery, the more their self-efficacy is cultivated.

In addition, positive reinforcement or verbal persuasion from a professor can also improve an individual's level of self-efficacy (Bandura, 1997), such as "great job on your presentation." The power to see another person with whom an individual identifies as successful is vicarious learning, which influences self-efficacy. The idea is "if they can do it, I can do it" (Bandura, 1997). The physiological indicators of stress or fatigue can also affect an individual's beliefs in their ability to complete an assignment or take an exam. These elements of social cognitive theory are relevant in the study of students in higher education.

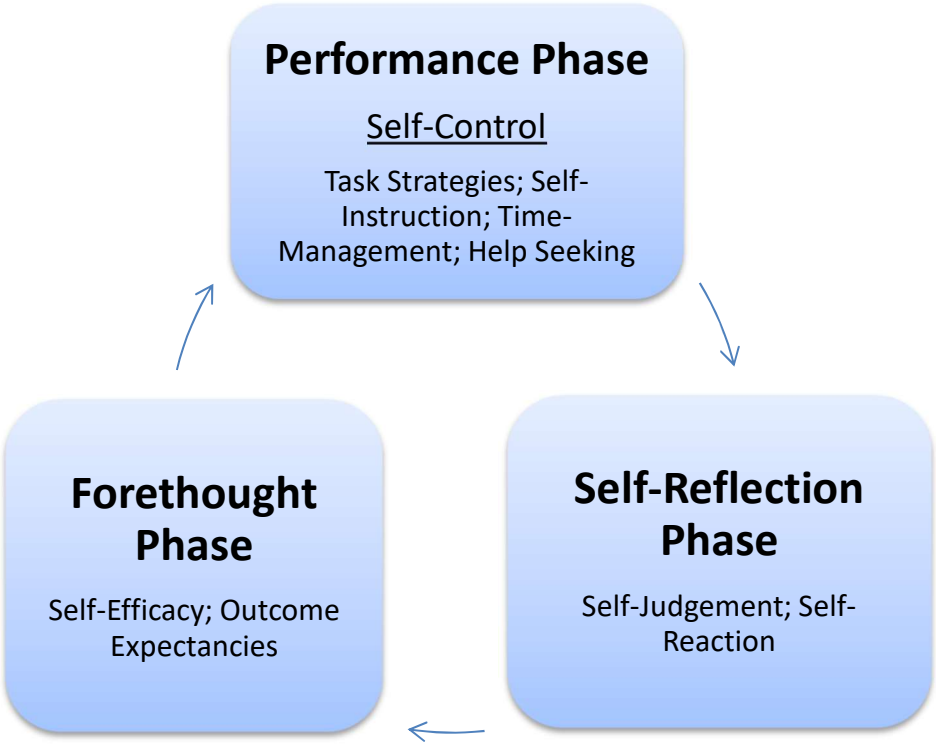
Zimmerman's Cyclical Model of Self-Regulation

Self-efficacy beliefs are also related to an enhanced ability to use effective decision-making and problem-solving strategies, plan and manage one's time more effectively, anticipate more optimistic expectations, and set higher goals (Chemers et al., 2001). This concept supports the cyclical model of self-regulation where Zimmerman et al. (2017) asserted that student self-

efficacy beliefs influence and are influenced by self-regulatory processes (p. 313). The continuous cycle from performance phase to self-reflection phase to forethought phase is presented in Figure 1.

Figure 1

Cyclical Model of Self-Regulation



Adapted from Zimmerman's cyclical model of self-regulation (2000, p. 313).

As previously stated, Zimmerman's cyclical model of self-regulation exhibits the phases of forethought, performance, and self-reflection. Self-efficacy beliefs take shape prior to the self-control phase, where time management is one element of self-control that affects self-regulated learning. The cyclical process then moves to the self-reflection phase in which, through this lens, individuals evaluate their behavior and create beliefs in their abilities (Zimmerman et al., 2017).

The framework for this study is based on the performance phase, where self-efficacy beliefs correlate with efforts to learn, and consequently with academic achievement. The learning and motivation strategies within this self-control phase involve the learners' use of task strategies, self-instruction, time management, and help-seeking concepts to improve their perceptions of their abilities to be successful. Self-control tasks are seen as malleable and imply interventions can affect the perception of one's belief in their ability to succeed (Beatson et al., 2018; Moore & Schulock, 2009; Zimmerman et al., 2017). Researchers have shown that high achievers are more likely to use learning and motivation strategies than low achievers (Zimmerman et al., 2017). Thus, self-regulated learners are distinguished by their use of self-control strategies to improve their performance.

Zimmerman et al. (2017) designed the cyclical model of self-regulation to describe the underlining processes and beliefs to measure sequential changes before, during, and after efforts to learn are repeated. It was also designed to create a standard for interventions to target identified self-regulatory dysfunctions to improve instruction and performance. The self-control phases of the self-regulation cycle imply strategies to improve success and self-reflection and are essential for the study of academic self-efficacy in higher education. The determination of academic self-efficacy in relation to self-regulated learning tasks can further aid in the knowledge of potential barriers to academic achievement.

Self-Regulation for Learning

Self-regulated learning strategies taught to community college students are essential for their success (Trawick & Corno, 1995); however, the studies on the effects of self-regulated learning and academic achievement of community college students are scarce (Liao et al., 2014). When students used self-regulatory (cognitive) strategies in current situations that mirror

strategies they had used successfully in the past, their self-efficacy in the current situation was higher (Schunk, 1991).

Pintrich and Garcia (1991) observed that students who are high in academic self-efficacy were more likely to demonstrate self-regulated learning behaviors, such as time management, planning, and help-seeking. Student self-efficacy has emerged as a critical resource that could affect self-discipline and enable students to remain focused during the completion of work or the achievement of goals. A self-regulated learner has the skills and perceived capacity to achieve academic goals by working hard and focusing on future goals (Bembenutty & Karabenick, 2004). High-achieving students displayed greater use of self-regulated learning, which was proven to be the best predictor of standardized test scores (Zimmerman & Martinez-Pons, 1986). Komarraju and Nadler's (2013) research has shown that student levels of self-efficacy and self-regulation can be manipulated and suggests students will experience success with the use of self-regulated tasks.

Persistence and Retention

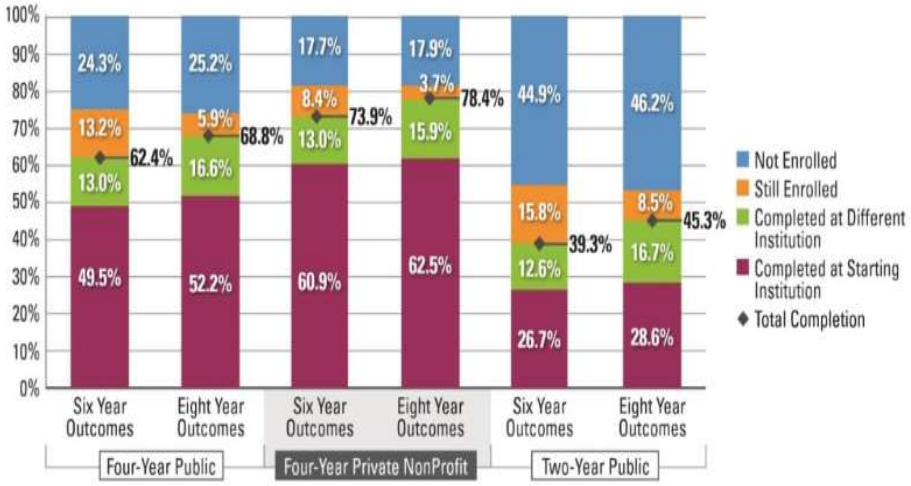
Retention research aids in the knowledge of the reasons that students do not persist toward the completion of their educational goals. There are several reasons students do not persist and stop attending college. Many of the reasons are external influences, such as financial challenges, stress, and lack of support (Hsieh et al., 2007). The challenge is to identify strategies to retain students, increase their ability to meet their educational goals, and motivate them to completion.

Figure 2 utilizes data from the National Student Clearinghouse and shows that over 46% of the students enrolled at two-year public, community, and technical colleges are still enrolled after eight years. The concern is that only 26.7% of the students completed their intended degree

or certificate at a two-year public institution within six years and that 28.6% of students completed within eight years (NSCH, 2019). The low retention and completion rates mean fewer students enrolled at two-year public institutions have completed their intended degrees and improved their earning potential.

Figure 2

Six-Year and Eight-Year Overall Outcomes by Starting Institution Type for the Fall 2010 Cohort



Adapted from the National Student Clearinghouse (2019)

The decline in retention rates for two-year institutions warrants further research in student persistence and interventions, such as self-regulated learning.

In a study by Liao et al. (2014) of urban community college students, self-regulated learning predicted intention to reenroll or persist. The intent to persist was based on the desire to improve their socioeconomic status, which is an extrinsic motivational factor. The intent to persist was not focused on learning as much as it was improving socioeconomic status. For two-year institutions that define persistence as a semester-to-semester rather than year-to-year, educational objectives and intent to reenroll have been proven to be the best indicators for

student persistence (Bers & Smith, 1991). Even though Bers and Smith's research dates back three decades, these concepts remain constant in higher education retention research.

Research suggests students who drop out at two-year institutions do so early and often within their first few semesters. Indicators to drop out need to be identified early within a student's education (Costa, 2013). Baier et al. (2016) completed a study of first-time college students, using standard regression and MANOVA to determine the influence of selected characteristics on intended persistence. They found college self-efficacy to be the strongest predictor for intentions to persist past the first college semester. The College Self-Efficacy Inventory and the College Student Mentoring scale were used to determine that mentorship and self-efficacy may have a connection leading to less self-efficacious students. These students did not approach professors for mentoring assistance. The relevance of this research supports the concept of identifying students' academic self-efficacy early in their enrollment to assist them towards persistence by providing education and research concerning self-regulated learning behaviors.

Academic Achievement

In this study, academic achievement is operationally defined as a cumulative grade point average (GPA). Within higher education research, cumulative college GPA is one of the most important indicators of college success and persistence (Feldman & Kubota, 2015; Nakajima et al., 2012; Pajares & Schunk, 2001; Zimmerman, 2000). Majer (2009) used a linear multiple regression and binary logistic regression models to determine whether self-efficacy for education and students' sociodemographic characteristics had a significant positive relationship between levels of self-efficacy for education and academic achievement (GPA) at the end of an academic year. The Beliefs in Education Success Test (BEST) was administered at the urban CTC and the

results suggest that greater academic self-efficacy influences the promotion of education to foster educational gains among a sample of diverse, first-generation college students (Majer, 2009). While the data is informing, it does not necessarily represent first-time first-year students who attend CTC.

In a study completed by Nakajima et al. (2012) at a community college in southern California, students who persisted had a higher GPA compared with those who did not persist. In fact, students who had higher GPAs were twice as likely to stay in college. While self-efficacy did not have a direct relationship with student persistence in the study, it can be assumed that since GPA significantly impacts persistence and self-efficacy correlates with GPA, then indirectly, self-efficacy can predict student persistence.

In Chemers et al.'s (2001) study of self-efficacy and optimism in first-year college students' success and adjustment, self-efficacy directly and indirectly showed powerful relationships to academic performance and adjustments. The first-year college students who entered with confidence in their ability to perform well academically did significantly better than those with less confidence. The sample in this study was of university students whose admission was contingent upon high achievement in high school, which does not mirror the type of student who attends a community and technical college.

Demographics

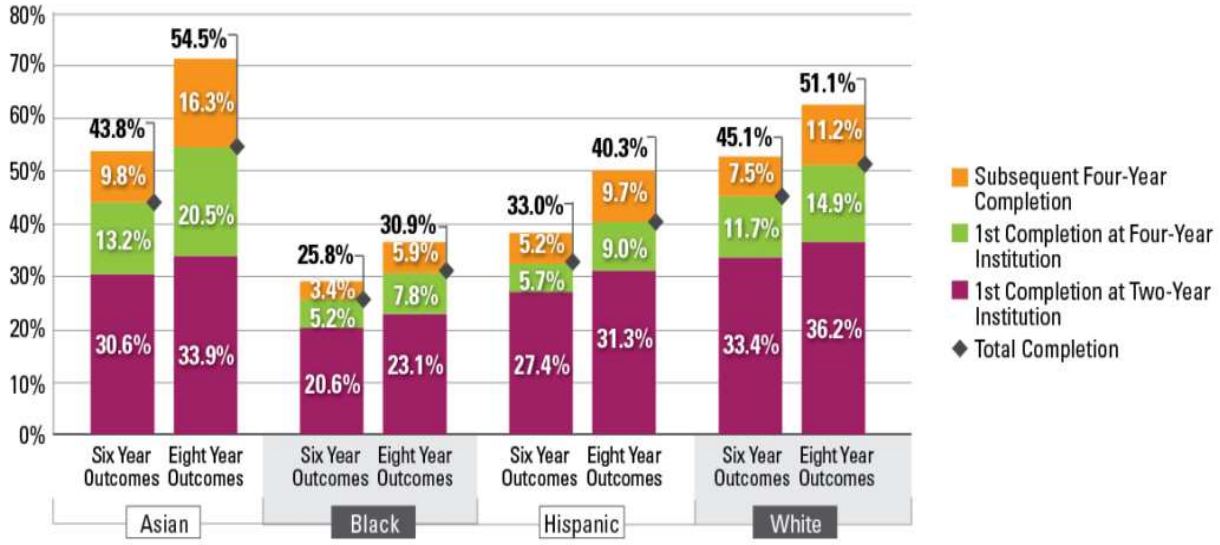
The demographic control variables of age, race/ethnicity, and gender will be examined to determine a relationship with academic achievement of first-time first-year technical college students who persist.

Study of Race/Ethnicity

The purpose of studying race and ethnicity is based on the significant gaps in completion among different races. Figure 3 represents the eight-year completion outcomes for 2010 of students who began enrollment at two-year public institutions (community and technical colleges) by race and ethnicity. The National Student Clearinghouse Research Center reported that about 40% of all community and technical college students who began their education in 2012 graduated within six years. Overall, White and Asian students complete two-year institutions at a higher rate than Black and Hispanic students. Of the total, 27.4% were Hispanic and 20.6% were Black students. An identified completion gap exists between Black, Hispanic, and low-income students compared with White and wealthier students (NSCH, 2019).

Figure 3

Six-Year and Eight-Year Outcomes for Students Who Started at Two-Year Public Institutions by Race and Ethnicity



Adapted from the National Student Clearinghouse (2019)

To further support the inclusion of demographic variables in this study, research completed by Voung et al. (2010) found a significant relationship between the results of the self-efficacy instrument used in their study and ethnicity. The College Self-Inventory study was used to determine academic self-efficacy among sophomore students at California State University. The College Self-Inventory Study was delineated into three components: SE course (self-efficacy in academic course work), SE social (self-efficacy in social interactions with faculty, counselor, and peer), and SE roommate (self-efficacy in relationships with roommates). The findings revealed that self-efficacy measured by SE course, SE social, and SE roommate had a direct impact on GPA and persistence. The self-efficacy results were studied against race and ethnicity. There was a significant finding in their study which suggested that minority students have lower perceptions of competence in course self-efficacy. Their findings support further examination into the study of race and ethnicity in relation to academic self-efficacy, specifically because many of the minority students were first-generation students, which means their parents did not complete a baccalaureate degree or higher (Higher Education Act of 1965). This subset of students will not be studied in this research but is considered important for future research implementation.

Study of Gender

In a meta-analysis of gender differences in academic self-efficacy, males were found to have a slightly higher level of academic self-efficacy than females (Huang, 2012). Females had significantly higher academic self-efficacy levels in language arts than did males. On the other hand, males had higher academic self-efficacy levels in mathematics, computer science, and social studies. Similarly, in a study of academic self-efficacy of university students in Turkey, Satici and Can (2016) found that the academic self-efficacy of male students was higher than

females. They suggest that their study was indeterminate of academic self-efficacy among males and females and encouraged researchers to further study gender in relation to academic self-efficacy, especially in relation to course content.

In a study of undergraduate students at a university in Sri Lanka, Sachitra and Bandara (2017) found female undergraduates were significantly more confident and had higher levels of self-efficacy in their ability to use self-regulatory learning strategies. Specifically, the learning strategies of writing notes, time management, asking friends for help, making sense of feedback, and paying attention during lectures were higher for females then males. What is missing in this study is the discussion of self-efficacy in relation to majors and gender as previously noted by Huang (2012). While this study and the others mentioned are important, none study community and technical college students and majors, which makes the need to study gender in relation to academic self-efficacy important.

Measures of Self-Efficacy

Self-efficacy assessments used in research have been derived from the general self-efficacy survey originally created by Bandura in 1986. The general self-efficacy scale was created to measure an individual's beliefs about their competencies in ten functional areas: intellectual, family, educational, professional, social, religious, erotic, moral, life standard, and health. A later version of the general self-efficacy scale was created by Schwarzer and Jerusalem (1995) as a derivative of Bandura's self-efficacy theory based on the socio-cognitive theory of perceived self-efficacy. The purpose of the general self-efficacy scale was to assess a general sense of perceived self-efficacy with the focus to forecast coping with daily stressors and to adapt to all kinds of stressful life events. While the use of the survey has proven that individuals with high levels of self-efficacy approach complex tasks more efficiently and are more likely to

achieve their objectives, Bandura (1997) has warned that self-efficacy should be studied within a given domain. He advocates that "efficacy beliefs should be measured in terms of particularized judgments of capability that may vary across realms of activity, under different levels of task demands within a given activity domain, and under different situational circumstances" (p. 42). Within the context of this research, the academic domain will be used to study self-efficacy of technical college students.

Academic Self-Efficacy Survey

Feldman and Kubota (2015) confirmed in their study of college students from a Northern California university psychology class that there was no correlation between general self-efficacy (General Self-Efficacy Scale) and academic self-efficacy (Academic Self-Efficacy Scale) in predicting GPA. However, general hope (Adult Hope Scale) was found to predict academic self-efficacy, and academic self-efficacy in turn predicted GPA. This supports the concept that self-efficacy should not be evaluated in a general sense but should be studied within context, such as academia (Bandura, 2006; Pajares, 1996). Zimmerman et al. (2017) caution the study of general self-efficacy within academic achievement since there are diverse ways for it to be studied. The study of academic self-efficacy within the community and technical colleges provides specificity as to the context and warrants further research. The generality of this study could lead to indirect results.

Conclusion

Early studies defined self-efficacy and the elements within social cognitive theory to affect student persistence and academic achievement (Chemers et al., 2001; Schunk & Pajares, 2006; Majer, 2009; Zimmerman et al., 2017). In the early 2000s, research was conducted on academic self-efficacy and its relation to academic achievement. However, limited research has

been conducted on the relationship between academic achievement and self-regulated learning within two-year public community and technical colleges. Majer's (2009) findings that academic self-efficacy and GPA are significantly correlated imply further research is needed to better understand relationship between self-efficacy, academic achievement, and demographic characteristics among community and technical college students. The need to determine a student's level of self-efficacy in correlation with academic success could translate to greater effort and a higher likelihood of college persistence (Ramos-Sanchez & Nicholas, 2007).

In chapter three, the methodology of the study will begin with the research questions, design, and justification for the use of the selected population. The purpose of the study will be addressed through the data collection process and instrument and plan for analysis. The chapter will conclude with an acknowledgement of limitations, ethical considerations, and positionality statement within the research study.

CHAPTER 3

METHODOLOGY

The purpose of the study was to determine if academic self-efficacy, specifically self-regulated learning, is significantly related to the academic achievement of first-time first-year technical college students who persist from fall to spring semester. A linear multiple regression analysis was run to examine the relationship between GPA earned after the first semester of enrollment and self-efficacy through various self-regulated learning tasks for first-time first-year students, controlling for demographic characteristics. The study took place at a Southeastern technical college (SETC), where self-regulated learning tasks were examined using an academic self-efficacy survey. The survey was administered to first-time first-year students who reenrolled from the fall 2021 semester to spring 2022 semester. Information concerning age, race/ethnicity, gender, and GPA were collected to examine the relationship between academic self-efficacy and academic achievement.

This chapter begins with a description of the research design and justification for the use of the population selected for the study. The data collection, instrumentation, data analysis, descriptive statistics, regression analysis, and assumption testing are outlined. Finally, the chapter concludes with limitations, an acknowledgment of ethical considerations, and positionality statement as part of the research process.

Research Questions

To better understand the relationship between academic self-efficacy and academic achievement the study answered three research questions:

- What demographic factors are related to the academic achievement of first-time first-year technical college students who persist?

A descriptive, quantitative research approach was used to describe the demographic characteristics of first-time first-year students who persisted to the spring semester at SETC to understand how academic achievement may differ among groups of students. The same approach was used to describe the demographic variables of those who did not persist. This provides context for the population and sample in this study.

- What are the self-reported levels of academic self-efficacy for first-time first-year technical students who persist?

A descriptive, quantitative research approach was used to describe the self-reported levels of academic self-efficacy of first-time first-year students who persisted from fall to spring semester. The descriptive statistics aid in identifying which self-regulated tasks are identified in the self-efficacy survey in relation to the performance phase of the cyclical model of self-regulation (Zimmerman et al., 2017).

- How does academic self-efficacy relate to academic achievement for first-time of first-time first-year students who persist from fall to spring semester?

An inferential analysis was used to determine whether academic self-efficacy predicts the academic achievement (GPA) of first-time first-year students who persist from fall to spring semester. A multiple regression analysis was run to examine the relationship between GPA earned after the first semester of enrollment and self-efficacy as operationalized through various self-regulated learning tasks for first-time first-year students, controlling for demographic characteristics.

Study Site and Participants

This study expands upon the knowledge of community and technical college students' academic self-efficacy. The participants for this research study were gathered from a Southeastern technical college (SETC). SETC is an open admission, two-year public technical college located in a small city. The institution offers 70 certificates and associate degrees and enrolled 1259 first-time first-year students in the fall 2021 semester, of which 74% were enrolled full time and 26% were enrolled part-time. The first-time first-year student population for fall 2021 was 54% female, 46% male, 63% White/Caucasian, 18% Black/African American, and 4% Hispanic. The average age of this population was 21 years.

Since persistence of first-time first-year students is the basis of the study, Table 1 displays the demographic variables of gender and race/ethnicity of first-time first-year students who enrolled in the fall 2021 semester and the sub-group who persisted to the spring 2022 semester. The data provides demographic context for the enrolled students at SETC.

The data in Table 1 indicates that White students represented 63.15 % of the population for the fall 2021 and 64.51% of the population for spring 2022. This is an overall increase in the proportion of White students compared to those who enrolled in the fall and the smaller number who persisted from fall to spring semester. On the contrary, Black students represented 17.63% of the population for fall and 15.55% of the population for spring. This is a decline in the proportion of Black students enrolled from fall to spring semester. The data indicates a need to understand the decline in the proportion of minority student enrollment from fall to spring semester.

Important to this study is that 69% of first-time first-year students at SETC persisted from fall 2021 to spring 2022 semester. The persistence is down 5% compared with fall 2019 to spring

2020 and down 2% compared with fall 2020 to spring 2021. The decline supports further research concerning first-time first-year persistence from fall to spring semester.

Data Collection and Instrumentation

The institutional student data were provided by SETC for analysis. The subgroup of first-time first-year students who persisted from fall 2021 to spring 2022 was administered a survey.

Data Collection

Utilizing my position as Registrar and with the study approved by the Coastal Carolina University and SETC Institutional Review Board, I obtained a list of first-time first-year students enrolled in the fall 2021 semester who reenrolled in spring 2022 after the end of the add/drop period, which was January 24, 2022. Table 2 is the list of each sample group. The sample (*FTFY_T*) included 1,288 first-time first-year students enrolled fall 2021. Twenty-nine students were removed from the list due to one-semester certificate completion in Electrical Lineman or Phlebotomy or an inaccurately labeled major of Undeclared. Of the remaining 1,259 first-time first-year students, 301 did not reenroll for the spring 2022 semester (*FTFY_N*). A total of 958 students (*FTFY_P*) remained with an attrition of 31% from fall 2021 to spring 2022. The final list of students was identified as the sample for the study, and these students were sent the academic self-efficacy survey to their college email address through the SETC Banner Communication Management (BCM) system (Appendix C).

Instrumentation

Many self-efficacy instruments were vetted for this study. The survey instrument used in the study was an attitude scale, which is an instrument that measures what individuals believe, perceive, or feel about themselves (Mills & Gay, 2019). The survey was entitled Academic Self-Efficacy and Self-Regulated Learning Survey (Liao et al., 2014) (Appendix B). The purposes for

employing this survey were to identify academic self-efficacy using self-regulated learning efficacy statements and obtain rapid data collection (Creswell & Creswell, 2018). The survey questions were chosen from a survey employed at an urban community college in New York. This survey measured the implications of self-efficacy and motivation on student persistence. The original survey was distributed to 310 students with similar demographic variables to those being studied in this research. The survey questions assessed self-efficacy for self-regulated learning measuring students' confidence in performing general academic skills. The survey items were measured on a five-point Likert scale with an internal consistency of $\alpha = .80$ using modified scales from Zimmerman et al. (1992) and Pintrich and De Groot (1990) (Liao et al., 2014, p. 603).

On December 16, 2021, Dr. Ann Liao, Associate Professor, Department of Communication at Buffalo State College, and lead researcher on the above-mentioned survey, emailed the questionnaire and gave me approval to use it as needed (Appendix D). The 14 questions assessing self-efficacy for self-regulated learning were used for this research study. The Academic Self-Efficacy and Self-Regulated Learning survey distributed at SETC began with informed consent (Appendix A) and acknowledgment of anonymity statement for the participants to acknowledge before beginning the study. The survey included a fillable field requesting their student ID number or name. If the student submitted only their name, their student ID number was identified from the data gathered from the college's student information system and used to obtain self-reported birthdate, gender, and race/ethnicity as defined by IPEDS. The student ID number acts as an identifier to connect demographics, major, and GPA information with the academic self-efficacy survey results. To protect anonymity, the student IDs were removed once the data were collected and merged. Students were given 14 self-regulated

learning statements, which were converted to Q1-Q14, with the response options of strongly agree (5) to strongly disagree (1) using a five-point Likert scale.

The survey results were combined with data obtained from the SETC Institutional Research Office using the student ID number. Survey responses that included name only were identified from the original sample and replaced with their student ID number. Survey responses where the name or student ID submitted could not be found in the original data were removed from the data set (n = 32). The survey responses were combined with the demographic, GPA, and student major by using the VLOOKUP formula in Microsoft Excel. Table 3 is the breakdown of the survey responses received as of the final survey date of February 22, 2022.

Survey Incentive

Ten $10 gift cards to Chick-fil-A or the Barnes and Noble Bookstore and Café were offered to incentivize survey completion. The initial email was sent on February 8, 2022, to the 958 first-time first-year students (*FTFY_P*) who reenrolled from fall 2021 to spring 2022 semesters (Appendix C). A reminder was then sent on February 11, 2022, to those who had not completed the survey. To determine the list of those who had not yet completed, a list of the student IDs who completed the initial survey were removed prior to sending the second email reminder. Third and fourth reminders were sent in a two-week timeframe focused on the quick completion of the survey and the chance to win a gift card. The survey ended on February 22, 2022, which provided a two-week response timeframe and is standard practice for online survey administration (Nulty, 2008). Those who completed the survey (*FTFY_S*) were placed into an Excel document and the random sample formula listed below was used to determine the ten winners of the gift cards.

$$= INDEX(\$A\$2{:}\$A\$105, RANK(B2, \$B\$2{:}\$B\$104)$$

The winners were notified to pick up their gift cards in the SETC Registrar's Office. On February 23, 2022, the survey results were obtained from the SETC Institutional Research Office who had created the survey in SurveyMonkey and housed the survey and responses. The responses and previously acquired demographic, major, and GPA variables were combined for data analysis using the student ID number as the key for the VLOOKUP formula in Microsoft Excel.

Data Analysis

To analyze the data, I first ran descriptive statistics to better understand the participants and dataset. I then utilized a linear multiple regression analysis to examine the relationship between self-efficacy through various self-regulated learning tasks for first-time first-year students, and GPA earned after the first semester of enrollment.

Cleaning Data

As part of best practice, the dependent and control variables were cleaned of improbable and missing values before evaluation (Sue & Griffin, 2016). In addition, survey responses with incomplete name or student ID were removed from the dataset.

Variables

The participants in the study were first-time first-year students who persisted from fall 2021 to spring 2022 semester and completed the survey (*FTFY_S*, $n = 104$).

Dependent Variables

The continuous, outcome variable is academic achievement defined as the student's GPA earned after the fall 2021 semester. GPA is the average of credit hours times the numeric grade earned. The numeric grades are as follows: A = 4.0, B = 3.0, C = 2.0, D = 1.0, F or WF = 0.0. Withdraw (W) does not affect a student's GPA. For example, if a student earned a B in a 3-credit

hour class, a C in a 4-credit hour class, and an A in a 3-credit hour class, their GPA would be 2.90.

Independent Variables

Five-point Likert scale results of the self-regulated learning tasks assessed in the student academic self-efficacy survey are predictor variables. The survey distributed to the participants is in Appendix B. The ordinal data responses in the survey ranged from 5 = "*Strongly Agree*"; 4 = "*Agree*"; 3 = "*Neither Agree nor Disagree*"; 2 = "*Disagree*"; and 1 = "*Strongly Disagree*."

Control Variables

Demographic characteristics, such as age, race/ethnicity, and gender were examined in Table 4. In addition, prior credit was examined as a binary variable labeled Prior Credit Earned (PCYES) or No Prior Credit (PCNO). Students who entered the SETC as a FTFY student and had transferred in either Advanced Placement (AP) credits earned through the CollegeBoard or courses from another institution of higher education taken as a dual enrollment student were coded as PCYES.

Descriptive Statistics

Descriptive statistics are provided for demographic characteristics of respondents. For the control variable (*Age)*, the average age of each subgroup was calculated. The distributions are provided for the control variables (*Gender, Race, Major, and PC*) for the four groups (*FTFY_T, FTFY_P, FTFY_N, FTFY_S*).

For the independent variables, descriptive statistics (count, mean, standard deviation, and range) were run for the *FTFY_S* participants. For the dependent variable (*GPA*), descriptive statistics (average) were run for the four groups (*FTFY_T, FTFY_P, FTFY_N, FTFY_S*). An independent t-test was run to determine if there were statistically significant differences between

the dependent and control variables (demographics). The formula for calculating the independent t-test when equal variances is assumed (SPSS Tutorials: Independent Samples T Test, 2022):

$$t = \frac{\bar{x}_1 - \bar{x}_2}{s_p \sqrt{\frac{1}{n_1} + \frac{1}{n_2}}}$$

with

$$S_p = \sqrt{\frac{(n_1 - 1)s_1^2 + (n_2 - 1)s_2^2}{n_1 + n_2 - 2}}$$

Mean (*M*) was used as the measure of central tendency. The mean/average is calculated by adding together all the data and then dividing by the total number of values (Field, 2018). The sample mean is denoted as $\bar{x}$, and for a sample of size *n.* The formula for calculating the mean is written as follows:

$$\bar{x} = \frac{\sum x}{n}$$

The standard deviation (*SD*) describes the shape of the distribution of scores. Standard deviation is the square root of the variance or the average amount of variability in the dataset. Large standard deviations relative to the mean suggest data are widely spread around the mean (Field, 2018, p. 27).

$$\sigma = \sqrt{\frac{\sum(x_i - \mu)^2}{N}}$$

Regression Analysis

The inferential design allows for the prediction of academic achievement (GPA) through the analysis of self-regulated tasks within the academic self-efficacy survey, including demographics as control variables. Multiple self-regulated learning tasks related to academic

self-efficacy were used as independent variables. The linear multiple regression was chosen as the statistical test because the independent and dependent variables are continuous, the scores are normally distributed, and the test yields the relationship between several predictors, independent variables and an outcome, dependent variable (Creswell & Creswell, 2018).

Assumption tests were completed to determine if correct conclusions could be drawn from the results of the analysis. To determine suitability of multiple regression analysis, the data were examined for evidence of a linear relationship, heteroscedasticity, and multicollinearity (Woolridge, 2013, p. 105). To examine for evidence of heteroskedasticity, a histogram was utilized to determine that the disturbance between the independent and dependent variables was the same across all values of the independent variables (Statistics Solutions, 2013). Below is the formula used to determine heteroskedasticity:

$$\sigma^2 = \frac{\sum(\mathcal{X} - \mu)^2}{N}$$

A variance inflation factor analysis (VIF) was used to examine for multicollinearity. A normal probability plot of the residuals was run to examine the distribution of the residuals and assess the skewness and kurtosis (*Testing assumptions of linear regression in SPSS,* 2021). The multiple coefficients of determination (R^2) were utilized as a measure of how well the model fits the sample data by reporting the proportion of variance in the dependent variable accounted for by the model. The adjusted R^2 was utilized to take into consideration the sample size and number of variables.

The simple linear regression equation listed below was used to analyze the data:

$$CUM_{GPA} = 2.539 + .518 * Q1 + -.046 * Q2 + .202 * Q3 + \ldots + -.016 * Q14$$

The standard error (SEM) was used to test whether the parameter was significantly different from 0 by dividing the parameter estimate by the standard error to obtain a t-value. The

standardized coefficient beta (β) was obtained by standardizing all the variables in the regression, including the dependent and all the independent variables. The standardized coefficient beta (β) allows for the magnitude of coefficients of all variables to be compared.

The formula for an unstandardized coefficient in simple linear regression is (Introduction to SAS, 2021):

$$b^1 = corr(y, x) * SD(y)SD(x).$$

For a standardized variable (Introduction of SAS, 2021):

$$\beta 1^{=corr(Zy,Zx)} * SD(Zy)SD(Zx).$$

The adjusted R^2 tells us that predictors are added to the model. Each predictor explains some of the variance in the *GPA* simply due to chance. The adjusted R^2 is computed using the equation:

$$1 - \big((1 - R^2(N-1)(N - k - 1)\big).$$

From this formula, the number of observations is small, and the number of predictors is large, which means there will be a much greater difference between R^2 and adjusted R^2 (because the ratio of (N – 1) / (N – k – 1) will be much greater than 1).

Limitations

The group surveyed was 958 first-time first-year students who reenrolled from the fall 2021 semester to the spring 2022 semester. A sample size of 10% of the group was recommended by Bullen (2022). In addition, the dissertation committee approved a minimum of 100 valid responses. In total, 104 valid responses were received, which is 10.9% of the sample group exceeding the recommended sample size of 10%. However, this is still a limitation of the survey because those who voluntarily complete a survey may differ in academic self-efficacy or

academic achievement from those who do not choose to complete the survey. This self-election bias in higher education has been linked to students who have both higher academic performance and motivation (Zobac et al., 2014).

The demographics of the students who responded were in accordance with the overall sample except for gender. A larger proportion of females completed the online survey than males. In an analysis comparing respondents to an online survey, Smith (2009) found that a significantly larger percentage of females returned surveys than their male counterparts (p. 10). The answer to the question "why" has not been identified. In addition, it is essential to note that the results of this study are from one technical college located in the Southeast and may not be generalizable to other community or technical colleges.

Ethical Considerations

Approval from the SETC's Institutional Research Office was issued on January 26, 2022, to conduct the survey and obtain student data to identify and communicate with the sample. The Student Exempt Review Request form was submitted to the Institutional Review Board at Coastal Carolina University on January 27, 2022. Approval to convene the study was issued on February 1, 2022. The intent of the study was not only to gain knowledge for research, but also to provide students with the definition of academic self-efficacy and present self-regulated tasks that may not have been previously considered.

Positionality Statement

I have been in the role of Registrar for over five years at SETC. One of my primary responsibilities is to follow the guidelines set forth by FERPA (Family Education and Privacy Act of 1974). FERPA is the federal law that protects the privacy of student educational records

(US Department of Education, 2021). As Registrar, I have access to a substantial portion of the institutional student data. I have used my access to obtain student demographic, persistence, and GPA information while honoring the protection and privacy of student records.

Conclusion

A quantitative research approach was used to determine if academic self-efficacy, specifically self-regulated learning, is significantly related to the academic achievement of first-time first-year technical college students who persist from fall to spring semester. A survey was administered to first-time first-year students at a Southeastern technical college who persisted from fall 2021 to spring 2022. Measures of central tendency were calculated for independent variables. Descriptive statistics were run to include count, mean, and standard deviation for control variables and standard deviation, and range were run for dependent, continuous variables. A linear multiple regression analysis was run to examine the relationship between GPA earned after the first semester of enrollment and academic self-efficacy through various self-regulated learning tasks for first-time first-year students, controlling for demographic characteristics. Chapter four will review the results of the analyses.

Table 1

Fall 2021 to Spring 2022 Demographic Data

	Fall 2021 FTFY	Spring 2022 FTFY Persistence	Difference
Headcount	1259	958	-31%
Female	683	510	-34%
Male	576	448	-29%
Race	**% Of population**	**% Of population**	**Difference**
White	63.15%	64.51%	⬆
Black /African American	17.63%	15.55%	⬇
Hispanic of any race	3.81%	3.86%	No increase/decrease
Two or more races	10.96%	11.17%	⬆

Table 2

Sample Groups

Name	Definition
FTFY_T	FTFY Students enrolled at SETC for the Fall 2021
FTFY_ P	FTFY Students who persisted from Fall 2021 to Spring 2022 at SETC
FTFY_N	FTFY Students who did not persist from Fall 2021 to Spring 2022 at SETC
FTFY_S	FTFY Students who persisted from Fall 2021 to Spring 2022 and completed the survey at SETC

Table 3

Survey Responses

Survey Response	**n**
"No" Response to statement: "I agree to take part in this research study."	3
Responses removed due to incomplete or blank information entered to statement: "Please enter your Name or Student ID Number."	32
Valid responses used in the study	104
Total Responses	**139**

Table 4

Dependent and Control Variables Defined

Variable	Definition	Responses and labels
	Dependent Variable	
GPA	GPA earned after Fall 2021	continuous variable
	Control Variables	
Age	Age as of 1/25/2022	continuous variable
Gender	Female or Male as defined by IPEDS	binary variable Female = 1 Male = 0
Race	Race/Ethnicity as defined by IPEDS	categorical variable White = 1 Black/African American = 2 Hispanic of any race = 3 Two or more races = 4 Other = 5
Major	Major grouped into degree fields	categorical variable Associate in Arts = AA = 1 Associate in Science = AS = 2 Associate in Applied Science = AAS = 3 Certificate in Applied Science = CAS = 4
PC	Prior Credits earned	binary variable Yes = 1 No = 0

Note: Other = Asian, American Indian/Alaskan Native, Non-Resident Alien, Race/Ethnicity Unknown

CHAPTER 4

RESULTS

Linear multiple regression was utilized to investigate whether self-regulated learning, controlling for demographics, major, and prior learning credit, predicted the GPA of first-time first-year students who persisted from fall 2021 to spring 2022 (*FTFY_S*). The results of the regression indicated that the model explained 24.7% of the variance and was a significant predictor of academic achievement (*GPA*) (R^2 = .247, F(24,79) = 2.411, p = .002).

There were five significant predictors identified in the analysis. The three self-regulated learning tasks: "I can finish homework assignments by deadlines" (*Q1*), "I can organize my schoolwork" (*Q7*), and "I can arrange a place to study without distractions" (*Q9*) had a significant, positive relationship with the academic achievement (*GPA*) of first-time first-year students who persisted from fall 2021 to spring 2022. The self-regulated learning task: "I can plan my schoolwork" (*Q6*) had a significant, negative relationship with the academic achievement of the *FTFY_S* subgroup. The final significant relationship was that of the self-reported Black/African American students in the *FTFY_S* subgroup. The results highlighted a significant, negative relationship with academic achievement for Black students compared with students of another race/ethnicity.

The chapter begins with a descriptive analysis of the dependent (*GPA*), independent (*Q1-Q14*), and control (*Age, Gender, Race, Major*, and *PC*) variables. Questions one and two of the research study are answered within the descriptive analysis. The regression analysis results answer to question three and complete the analysis of the variables. The chapter ends with a summary of the results.

Descriptive Analysis

A descriptive analysis of the dependent, independent, and control variables is listed below.

Dependent Variable

The dependent variable (*GPA*) is a continuous variable ranging from 0.00 – 4.00. The *GPA* of the FTFY students who persisted and completed the survey (*FTFY_S)* (*M* = 3.09, *SD* = .98) was more than the total sample of FTFY students who persisted from fall to spring semester *(FTFY_P)* (*M* = 2.69, *SD* = 1.09). The greatest difference in *GPA* was between the first-time first-year students who persisted and completed the survey (*FTFY_S*) (*M* = 3.09, *SD* = .98) and the first-time first-year students who did not persist from fall to spring semester *(FTFY_N) (M* = .96*, SD* = 1.30). Table 5 details the mean (*M*), standard deviation (*SD*), and range for the dependent variable for each group.

Control Variables

For the control variables, descriptive statistics were run for the continuous variable (*Age)*, categorical variables (*Race, Major)* and the binary variables (*Gender, PC*) of the four sample groups (*FTFY_T, FTFY_P, FTFY_N, FTFY_S*) (see Table 6). The average *Age* for the subgroup (*FTFY_S)* was 22.45 (*SD* = 9.25), which was relatively similar though slightly older than the other three subgroups. *Gender* was not as evenly distributed. For the *FTFY_S* subgroup, 77.8% were female and 22% were male. The *Race* distribution was similar between the four sample groups. The *Race* distribution for the subgroup *FTFY_S* was White (70%), Black/African American (9.62%), Hispanic of any race (2.88%), two or more races (9.62%), and other (7.69%).

Major within the *FTFY_S* subgroup closely aligned with the subgroups *FTFY_P* and *FTFY_T.* The students majoring in the Associate of Applied Science degree represented 46.15%

of the *FTFY_S* subgroup, which was closely aligned with the other three subgroups. Students majoring in the Certificate of Applied Science were the least represented within the *FTFY_S* subgroup at 3.85% and did not align with the other three subgroups. The *FTFY_S* subgroup variable *PC* was closely aligned with the other three subgroups at 5.77% (*SD* = .23) who earned prior credit and 94.23% who did not earn prior credits.

The average *GPA*s for each subgroup of the sample in Table 7 answer research question one, "What demographic factors are related to the academic achievement of first-time first-year technical college students who persist?" The first-time first-year students who persisted (*FTFY_P, n* = 958, *GPA* = 2.69) had an overall higher average *GPA* than those who did not persist (*FTFY_N*, *n* = 301, *GPA* = .96). *Female* students who persisted (*GPA* = 2.60) had a slightly lower average *GPA* than the *Male* students who persisted (*GPA* = 2.79); however, this difference was not statistically significant. *Black* students had a statistically significant lower average *GPA* (1.97) than all other races after running an independent t-test. Students enrolled in Certificate in Applied Science (*CAS*) programs had a higher average *GPA* (3.03) compared with students in other majors. Students who earned credit before enrolling had a higher *GPA* (3.15) compared with those who did not earn prior credit before enrolling (2.66).

Independent Variables

The examination of the independent, ordinal variables in Table 8 answers research question two, "What are the self-reported levels of academic self-efficacy for first-time first-year technical college students who persist?" A standard deviation (*SD*) of less than 2.0 represents measures that are closer to the true value. The *SD* values are lower than 2.0 for each of the independent variables.

The reported levels of academic self-efficacy for first-time first-year technical college students who answered the self-regulated question "I can finish homework assignments by deadlines" (M =4.38, SD = .85); "I can study when there are other interesting things to do" (M = 3.53, SD = 1.11).; "I can concentrate on school subjects" (M = 3.97, SD = .86); "I can take notes in class" (M = 4.17, SD = .96); "I can use the library to get information for class assignments" (M = 3.88, SD = 1.01); "I can plan my schoolwork" (M = 4.19, SD = .98); "I can organize my schoolwork" (M = 4.14, SD = .98); "I can remember information presented in class and textbooks" (M = 3.76, SD = .91); "I can arrange a place to study without distractions" (M = 3.91, SD = 1.01); "Even when I make a disappointing grade, I can study hard for the next exam" (M = 4.22, SD = .87); "Even if I fail a few courses, I will persist until I get my college certificate/degree" (M = 4.46, SD = .75); "I prefer class work that is challenging so I can learn new things" (M = 3.65, SD = .99); "Even when study materials are dull and uninteresting, I keep working until I finish" (M = 3.94, SD = .97); and "I can continually work at my career goal even when I get frustrated" (M = 4.28, SD = .76).

Regression Analysis

A linear regression analysis was run to answer research question three, "How does academic self-efficacy relate to academic achievement for first-time of first-time first-year students who persist from fall to spring semester?" An inferential research design was used to determine whether academic self-efficacy predicts the academic achievement (*GPA*) of first-time first-year students who persist from the fall to spring semester. A multiple regression analysis was run to examine the relationship between *GPA* earned after the first semester of enrollment and self-efficacy as operationalized through various self-regulated learning tasks for first-time first-year students, controlling for demographic characteristics. The linear regression model

summary is presented in Table 9. The R-value (.650) is the correlation between the observed and predicted values of the dependent variable. R^2 indicates that the independent and control variables are relatively good predictors of *GPA*. In this study, 24.7% of the variance in the *GPA* can be explained by the predictor variables *Q1-Q14*.

Table 10 provides the regression coefficients, standard errors, and standardized beta coefficients for each self-regulated learning task. The B values in Table 10 were used in the regression equation for predicting the dependent variable (*GPA)* from the independent variables (*Q1-Q14*). The constant *GPA* (2.539) is the predicted value of academic achievement when the variable values equal zero.

The t-value and two-tailed p-values used in testing the null hypothesis coefficient/parameter was 0. Coefficients having p-values less than alpha are statistically significant. With a 2-tailed test and alpha of 0.05, the null hypothesis was rejected for Q1, Q6, Q7, and Q9 coefficients, because all the p-values are ≤ 0.05. The coefficients for those predictors are significantly different from 0. Likewise, the β values for Q1, Q6, Q7, Q9, and *Black* students were larger than the other standardized coefficients. Self-regulated learning tasks (*Q1, Q6, Q7, Q9*) and race (*Black*) resulted in a significant relationship with GPA, which answers question three, "How does academic self-efficacy relate to academic achievement for first-time of first-time first-year students who persist from fall to spring semester?"

Q1 - "I can finish homework assignments by deadlines."

Finishing homework (*Q1*, β = .45) is a highly significant (p <.001) predictor of academic achievement. The standardized coefficient (β) can be interpreted as a one standard deviation increase in agreement to *Q1* leads to a .45 increase in *GPA* when the other variables are held constant.

Q6 - "I can plan my schoolwork."

Planning schoolwork (*Q6*, β = -.47) is a moderately significant (p = .01) predictor of academic achievement. The standardized coefficient (β) can be interpreted as a one standard deviation increase in agreement to *Q6* leads to a .47 decrease in *GPA* when the other variables are held constant.

Q7 - "I can organize my schoolwork."

Organizing schoolwork (*Q7*, β =.34) is slightly significant (p = .035) predictor of academic achievement. The standardized coefficient (β) can be interpreted as a one standard deviation increase in agreement to *Q7* leads to a .34 increase in *GPA* when the other variables are held constant.

Q9 - "I can arrange a place to study without distractions."

Studying without distractions (*Q9*, β =.25) is a slightly significant (p = .032) predictor of academic achievement. The standardized coefficient (β) can be interpreted as a one standard deviation increase in agreement to *Q9* leads to a .25 increase in *GPA* when the other variables are held constant.

Race/Ethnicity – Black/African American

Black/African American (*Black*, β = -.32) is a highly significant (p = .001) negative predictor of academic achievement. Compared with students who are not Black/African American, *Black* students are predicted to have a .32 lower *GPA*.

Summary of Regression Results

Linear multiple regression was carried out to investigate whether self-regulated learning, controlling for demographic variables, predicted academic achievement of first-time first-year students who persisted from fall 2021 to spring 2022 (*FTFY_S*). The results of the regression

model explained 24.7% of the variance and was a significant predictor of academic achievement (R^2 = .247, F(24,79) = 2.411, p = .002).

There were five significant relationships identified within the variables. The self-regulated learning tasks involving finishing homework, organizing schoolwork, and studying without distractions had a positive relationship with academic achievement. The self-regulated learning task of planning schoolwork and the self-reported race/ethnicity demographic of Black/African Americans had negative relationships with academic achievement.

In chapter five, I will address the results of the analysis through a discussion of the findings. The implications of the findings and recommendations for further action and research will be examined. The chapter will conclude with a reflection on my experience and personal observations of the study.

Table 5

Descriptive Statistics of the Dependent Variable

		FTFY_S FTFY Who Persisted from Fall 2021 to Spring 2022 and Completed the Survey (n=104)			*FTFY_P* FTFY Who Persisted from Fall 2021 to Spring 2022 (n=958)			*FTFY_N* FTFY Who Did Not Persist from Fall 2021 to Spring 2022 (n=301)			*FTFY_T* FTFY Fall 2021 Population (N=1259)		
Variable	**Definition**	***M***	***SD***	**Range**	***M***	***SD***	**Range**	***M***	***SD***	**Range**	***M***	***SD***	**Range**
GPA	Cumulative GPA earned after Fall 2021	3.09	0.98	0.00-4.00	2.69	1.09	0.00-4.00	0.96	1.30	0.00-4.00	2.28	1.36	0.00-4.00

Table 6

Demographic Characteristics of Population, Sample, and Subgroups

		FTFY_S FTFY Who Persisted from Fall 2021 to Spring 2022 and Completed the Survey (n=104)			*FTFY_P* FTFY Who Persisted from Fall 2021 to Spring 2022 (n=958)			*FTFY_N* FTFY Who Did Not Persist from Fall 2021 to Spring 2022 (n=301)			*FTFY_T* FTFY Fall 2021 Population (N=1259)		
Variable	**Label**	***M* or %**	***SD***	**Range**	***M* or %**	***SD***	**Range**	***M* or %**	***SD***	**Range**	***M* or %**	***SD***	**Range**
Age		22.45	9.25	17-68	20.72	6.21	16-68	21.97	7.38	16-69	21.02	6.52	16-69
Gender	Female	77.88%			53.24%			57.48%			54.25%		
	Male	22.12%			46.76%			42.52%			45.75%		
Race	White	70.19%			64.51%			58.80%			63.15%		
	Black/African American	9.62%			15.55%			24.25%			17.63%		
	Hispanic of any race	2.88%			3.86%			3.65%			3.81%		
	Two or more races	9.62%			11.17%			10.30%			10.96%		
	Other	7.69%			4.91%			2.99%			4.45%		
Major	Associate in Arts	12.50%			11.48%			8.64%			10.80%		
	Associate in Science	37.50%			31.94%			34.88%			32.64%		
	Associate in Applied Science	46.15%			43.01%			39.87%			38.76%		
	Certificate in Applied Science	3.85%			13.57%			16.61%			13.82%		
Prior Credit	Yes	5.77%			5.32%			8.31%			6.04%		
	No	94.23%			94.68%			91.69%			93.96%		

Table 7

Average GPA

		FTFY_S FTFY Who Persisted from Fall 2021 to Spring 2022 and Completed the Survey (n=104)	*FTFY_P* FTFY Who Persisted from Fall 2021 to Spring 2022 (n=958)	*FTFY_N* FTFY Who Did Not Persist from Fall 2021 to Spring 2022 (n=301)	*FTFY_T* FTFY Fall 2021 Population (N=1259)
Variable	**Label**	***Mean***	***Mean***	***Mean***	***Mean***
Cumulative GPA		3.09	2.69	.96	2.28
Gender	Female	3.09	2.60	1.00	2.19
	Male	3.10	2.79	0.91	2.37
Race	White	3.15	2.86	1.15	2.48
	Black/African American	2.16	1.97	0.57	1.51
	Hispanic of any race	3.41	2.58	1.21	2.68
	Two or more races	3.12	2.60	0.56	2.14
	Other	3.53	2.97	1.48	2.73
Major	Associate in Arts	3.11	2.67	1.12	2.38
	Associate in Science	3.00	2.58	0.70	2.10
	Associate in Applied Science	3.13	2.66	0.99	2.29
	Certificate in Applied Science	3.54	3.03	1.50	2.58
PC	Yes	3.28	3.15	1.38	2.57
	No	3.08	2.66	0.92	2.26

Note: Other = Asian, American Indian/Alaskan Native, Non-Resident Alien, Race/Ethnicity Unknown

Table 8

Academic Self-Efficacy of FTFY Students who Persisted from Fall 2021 to Spring 2022

FTFY_S = FTFY Who Persisted from Fall 2021 to Spring 2022 and Completed the Survey (n=104)			
Independent Variables		*M*	*SD*
Q1	I can finish homework assignments by deadlines.	4.38	0.85
Q2	I can study when there are other interesting things to do.	3.53	1.11
Q3	I can concentrate on school subjects.	3.97	0.86
Q4	I can take notes in class.	4.17	0.96
Q5	I can use the library to get information for class assignments.	3.88	1.01
Q6	I can plan my schoolwork.	4.19	0.98
Q7	I can organize my schoolwork.	4.14	0.98
Q8	I can remember information presented in class and textbooks.	3.76	0.91
Q9	I can arrange a place to study without distractions.	3.91	1.01
Q10	Even when I make a disappointing grade, I can study hard for the next exam.	4.22	0.87
Q11	Even if I fail a few courses, I will persist until I get my college certificate/degree.	4.46	0.75
Q12	I prefer class work that is challenging so I can learn new things.	3.65	0.99
Q13	Even when study materials are dull and uninteresting, I keep working until I finish.	3.94	0.97
Q14	I can continually work at my career goal even when I get frustrated.	4.28	0.76

Table 9

Linear Regression Model Summary

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.650[a]	.423	.247	.85235

a. Predictors: (Constant), Prior Credit, Q13, Hispanic or Latino, Certificate in Applied Science, Black/African American, Associate in Arts, Two or more races, AGE, Q4, Male, Other, Q5, Q1, Q9, Associate in Science, Q14, Q7, Q8, Q2, Q12, Q11, Q3, Q10, Q6

Table 10

Linear Regression Coefficients Table

Model	Unstandardized Coefficients		Standardized Coefficients Beta (β)
	B	Std. Error	
(Constant)	2.54	.79	T
Q1: Finish Homework	.52	.15	.45***
Q2: Study when Other Things to Do	-.05	.12	-.05
Q3: Concentrate	.20	.16	.18
Q4: Take Notes	-.06	.11	-.06
Q5: Use Library	-.17	.11	-.18
Q6: Plan Schoolwork	-.47	.19	-.47**
Q7: Organize Schoolwork	.34	.16	.34*
Q8: Remember Information	-.01	.14	-.01
Q9: Study w/out Distraction	.25	.11	.25*
Q10: Study Hard if Bad Grade	-.20	.17	-.18
Q11: Persist to Get Degree	-.12	.19	-.09
Q12: Challenging Class Work	-.23	.13	-.23
Q13: Keep Working until Finished	.21	.13	.21
Q14: Continually Work at Goals	-.012	.16	-.01
Age	.00	.01	.03
Black/African American	-1.05	.31	-.32***
Hispanic or Latino	.40	.56	.07
Two or more races	-.34	.31	-.10
Other	.36	.36	.10
Male	.12	.27	.05
Associate in Arts	-.09	.30	-.03
Associate in Science	-.22	.22	-.11
Certificate in Applied Science	.07	.49	.01
No Prior Credit	-.26	.38	-.06

a. Dependent Variable: *GPA*

*p<.05. **p<.01. ***p<.001

CHAPTER 5

DISCUSSION

Low academic achievement and high attrition rates in two-year public institutions (NSCH, 2021; Smith, 2019b) contradict the educational mission and purpose of these colleges, which is to assist students to meet their academic goals. Community and technical colleges, such as SETC, educate low-income and underprepared students whose primary focus may be to transfer to a four-year institution, earn a two-year degree, or gain skills to enter the workforce (Stuart et al., 2014).

While external influences, such as lack of finances, preparedness, discipline, contentment, control of life events, and institutional resources contribute to persistence and retention (Costa, 2013; Therriault & Krivoshey, 2014), there are also social-cognitive factors, such as goals, outcome expectancies, and self-efficacy, that play a role in student academic achievement and progression (Chemers et al., 2001; Hackett et al., 1992; Zimmerman et al., 2017). The influence of self-efficacy on task accomplishment makes it noteworthy in the analysis of academic achievement given that academic self-efficacy has been a powerful predictor of academic achievement and persistence (Chemers et al., 2001; Majer, 2009; Wigfield & Eccles, 2002; Zimmerman et al., 1992). Studies suggest high levels of self-efficacy could translate to more significant effort and result in college persistence (Ramos-Sanchez & Nicholas, 2007).

The focus of this study was to determine the academic self-efficacy and self-regulated factors that influence the academic achievement of first-time first-year community and technical college (CTC) students who persist from the fall to spring semester. Given that self-efficacy focuses on personal capabilities and forecasts the goals individuals will set for themselves

(Bandura, 1997), self-regulated learning tasks of first-time first-year students at the SETC were identified as significant predictors of academic achievement.

Interpretation of Findings

The results of the linear multiple regression conducted in this study indicate that academic self-efficacy is a significant predictor of academic achievement. This coincides with other research in which academic self-efficacy has been proven to be a powerful predictor of academic achievement and persistence (Chemers et al., 2001; Majer, 2009; Nakajima et al., 2012; Wigfield & Eccles, 2002; Zimmerman et al., 1992). Given that self-efficacy has been proven to be malleable (Beatson et al., 2018; Moore et al., 2009; Zimmerman et al., 2017), the determination of a student's level of academic self-efficacy could provide insight into the degree institutions need to intervene to ensure academic success and persistence.

Three research questions were examined based on a sample of first-time first-year students who persisted from fall 2021 to spring 2022 at an SETC. The interpretation of the findings for each question includes the results and relevance to the relationship between academic self-efficacy and academic achievement.

Demographic Factors Related to Academic Achievement

The first research question provides context to the sample and subgroups within the sample: “What demographic factors are related to the academic achievement of first-time first-year technical college students who persist?” Academic achievement was measured by calculating the average GPA for each subgroup. First-time first-year students who persisted and completed the survey had the highest GPA (n = 104, GPA = 3.09) of all subgroups within the sample.

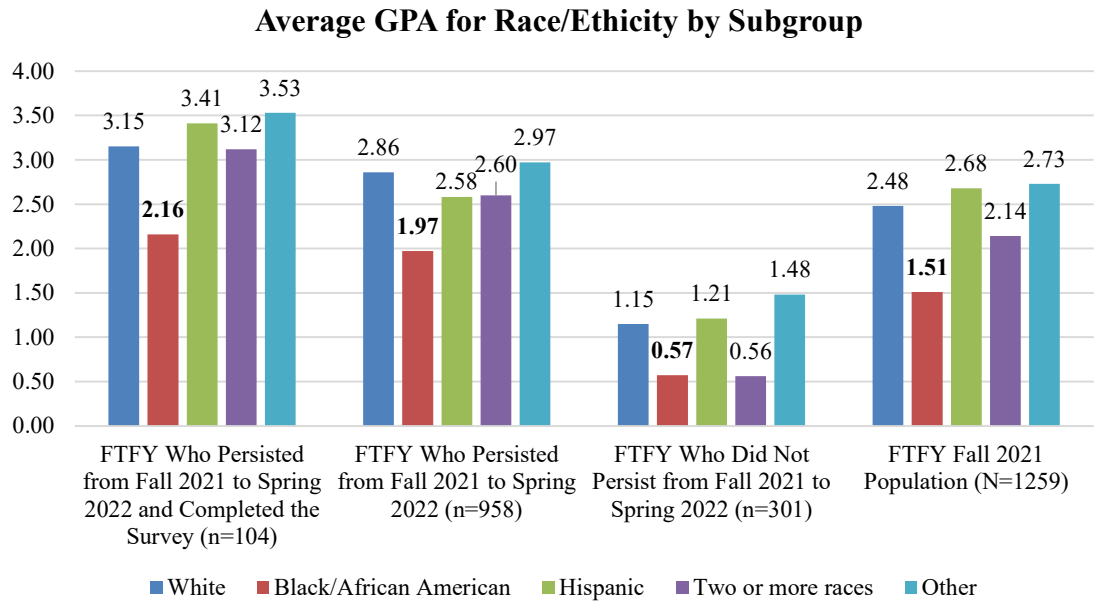
Female students who persisted had a slightly lower GPA (2.60) than male students who persisted (2.79). This is contradictory to many studies where males earned lower GPAs and fewer credit hours than female students (Mintz, 2019). In a study of gender differences in self-regulated learning of developmental community college students, Ray et al. (2003) found females outperformed males in both final grades and GPA. Conger and Long (2010) conducted a study of four-year students' first-semester persistence, credit hours earned, and GPA. Male students fell behind female students in terms of lower earned credit hours and GPA. Their research is parallel to that of high school students where females earn higher GPAs than male students (Buddin, 2014).

Since females represented 78% of those who persisted and completed the academic self-efficacy survey, those that responded could have skewed the average GPA lower than other females at the institution. Since there is very little research concerning community and technical college student persistence and differences in GPA by gender, further research may be needed to understand the gap in academic achievement at SETC.

Compared with all other races, Black/African American students had a statistically significant lower GPA on average. Figure 4 highlights the average GPA for the study population and sample subgroups. Black/African American students had the lowest average GPA of all subgroups. This is consistent with high school and postsecondary research concerning student GPA and race/ethnicity. In the Nation's Report Card (2009), Black high school graduates were reported to have the lowest GPA as compared with all other races from 1990-2009.

Figure 4

Average GPA by Race/Ethnicity



Note: Other = Asian, American Indian/Alaskan Native, Non-Resident Alien, Race/Ethnicity Unknown

While the results of this study align with national data, the gap in academic achievement by race/ethnicity is an institutional and national concern. Further research is needed to determine if academic self-efficacy and academic achievement of Black students can aid in reducing the gap and provide insight into potential interventions.

Students enrolled in Certificate in Applied Science (CAS) programs within each subgroup had a higher GPA compared with students in the Associate in Science, Associate in Arts, and Associate in Applied Science majors. However, the difference in GPA was not statistically significant. Programs within the CAS degree are short-term, lasting one year or less, and provide direct entry into the workforce. Students who choose these programs have made a career choice that has a smaller investment and requires less coursework and, in some cases,

fewer general education courses and more career courses. These factors could lead to a higher GPA.

Students who earned prior credit before enrolling at SETC (either through AP exams or the transfer of postsecondary courses) earned a higher average GPA (3.15) than students who did not earn credits before enrolling (2.66). However, the difference in GPA was not statistically significant. While the number of students in each of the subgroups who earn, prior credit is low (< 8.5%), higher academic achievement could be attributed to greater high school achievement. Students who enrolled in advanced placement courses in high school or took postsecondary courses while in high school must meet a higher academic standard. This could explain why students with prior credits earned a higher GPA as compared to those who did not have prior credits.

Overall, in answer to the first research question of "What demographic factors are related to the academic achievement of first-time first-year technical college students who persist?", the results indicate White students, those enrolled in Certificate in Applied Science programs, and those with earned prior learning credit have higher average GPAs.

Levels of Academic-Self Efficacy

Zimmerman's cyclical model of self-regulation exhibits the phases of forethought, performance, and self-reflection. Within the performance phase of the cyclical model of self-regulation, students execute a task while monitoring their progress and use several self-control strategies to remain cognitively engaged and motivated to finish the task (Zimmerman, 2000). The cyclical process then moves to the self-reflection phase in which individuals evaluate their behavior and create beliefs in their abilities (Zimmerman et al., 2017). The model was designed to create a standard for interventions that target identified self-regulatory dysfunctions to

improve instruction and performance. The self-control phases of the self-regulation cycle imply strategies to improve success and self-reflection are essential for the study of academic self-efficacy in higher education. The determination of academic self-efficacy in relation to self-regulated learning tasks can increase knowledge of potential barriers to academic achievement.

Pintrich and Garcia (1991) observed that students who had high academic self-efficacy were more likely to demonstrate self-regulated learning behaviors, such as time management, planning, and help-seeking. Student self-efficacy has emerged as a critical factor that could affect self-discipline and enable students to remain focused during the completion of work or the achievement of goals. A self-regulated learner has the skills and perceived capacity to achieve academic goals by working hard and focusing on future goals (Bembenutty & Karabenick, 2004). Komarraju and Nadler's (2013) research has shown that student levels of self-efficacy and self-regulation can be manipulated and suggests students will experience success with the use of self-regulated tasks.

The academic self-efficacy survey utilized in this research was aligned with the self-reflection phase of Zimmerman's cyclical model of self-regulation framework. The results of the survey analysis answer the second question: "What are the self-reported levels of academic self-efficacy for first-time first-year technical college students who persist?" The mean scores of the survey items ranged from 3.53 (I can study when there are other interesting things to do.) to 4.46 (Even if I fail a few courses, I will persist until I get my college certificate/degree.). The lowest scoring response is a self-regulated task that is the most difficult for an institution of higher education to provide interventions. For students to "study when there are other interesting things to do" would require an internal review of students' level of personal self-control.

The highest mean score focused on persistence ("Even if I fail a few courses, I will persist until I get my college certificate/degree"). Students who completed the survey persisted from the fall to spring semester. Academic resilience is the ability to compete and be successful when faced with adversity, such as poverty or abuse (Beri & Kumar, 2018). Predictors of academic resilience are self-efficacy, control, planning, low anxiety, and persistence (Martin & Marsh, 2006). Students who persist demonstrate academic resilience. It can then be assumed that the mean score for this item would have been lower if the survey had been given to students who did not persist from the fall to spring semester.

Academic-Self Efficacy in Relation to Academic Achievement

Given that the performance phase of the model has self-control elements that can be influenced by interventions, a survey was sent to assess the academic self-efficacy of FTFY students who persisted. To answer question three of the study, "How does academic self-efficacy relate to academic achievement for first-time of first-time first-year students who persist from fall to spring semester?", a linear multiple regression controlling for demographics was carried out. The results of the regression model explained 24.7% of the variance and was a significant predictor of academic achievement (R^2 = .247, F(24,79) = 2.411, p = .002). The independent and control variables identified as significant predictors of academic achievement are described below.

Self-Regulated Learning Independent Variables

Four self-regulated learning tasks were identified as significant predictors of academic achievement. Three of them, finishing homework assignments by deadlines (*Q1*, β = .45), organizing schoolwork (*Q7*, β =.34), and arranging for a place to study without distractions (*Q9*,

β =.25) were positive predictors of academic achievement. These are malleable tasks that can be taught to students to improve their academic achievement (Mahlberg, 2015).

Self-regulated learners approach learning in a way that leads to academic achievement by assessing their performance and modifying future performance using regulatory strategies (Mahlberg, 2015). Mahlberg studied self-assessment where active modification of self-regulation was used in the classroom. The first- and second-year community college students in the study were retained at a higher percentage, enrolled in more credits in the future, and were more academically successful (Mahlberg, 2015).

The use of self-assessment leading to improved self-regulation provides a strategy to improve persistence and academic achievement at postsecondary institutions. The three significant positive predictors of academic achievement in this study could be assessed at the beginning of each course and then reintroduced throughout the course. Faculty need to support student academic achievement by understanding and learning ways to support and encourage self-regulated tasks to improve academic self-efficacy.

The fourth self-regulated learning task of planning my schoolwork (*Q6*, β = -.47) was a negative predictor of academic achievement. This means that as students' reported level of self-efficacy for this learning task increased, their GPA decreased. Students who indicated they could plan their schoolwork had a .47 lower GPA. These results suggest an inflated understanding of the self-regulated task of "planning my schoolwork." There is a disconnect between what is expected and what occurs when students plan their schoolwork to improve academic achievement. In the self-reflection phase of Zimmerman's Self-Regulated Learning Cycle (2000), students self-evaluate their regulatory tasks, such as "planning my schoolwork." Reactive students tend to assess their competencies spontaneously and inaccurately, however, Zimmerman

et al. (2017) ascertain students can be taught to assess their performance more effectively, which could lead to intervention receptivity.

The results indicate a need for further intervention by advisors, instructors, and student success centers to provide self-assessment and self-evaluation resources and opportunities to prepare students to better assess their performance. Schunk (1996) suggests systematic efforts to incorporate self-evaluation into courses can result in enhanced perceptions of self-efficacy and improved academic skills.

Race/Ethnicity

Demographics were used as control variables in the linear multiple regression. The race/ethnicity variable, Black/African American (*Black*, $\beta = -.32$) was identified as a significant, negative predictor of academic achievement. Black students were predicted to have a .32 lower GPA compared with other students when holding other variables constant. The results confirm the previous research, which indicated that Black students at community and technical colleges progress and complete at lower rates than other racial groups (California Community Colleges Black and African American Advisory Panel, 2020). According to the National Student Clearinghouse Research Center (2019), only 20.6% of Black students complete within six years. The overall significantly lower average GPA of Black students contributes to the completion gap that exists among Black, Hispanic, and low-income students compared with White and wealthier students (NSCH, 2019).

Implications and Recommendations

Understanding the effects academic self-efficacy has on academic achievement and persistence can assist postsecondary institutions in identifying interventions and strategies to improve persistence, tenacity, and achievement (Chemers et al., 2001). Majer (2009) suggests

"researchers should consider using self-efficacy for education as an outcome measure for academic interventions" (p. 249). A systematic approach should be used to develop programs that address academic self-efficacy and identify students in need of interventions. Integration of self-regulatory practices (e.g., task strategies, self-instruction, time-management, and help-seeking skills) within advising and the classroom could improve academic self-efficacy and academic achievement. Recommendations for further research are incorporated throughout the implications for improving academic self-efficacy through self-regulated learning.

Understanding Students' Self-Efficacy and Academic Achievement

The focus of this study was on first-time first-year students who persisted. However, the identification and examination of students who do not persist and, specifically, Black/African American students could improve persistence and academic achievement.

Students Who Do Not Persist

Student persistence, retention, and completion are continued concerns in higher education. Students at two-year public institutions are 24.7% less likely to be retained and 28% less likely to graduate than students at four-year colleges and universities based on the 2019-2020 data reported to IPEDS (2021). Fong et al. (2018) suggest that further investigation is needed to understand the factors that unlock success in the community and technical colleges for those who do not persist. First-time first-year students who did not persist had a lower GPA (n = 301, GPA = .96) than those who persisted (n = 958, GPA = 2.69). A low GPA could be mean that the student withdrew from courses or college or performed poorly. A total withdrawal from the college would equal a 0.00 GPA because neither a GPA nor credits had been earned.

Nakajima et al. (2012) reported that GPA was the strongest predicting variable for student persistence. The research indicated that students with higher cumulative GPAs were

twice as likely to stay in school. Students who performed poorly may have chosen not to continue their education for several reasons. Administering surveys to students who withdraw could assist the institution in gaining valuable information about why students leave. In addition, it would be important to reach out to those who did not persist to identify the self-regulatory factors that may have significantly affected progression. A proactive approach would be to require an academic self-efficacy survey to be completed before first-semester enrollment. Kahn and Nauta (2001) suggested that obtaining an understanding of students' social-cognitive factors, such as self-efficacy, before enrollment to aid in supporting interventions as students begin and progress through their academic careers. Further research is needed to understand the academic achievement of those who do not persist and their levels of self-efficacy.

Black/African American Students

The identification of Black students' academic self-efficacy and persistence is especially important given the results of this study. The results confirm the previous research, which indicated that Black students at community and technical colleges progress and complete at lower rates than other racial groups (California Community Colleges Black and African American Advisory Panel, 2020). Strategies that build a student's belief in the importance of education may do more to increase academic self-efficacy among African American youth (Jonson-Reid et al., 2005). Understanding why Black student GPAs are significantly lower than other races/ethnicities could strengthen educational practices that develop self-efficacy.

In a study of whether self-efficacy differed across levels of academic integration, first-time first-year Black males at a community college were more likely to meet with faculty and academic advisors when their level of math self-efficacy mean scores were high (Wood et al., 2015). Interactions and relationships with faculty and advisors are essential to student persistence

and success (Bean & Eaton, 2001). Proactive measures by faculty, such as requiring attendance during office hours or encouraging one-on-one meetings, will ensure a positive integration into the college setting (Wood et al., 2015). In addition, meeting with an advisor was associated with greater self-efficacy for Black students (Wood et al., 2015).

Given that Black students at the SETC had significantly lower average GPAs than other race/ethnicities, the need for strategies to improve academic achievement and persistence among the African American population is vital. Encouraging faculty and advisors to reach out to their advisees and require one-on-one advising meetings could support increased academic self-efficacy and academic achievement among Black students.

Student Support Services

Four self-regulated learning tasks were identified as significant predictors of academic achievement. This implies the need for support services to develop self-regulated learning tasks for all students, specifically those identified with low self-efficacy or low academic achievement. In a study of students placed in developmental courses, Nakajima et al. (2012) suggested that remedial courses should be linked to other support services to bridge the academic gap. While the SETC places students directly into entry-level courses, support services for these students in math and English with labs could bridge the gap and improve academic self-efficacy and academic achievement.

There is a disconnect between what is expected and what occurs when students plan their schoolwork to improve academic achievement. The results indicate a need for further intervention by success centers to provide resources to students to ensure they are prepared to achieve their academic goals (Allen, 2012). Students need to be trained on how to self-regulate and reach out for academic support as a vital part of success at community and technical

colleges. Student support services, such as a Student Success Center, could engage students by providing training and resources on self-regulatory tasks via entry-level courses such as math and English. The Student Success Center could collaborate with faculty to provide student workshops on time-management in and outside of the classroom.

Externally, Student Success Centers can work with area high schools and community organizations not only to impart the importance of students continuing their education but to provide them with the self-regulatory skills necessary to be successful. Liao et al. (2014) suggest reaching out to students while they are still in high school or partnering with community-based organizations, such as adult education to provide self-regulated skills that are necessary for college. Student Success Centers can be a valuable resource to communicate and instill a culture of self-regulated learning that would lead to academic achievement within the college and the community (Insights, 2016).

Student Success Coaches

Academic self-efficacy is the level to which students have the confidence to perform academic activities, such as problem-solving, goal setting, or information processing, that influence effort, persistence, and perseverance (Schunk & Pajares, 2006). Students with higher levels of self-efficacy study more and manage complex academic tasks more effectively than those with low levels of academic self-efficacy (Satici & Can, 2016). Thus, self-efficacy is related to persistence, tenacity, and achievement in educational settings. Students who receive academic coaching that includes the assessment of self-efficacy reach higher achievements than their peers (Yehuda et al., 2016).

Student Success Coaches (SSC) go beyond enrolling students and take a proactive approach to identify and assist students toward their short-term and long-term goals (Allen,

2012). National Academic Advising Association (NACADA) (2022), a global community for advising that promotes quality academic advising in higher education, advocates for the proactive approach to student success offered by Student Success Coaches. A coach's role is to identify students' strengths and challenges and identify the resources needed to ensure academic success. SSCs would use an Academic Self-Efficacy survey, for example, to identify self-regulatory tasks where support is needed and then identify those resources. SSCs would follow up regularly with students and provide structure and accountability. Instead of providing resources all at once to new students, they would slowly integrate them into their academic journey as the need arises.

The goal of the SSC is to create a connection between the student and the college and encourage students to be self-motivated, responsible, and self-managed (Allen, 2012). SSCs also monitor academic progress, create a sense of accountability within the student, establish benchmarks for success, teach student success skills, and discuss topics that lead to academic success, such as the use of tutors and instructor office hours (Allen, 2012). Liao et al. (2014) suggested the need to provide students with academic support and strategies to train them to maintain self-regulation.

Student Success Course

Identifying student academic self-efficacy alone is not effective. Teaching students how to engage in self-regulatory tasks while using self-control is important for student success. Mahlberg (2015) reported significantly higher use of self-regulated learning practices by students when enrolled in a self-assessment (student success) course. Students enrolled in a student success course were retained at a higher percentage and registered for more classes the following fall semester than students who did not take the course. In this class, formative self-assessment

was one method used to increase self-regulation. Students exposed to self-assessment in classes reported using significantly more self-regulatory practices, such as being prepared for class.

At a two-year technical college in Georgia, Student Success Coaches were hired to provide support to students and teach student success courses (Allen, 2012). In this model, students were aligned with their SSC throughout their first semester. The combination of the SSC and student success course had a meaningful impact on student persistence through the end of the term as well as on their academic performance in math courses.

Fong et al. (2018) suggest that understanding academic self-efficacy early, in a student success course, could assist higher education practitioners to locate at-risk students and provide the necessary training and interventions needed to support success. Given that academic self-efficacy is malleable (Beatson et al., 2018; Moore & Schulock, 2009; Zimmerman et al., 2017), interventions offered in the classroom could provide opportunities for discussion concerning areas of identified deficiency. Discussions regarding how to improve academic success with the use of self-regulatory tasks, such as finishing homework on time, organizing, and planning schoolwork, and finding a place to study to avoid distractions (all of which were significant findings in this study) could ensue to alter academic self-efficacy to improve academic achievement.

Professional Development for Faculty

Positive reinforcement or verbal persuasion from a professor can also improve an individual's level of self-efficacy (Bandura, 1997), such as "great job on your presentation." Students who receive academic coaching reach higher achievements than their peers. Academic coaching refers to the proactive relationship between faculty and students (Yehuda et al., 2016). Faculty need to be involved in supporting student academic achievement by understanding and

learning ways to support and encourage self-regulated tasks in the classroom to improve academic self-efficacy. Through a professional development series dedicated to improving academic self-efficacy, faculty could learn valuable self-regulatory strategies to be embedded throughout their course to reinforce success. The tasks of finishing homework assignments by deadlines, organizing schoolwork, and arranging for a place to study without distractions were positive predictors of academic achievement and could be successful tips added to enhance academic self-efficacy.

In addition, faculty could engage in other meaningful tasks to support successful learning by encouraging a growth mindset. Research suggests that what faculty members communicate to students concerning their ability to succeed may matter more than what students personally believe (Center for College Community Student Engagement, 2019). Students who do not believe they test well or are not good at math may change their mindset if given positive reinforcement. Instead of "I cannot study when there are other interesting things to do," instructors can help students understand the importance of learning and change the mindset to "I can study when there are other interesting things to do."

SETC and other community and technical colleges could provide professional development for faculty concerning the growth mindset. This would include helping students connect coursework with their interests, conversing with students about strategies for improvement, and providing students with detailed feedback on projects and opportunities to review work (Center for Community Service Engagement, 2019). Strategies such as these can improve academic self-efficacy and engage students toward academic success.

Limitations

Although this study provides valuable information about the relationship between academic achievement and academic self-efficacy for students who persisted at SETC, a limitation of this study is that the survey response rate was 10.9%. A larger pool of participants may have produced additional significant findings. The subgroup of first-time first-year students who persisted received emails to their institutional email accounts. If emails had been sent to each student's personal email account, a larger response rate may have occurred. This is important to note for future survey distribution.

In addition, the survey was only sent to those students who persisted. To fully understand the academic self-efficacy of first-time first-year students, the Academic Self-Efficacy survey should also be administered to students who do not persist or at the beginning of their first semester of enrollment. Another limitation associated with this study is that the variance was 24.7%. This indicates that academic self-efficacy explained by self-regulated tasks in relation to academic achievement may involve other factors not assessed in this survey.

Reflection

"Assist students towards meeting their academic and career goals" has been my professional goal for over twenty years. The purpose of pursuing this research was to better understand ways in which institutions of higher education can provide resources to assist students in meeting their academic and career goals. I am grateful to have identified a survey that could aid in better understanding the self-regulatory tasks that affect academic achievement. I intend to continue to study and research academic self-efficacy to assist students in meeting their academic and career goals.

Conclusion

Students persisting and completing their educational goals is a measure of student success and institutional success. While external influences contribute to persistence and retention, the focus of this research study was to determine the academic self-efficacy and self-regulated factors that influence the academic achievement of first-time first-year students who persist from the fall to spring semester at a Southeastern technical college. Given that self-efficacy focuses on personal capabilities and forecasts the goals individuals will set for themselves (Bandura, 1997), a correlation exists between academic self-efficacy, self-regulation, and academic achievement.

Of the first-time first-year students who persisted to the spring semester, 104 completed the Academic Self-Efficacy Survey. Linear multiple regression examined whether self-regulated learning, controlling for demographics, major, and prior learning credit, predicted the GPA of first-time first-year students who persisted from fall 2021 and spring 2022 (*FTFY_S*). The results of the regression indicated that the model explained 24.7% of the variance and was a significant predictor of academic achievement (*GPA*) (R^2 = .247, F(24,79) = 2.411, p = .002).

There were five significant predictors identified in the analysis. The three self-regulated learning tasks ("I can finish homework assignments by deadlines," "I can organize my schoolwork," and "I can arrange a place to study without distractions") had a significant, positive relationship with academic achievement. The self-regulated learning task: "I can plan my schoolwork" had a significant, negative relationship with academic achievement. Black students had a significant, negative relationship with academic achievement and a significantly lower average GPA as compared with other self-reported race/ethnicity students.

Identifying ways to assist students toward academic achievement is not effective if action is not taken. The results of this research provide an opportunity to engage the SETC community

in promoting student persistence and academic achievement by incorporating academic self-efficacy into many facets of the college. The inclusion of support services, Student Success Coaches, and Student Success Courses for first-time first-year students and/or those identified as needing self-regulated learning interventions could aid in academic achievement. Through a professional development series dedicated to improving academic self-efficacy, faculty could learn valuable self-regulatory tools to be embed in their course to reinforce success.

The relationship identified between academic self-efficacy and academic achievement of first-time first-year students provides actionable opportunities for community and technical colleges. Understanding levels of academic self-efficacy gauged through self-regulated learning provides knowledge that can be used to retain students toward completion and meet the mission of the institution.

APPENDIX A. Informed Consent

Informed Consent for Human Subject Research Participation

Introduction

My name is Heather Hoppe, and I am a graduate student at Coastal Carolina University. I would like to invite you to take part in my research study entitled, "The Relationship Between Academic Self-Efficacy and Academic Achievement of First-Time First-year Students." If you have any questions, I will answer them now or at any time during the study.

Purpose

The purpose of this research study is to determine if academic self-efficacy, specifically self-regulated learning, is significantly related to the academic achievement of first-time first-year technical college students who persist from fall to spring semester.

Procedures and Duration

During this research study, you will be asked to complete a 14-question survey indicating your level of agreement with statements provided. The survey will take approximately 5-10 minutes to complete.

Rights

You do not have to agree to participate in this research study. You may choose to withdraw at any time. There is no penalty for not participating or withdrawing from the study at any time, and there will be no impact on your relationship with the researcher, Horry-Georgetown Technical College, or Coastal Carolina University.

Risks and Benefits

During this research study, no risks or discomforts are anticipated. Although you will likely not directly benefit from participation in the study, the results may inform future initiatives to support technical college students.

Incentives

Participants will have the opportunity to be randomly selected to win a $10 gift card to an area establishment.

Confidentiality

All identifiable information will be removed from this study prior to dissemination. As the researcher, I plan to share the results of this study within my dissertation and to leadership at Horry-Georgetown Technical College.

Contacts

If you have questions about this research study, please feel free to contact me by email at hmhoppe@coastal.edu

This research study has been approved by Coastal Carolina University.

*I have read this form and have been able to ask questions of the researcher and/or discuss my participation with someone I trust. I understand that I can ask additional questions at any time during this research study and am free to withdraw from participation at any time.

I agree to take part in this research study.

- Yes
- No

APPENDIX B. Academic Self-Efficacy and Self-Regulated Learning Survey

*Please enter your Name or Student ID Number (H Number)
(Your student ID/name will be used to obtain student records information to include your gender, race/ethnicity, age, major, previous high school GPA (if applicable), and cumulative GPA. Once the information has been obtained, your ID/name will be removed, and you will not be identified in the study.)

Please indicate your level of agreement with the statements below.

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
1. I can finish homework assignments by deadlines.					
2. I can study when there are other interesting things to do.					
3. I can concentrate on school subjects.					
4. I can take notes in class.					
5. I can use the library to get information for class assignments.					
6. I can plan my schoolwork.					
7. I can organize my schoolwork.					
8. I can remember information presented in class and textbooks.					
9. I can arrange a place to study without distractions.					
10. Even when I make a disappointing grade, I can study hard for the next exam.					
11. Even if I fail a few courses, I will persist until I get my college certificate/degree.					
12. I prefer class work that is challenging so I can learn new things.					
13. Even when study materials are dull and uninteresting, I keep working until I finish.					
14. I can continually work at my career goal even when I get frustrated.					

APPENDIX C. Recruitment Emails

Email sent 2/8/2022:

SETC Student:

I am currently completing my Doctoral Studies in Educational Leadership from Coastal Carolina University. My research study consists of the relationship between Academic Self-Efficacy (which is the belief in one's abilities to achieve their academic goal) and Academic Achievement.

I would be very grateful if you would complete this short survey. Participation is completely voluntary, and all information provided will be treated with strict confidence. The data collected will be used for my dissertation research.

This survey only takes a few minutes of your time to complete. Individuals who complete this survey and provide their name or student ID number **will be eligible to win one of ten $10 gift certificates** at either Chick-Fi-La or the Barnes & Noble Bookstore. I would be very grateful if you could answer all questions honestly before the deadline which is February 21, 2022.

Here is the link: https://www.surveymonkey.com/r/VPJQL7Z

Thank you for your participation,
Heather Hoppe, M.Ed.

Email sent 2/11/2022 to those who did not previously complete the survey:

Reminder – Please complete the below survey with the chance to win one of ten $10 gift certificates. Your response is very important to my dissertation research study entitled: The Relationship between Academic Self-Efficacy and Academic Achievement of First-Time First-Year Technical College Students.

Here is the link: https://www.surveymonkey.com/r/VPJQL7Z

Thank you so much for completing this short survey.
Heather Hoppe, M.Ed.

Email sent 2/16/22 to those who did not previously complete the survey:

Reminder – Please complete the below SHORT 14-question survey with the chance to win one of ten $10 gift certificates to your choice of either Chic-Fi-La, Barnes and Noble Bookstore, or Starbucks. *If you have already completed the survey, please disregard.*

Your response is very important to my dissertation research study entitled: The Relationship between Academic Self-Efficacy and Academic Achievement of First-Time First-Year Technical College Students.

Here is the link: https://www.surveymonkey.com/r/VPJQL7Z

Thank you so much for completing this short survey.
Heather Hoppe, M.Ed.

Email sent 2/21/22 to those who did not previously complete the survey:

FINAL REMINDER to complete the below survey with the chance to win one of ten $10 gift certificates. Your response is very important to my dissertation research study entitled: The Relationship between Academic Self-Efficacy and Academic Achievement of First-Time First-Year Technical College Students.

Here is the link: https://www.surveymonkey.com/r/VPJQL7Z

Thank you so much for completing this short survey.
Heather Hoppe, M.Ed.

APPENDIX D. Permission to Use Questionnaire

From: Liao, Ann <liaoha@buffalostate.edu>
Sent: Thursday, December 16, 2021 8:40 AM
To: Heather Hoppe <hmhoppe@coastal.edu>
Subject: Re: Self-Efficacy for Self-Regulated Learning

CAUTION: This email originated from outside your organization. Exercise caution when opening attachments or clicking links, especially from unknown senders.
Hi Heather,

My questionnaire is attached.

Please don't hesitate to write back if you have further questions.

Good luck.

Ann Liao, Ph.D.
Associate Professor
Department of Communication
Buffalo State College
B132 Buckham Hall
1300 Elmwood Ave.
Buffalo, NY 14222-1095
E-mail: liaoha@buffalostate.edu
Phone: (716) 878-5802
Fax: (716) 878-4697

From: Heather Hoppe <hmhoppe@coastal.edu>
Sent: Thursday, December 9, 2021 3:49 PM
To: Liao, Ann <liaoha@buffalostate.edu>
Subject: Self-Efficacy for Self-Regulated Learning

Dr. Liao,

I am in the process of writing my dissertation entitled "The Relationship Between Academic Achievement and Academic Self-Efficacy of First-Time First-Year Students Enrolled at a Technical College" for my Ph.D. in Educational Leadership at Coastal Carolina University.

I have read your article P*ersistence at an Urban Community College: The Implications of Self-Efficacy and Motivation* published in the Community College Journal of Research and Practice in 2014. In your research, you assessed student self-efficacy for self-regulated learning using a modified scale from Zimmerman, Bandura, and Martinez-Pons (1992) and Pintrich and De Grout

(1990). I am interested in the questionnaire you used and have two questions. Did you validate the questionnaire before using it? If so, would you be willing to allow me to use the questionnaire for my research study? The questions pertaining to self-efficacy for self-regulated learning are exactly what I am looking for in my research.

While I understand it is the end of the semester, I ask that you please consider my request.

Thank you for your time. Heather Hoppe, M.Ed.

Ph.D. Candidate, Educational Leadership
Coastal Carolina University

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