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Students' Perceptions of Persistence in Two-Year Radiologic Technology Programs

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This is to certify that the doctoral study by

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Walden University
2020

Abstract

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by

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MAEd., University of Phoenix, 2012

BS, Central Missouri State University, 1998

Dissertation Submitted in Partial Fulfillment

of the Requirements for the Degree of

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Walden University

February 2021

Abstract

Obtaining a health care degree benefits individuals and society; however, 2-year radiologic technology programs in a metropolitan area of the southern United States continue to struggle with student persistence from enrollment to graduation. Exploring student persistence is important to college administrators, faculty, and students because of the predicted growth in the profession of radiologic technology. The purpose of this basic qualitative study was to explore students' perceptions of their experiences at the local college that encouraged them to persist to graduation or quit attending. Deci and Ryan's self-determination theory and Bean and Metzner's nontraditional undergraduate attrition model served as the conceptual framework. Two research questions focused on the experiences of 7 students who did not persist and 7 students who persisted from enrollment to graduation in a 2-year radiologic technology program. Individual participant interviews were conducted. Data analysis involved open and axial coding and application of the NVivo 12 software package. Findings indicated that (a) financial issues, (b) lack of support, (c) student readiness issues, and (d) personal issues were reasons participants did not persist from enrollment to graduation, whereas (a) autonomy, (b) preparedness, (c) connectedness, and (d) self-efficacy were reasons participants persisted from enrollment to graduation. The findings may promote social change by encouraging higher education institutions to provide resources, support, and active learning environments that increase connectedness and contribute to student persistence from enrollment to graduation.

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Dedication

"He who is not courageous enough to take risks will accomplish nothing in life" (Muhammad Ali).

I dedicate my dissertation to my family. To Brad, my wonderful husband, thank you for your patience and your sacrifices during this journey. From the moment I came to you with the idea of getting my doctorate, you have offered constant support. Thank you for believing in me when I did not believe in myself. Your love and encouragement meant the world to me and kept me going on the days I was not sure how I could accomplish this dream. I love you always.

To my precious children, Barrett and Olivia, thank you for your support and understanding during the last few years. I hope I have been an inspiration to you both and have shown you that you can accomplish anything. You both are my heart and I love you.

To my parents, Bill and Bonnie, thank you for believing in me. I appreciate you listening to me always. I hope I have made you proud. I love you both.

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Chapter 1: Introduction to the Study

Radiologic technology programs seek to attract students with the requisite knowledge and skills to perform well in the classroom, yet these programs struggle with student persistence from enrollment to graduation. In addition to radiologic technology programs, student persistence is also a concern for college administrators (Bergman, Gross, Berry, & Shuck, 2014). Across the United States, persistence rates are decreasing in health care degree programs (Donnell, 2015). Since 2008, the full-time persistence rate for public and private not-for-profit institutions and private for-profit 2-year institutions has been 60% (House & Arnett, 2018). College administrators have employed strategies to improve persistence to graduation in health science programs, such as utilization of selective admission processes to admit the best-qualified applicants; however, persistence rates continue to decline in health care programs in the United States (Donnell, 2015). As student persistence rates in health science programs continue to decrease, a deeper look into the projected growth of health professions, specifically radiologic technology, is needed.

With the increase in the number of baby boomers retiring from medical imaging jobs and the increase in life expectancy, there is a growing need for radiologic technologists in health care. In the state of the study site institution, the projected growth in the profession of radiologic technology from 2019 to 2026 is 16.2% (United States Bureau of Labor Statistics, 2018). The predicted growth in the profession of radiologic technology in the United States from 2016 to 2026 is 12.3%, faster than the average of all occupations (United States Bureau of Labor Statistics, 2018). Exploring student

persistence from enrollment to graduation in radiologic technology programs is important to meet the projected workforce needs. As health care gaps negatively impact the most vulnerable citizens, there are strong positive social change implications for increasing student persistence from enrollment to graduation.

As the number of graduates increases and these individuals transition into medical facilities to work, they can assist with the medical needs of others. Graduates who are hired to work in the communities in which they trained have a more disciplined and structured approach to quality patient care and employee engagement (Gabow, 2016). Gabow (2016) stressed the importance of consistent training in a standard protocol for care for students and as they transition into the role of a health care professional. Additionally, graduating with a degree in radiologic technology would help the individual with financial independence. The social change implications of improved quality patient care, employee engagement, and financial independence are important on both a local and global level and reinforce the importance of student persistence from enrollment to graduation in radiologic technology programs.

Chapter 1 includes information regarding persistence rates of students enrolled in 2-year radiologic technology programs in the United States, as well as the state in which the study was conducted, and the limited amount of research previously conducted on the topic of student persistence from enrollment to graduation in 2-year radiologic technology programs. Chapter 1 also includes the problem, purpose, research questions, conceptual framework, nature of the study, definitions, assumptions, scope and delimitations, limitations, and significance of the study.

Background

Student persistence has been a topic of research for many decades. However, the recent mandates from the United States government concerning institutional effectiveness and student persistence to graduation require higher education institutions to take an active role in increasing student retention. The United States government has created policies to address structural flaws within higher education systems and incentivized institutions to focus on student outcomes, including student persistence to graduation (U.S. Department of Education, 2015). The pressure for increased accountability for student outcomes was placed on accrediting agencies to focus on student outcomes, raise the bar for quality, and increase transparency (U.S. Department of Education, 2015).

In Draft 1 of the 2021 Standards for Radiography programs, the Joint Review Committee on Education in Radiologic Technology (JRCERT, 2017) proposed a 3-year persistence rate of 80%. If programs do not adhere to stated persistence policies, future funding and accreditation could be negatively affected. This national trend toward performance funding within higher education means that a portion of state funds to public colleges and universities are based on student persistence and outcomes as opposed to the more traditional budget model that utilizes incremental or cost-based increases (Hearn, 2015). The implementation of this policy has been fueled by concerns over inadequate student retention and completion rates, increasing college costs and student debt levels, and economic recessions that have resulted in fiscal scarcity and fueled calls for accountability (Li & Zumeta, 2016). Research pertinent to student persistence in radiologic technology programs is limited (Menser, 2015). However, with the

strengthening pressures from performance-based funding, all institutions must actively participate in finding solutions to increase student persistence from enrollment to graduation.

A review of the research revealed that research on student persistence in radiologic technology programs is limited, adding to the relevance of this study. According to Trusclair (2017), few researchers have focused on what motivates the allied health student population and its relationship with student persistence. Menser and Hughey (2016) studied selective versus nonselective admission practices of radiologic technology programs. Menser and Hughey compared the radiologic technology programs' use of interviews, high school and previous college grade point average (GPA), and the completion of prerequired coursework in relation to student persistence. Menser and Hughey concluded that the use of prerequisite courses as admission criteria was positively related to student persistence to program completion. However, Ingrassia (2016) concluded that radiologic technology students' persistence cannot be predicted using common admission criteria alone, supporting the need for additional research. Dawson (2017) examined predictors of educational attainment and clinical persistence of minority radiologic technology students; however, this study was focused on students' perceptions about their ability to adjust and become comfortable with their role within clinical affiliates. Increased understanding of student persistence in radiologic technology programs may provide higher education institutions with valuable information that could help them anticipate student needs and allocate the necessary resources. Higher education leaders lack an understanding of the underlying reasons for decreased student persistence

(Bergman et al., 2014). In addition, there are new governmental policies that increase institutional accountability for student success. The gap in practice is the lack of understanding of student persistence from enrollment to graduation in 2-year radiologic technology programs. The current study was needed to improve understanding of student persistence and assist higher education institutions with improving persistence from enrollment to graduation, which may positively impact the institution, student, and community.

Problem Statement

Higher education institutions are challenged to understand why some students persist and why other students do not persist to graduation. Nationally, graduation rates at all 2-year higher education institutions are declining (National Center for Education Statistics, 2018). Student retention in public and private 2-year institutions is well documented. The JRCERT (2019b) reported that the average persistence of students enrolled in accredited radiologic technology programs in the United States is approximately 70% annually. However, the average persistence of students enrolled in 2-year JRCERT accredited programs in the local area is approximately 60% (JRCERT, 2019b). At the local study site, student persistence in the 2-year radiologic technology program is below the national average for these programs, revealing a gap in practice. In addition to the decreased student persistence from enrollment to graduation, the local study site is adjusting to the changing health care environment.

Health care is evolving as it adjusts to the mandates required by the Patient Protection and Affordable Care Act and to the aging population. Approximately 10,000

Americans turn 65 years old each day, making them eligible for Medicare and retirement (Ezequiel, 2016). "As a result, the number of Medicare enrollees will increase from its current 54 million to more than 80 million by 2030, when 20% of the U.S. population will be aged 65 years or older" (Ezequiel, 2016, p. 242). As the population ages, the United States Bureau of Labor Statistics (2018) indicated an increased need for diagnostic imaging to help make medical diagnoses. To provide the health care community with skilled professionals to assist with imaging needs and to address the projected radiology workforce shortage, student persistence in radiologic technology programs is critical.

The specific problem addressed in the current study was student persistence from enrollment to graduation at the local college in a metropolitan area of the southern United States. To meet the needs of the changing health care environment (Demo, Fry, Devine, & Butler, 2015; Jantzen, 2019) and to maintain accreditation standards (JRCERT, 2019a), exploration of student persistence is needed to increase the overall graduation rates. Although previous studies have been conducted using admission criteria to predict student success and persistence in radiologic technology programs (Ingrassia, 2016; Menser & Hughey, 2016), there have been no studies on the subjective experiences of students regarding persistence. Most of the previous studies focused on institutional factors associated with persistence; however, they did not identify reasons for decreased persistence or strategies to increase persistence from enrollment to graduation. A qualitative approach was needed to fill this gap. The subjective experience of persistence

may enhance the current knowledge as it relates to the radiologic technology student population.

Purpose of the Study

Higher education institutions have struggled with student persistence for decades. Although researchers have studied student persistence at 4-year institutions and community colleges, 2-year institutions are also challenged with this problem. The purpose of this study was to explore how students describe their perceptions of experiences at the local college that either encouraged them to persist to graduation or quit attending in a metropolitan area of the southern United States. By conducting this qualitative study, my intent was to explore what impediments may influence students to drop out of radiologic technology programs while providing useful information to higher education leaders to improve their understanding of student persistence from enrollment to graduation. Improved understanding of student persistence in 2-year radiologic technology programs may lead to the development of effective persistence strategies that may help to ensure the projected radiology workforce needs are met.

Research Questions

The research questions for this study guided the exploration of student experiences relating to concepts of motivation and success in Deci and Ryan's (1985) self-determination theory because they support student persistence. The following research questions (RQs) were designed to promote understanding of student persistence from enrollment to graduation in a 2-year radiologic technology program in a metropolitan area of the southern United States:

RQ1: What are the students' perceptions of why they did not persist from enrollment to graduation in the 2-year radiologic technology program in a metropolitan area of the southern United States?

RQ2: What are the students' perceptions of what helped them persist from enrollment to graduation in the 2-year radiologic technology program in a metropolitan area of the southern United States?

Conceptual Framework

The conceptual framework for this study was Bean and Metzner's (1985) non-traditional undergraduate student attrition model and the self-determination theory of Deci and Ryan (1985). Bean and Metzner's model for student retention was important to this study due to the population of students to which it refers. Bean and Metzner defined non-traditional students as "(a) older than 24 years, (b) do not live in a campus residence, and (c) a part-time student, or some combination of these factors" (p. 492). Non-traditional students, as defined by Bean and Metzner, align with the characteristics of 2-year radiologic technology students.

Non-traditional students continue to make up the majority of the student population within higher education. The U.S. Department of Education's 2017 report on student demographics in 2-year institutions indicated that 67% of the students were female, 52.5% were age 24 or older, 23% were first-generation college students, and over 65% were independent students who supported themselves (Arbeit, Horn, National Center for Education Statistics (ED), & RTI International, 2017). Non-traditional

students face the challenges of balancing the demands of college, family, and work obligations.

The second part of the conceptual framework of this study was Deci and Ryan's (1985) self-determination theory. The self-determination theory is a theory of human motivation and personality that focuses on three psychological needs: (a) autonomy, (b) competence, and (c) relatedness (Deci & Ryan, 1985). This theory was important to the study because it addresses intrinsic and extrinsic student factors. Because my study focused on subjective experiences of persistence, the self-determination theory provided the appropriate platform in which to frame the study. The use of Bean and Metzner's (1985) non-traditional undergraduate student attrition model and the self-determination theory of Deci and Ryan helped me gain an understanding of the external environment, internal motivations, and choices made by the participants regarding their persistence efforts. Aspects of intrinsic and extrinsic motivation were addressed in the research questions. The data were collected and organized in a manner that conclusions could be drawn regarding how the external environment and/or internal motivation affects student persistence from enrollment to graduation. Chapter 2 includes additional information on the chosen framework and how each was applied in the research questions and data analysis.

Nature of the Study

The nature of this research was a basic qualitative study. Gaining an understanding of the attitudes, beliefs, and perceptions through the insights of others is the basis of qualitative research (Ravitch & Carl, 2016). Generally related to social

constructivism, a basic qualitative design is used to construct knowledge through the complexities of human experiences, and individuals create learning through their interactions (Ravitch & Carl, 2016). Mihas (2019) identified basic qualitative research as the preferred approach when trying to "solve a problem, effect a change, or identify relevant themes" (para. 1). Ravitch and Carl (2016) suggested that the sample size can be as small as one and data collection involves voice interviews, observation, and/or archival data. However, with relatively homogenous groups, 16 or fewer interviews are enough to identify common themes (Hagaman & Wutich, 2016). Because the current study included participants who attended the same program, I interviewed a minimum of 14 participants. The participants consisted of previous students who did not persist and previous students who persisted from enrollment to graduation in a 2-year radiologic technology program in a metropolitan area of the southern United States during the years 2014-2019. In this basic qualitative study, I addressed the gap in practice by providing an in-depth understanding of student perceptions of their experiences regarding persistence from enrollment to graduation in a 2-year radiologic technology program.

A basic qualitative approach provided an opportunity to conduct empirical inquiry into student persistence in a 2-year radiologic technology program. Interviews contributed to the understanding of participants and a wider culture (Holloway & Galvin, 2016). Applying high standards to the interview process helped to capture the reality of the participants' perceptions, experiences, and descriptions of student persistence in a 2-year radiologic technology program (Holloway & Galvin, 2016).

Previous students who did not persist to graduation and those who did persist to graduation were asked to self-report explanations for their persistence. The data were analyzed in relation to each research question. I manually coded the data from the audio-recorded transcripts and used NVivo 12 software to identify themes. To increase reliability and decrease bias, I was transparent in the manual coding process and used NVivo 12 software for theme identification. After manually coding each transcript, I used NVivo to maintain transparency, attain consistency of identified categories and themes, and reach meaningful findings with visual representations. Addressing the gap in practice and research regarding the student perspective on persistence in 2-year radiologic technology programs added to the limited research, strengthened current knowledge, and may encourage future studies on student persistence in allied health educational programs.

Definitions

Enrollment: To register or enter a higher education institution or program of study as a participant (Narayan, 2011).

Graduation: The process of receiving a degree for completing a formal education program (Selingo, 2012).

Joint Review Committee on Education in Radiologic Technology (JRCERT): The organization recognized by the United States Department of Education and the Council for Higher Education Accreditation for the accreditation of traditional and distance delivery educational programs in radiography, radiation therapy, magnetic resonance, and medical dosimetry (JRCERT, 2019a).

Radiologic technology: Term applied to the allied health profession that uses ionizing radiation (x-ray) to produce an image (American Registry of Radiologic Technologists, 2019).

Student persistence: Continued enrollment or degree completion at any institution (National Student Clearinghouse Research Center, 2017).

Assumptions

The higher education institution that served as the study site was chosen due to its location, student population, and offering of a 2-year radiologic technology program. The first assumption was that all participants would provide honest and accurate responses to the interview questions and make every effort to provide rich, thick descriptions of their experiences. Throughout the study, I assumed the research would be conducted with integrity. Lastly, I assumed that the questions drawn from my experience and research of the existing literature would be pertinent for understanding the phenomenon.

Scope and Delimitations

The setting for this study was a 2-year higher education institution in a metropolitan area in the southern United States. Although radiologic technology programs are offered in 4-year institutions, a 2-year institution was chosen due to the format in which classes and clinical overlap. In 4-year institutions, most radiologic technology program curricula consist of two years of general education courses before moving into the core curriculum classes. However, at the 2-year institutions, students often take general education courses in conjunction with radiologic technology didactic classes and radiologic technology clinical classes. The sample size was limited to 7-9

students who persisted and 7-9 students who did not persist from enrollment to graduation in a 2-year radiologic technology program during the 2014-2019 academic years. This sample size was adequate for the interviews that were used to collect data. Creswell and Creswell (2018) stated that the goal of qualitative researchers should be the attainment of saturation and recommended 5-25 participants. Focus groups were not included in this study due to lack of time and resources to collect additional data. The interviews allowed for collection of rich data; therefore, focus groups were not needed for this study. The population chosen for this study was students who persisted and did not persist in a 2-year radiologic technology program because they would provide subjective and personal experiences regarding persistence. Focusing on student experiences provided a different perspective on student persistence compared to previous studies.

Limitations

One of the potential limitations for this study was researcher bias. My personal experiences with student persistence in 2-year radiologic technology programs could have interfered with understanding and accurately representing the beliefs and interpretations of participants (see Galdas, 2017). To reduce bias, I had no affiliation with the study site other than that of researcher. Establishing informed consent, journaling, and using approved interview questions helped decrease bias in the study. To increase credibility, interview transcripts were used to document participant answers to the research questions. Meticulous record keeping, including rich and thick verbatim descriptions of participants' experiences, was used to ensure interpretations of data were consistent and transparent (see Noble & Smith, 2015). I used audio recordings and

transcript summarization to increase dependability. As stated by Amankwaa (2016), methods of data collection that provide an audit trail are desired because they increase dependability of the study. For the current study, audio recordings and transcript summarization were utilized.

Faculty and higher education administrators were not interviewed in this study; therefore, limiting institutional information on their experiences with student persistence. However, the subjects in this study addressed institutional factors related to student persistence. Qualitative study results are not intended for generalizability; however, information about the study site, student population, and radiologic technology program may provide readers with the knowledge to determine the transferability of the results to their own experiences and settings (see Leung, 2015).

Significance

The results of this research contributed to the body of knowledge on student persistence from enrollment to graduation in 2-year radiologic technology programs. Application of findings may lead to improved levels of persistence in 2-year radiologic technology programs in a metropolitan area of the southern United States and may inform instructors and administrators in similar community college settings across the United States. This study may promote positive social change by providing ways to better support student success. The findings may be used for training purposes for academic leaders and instructors and as a basis for future studies on student persistence in radiologic technology programs.

Summary

Chapter 1 included an introduction of the problem of student persistence in health care programs, specifically a 2-year radiologic technology program in a metropolitan area of the southern United States, and literature about similar settings across the United States. Persistence strategies utilized by some programs, such as selective admission processes, were identified; however, persistence rates continue to decline while the projected growth in the profession continues to grow. Chapter 1 also included the background on the history of radiologic technology student persistence research, accreditation accountability, student persistence rates in local radiologic technology programs in 2017, and the changing health care environment.

The problem addressed was the declining persistence rates in 2-year radiologic technology programs and the need to increase the overall graduation rate of this population of students due to increasing demand for imaging professionals in the health care environment. The purpose was to explore student persistence from enrollment to graduation in 2-year radiologic technology programs in a metropolitan area of the southern United States. Chapter 2 provides a review and analysis of relevant literature to identify what scholars understand about student persistence and what future research needs to address.

Chapter 2: Literature Review

The purpose of this literature review is to discuss student persistence as it relates to successful completion of radiologic technology courses in 2-year colleges and ultimately graduation from the program. According to the American Registry of Radiologic Technologists (2019), radiologic technologists make up the third largest group of health care professionals, surpassed in number only by physicians and nurses. The United States Bureau of Labor Statistics (2018) anticipated that the profession of radiologic technology would expand by 16.2% between 2019 and 2026, adding millions of new jobs. The shortage of radiologic technologists will present a major challenge to rural and urban areas of the United States. Current literature on student persistence in radiologic technology programs has been limited to admission criteria (Menser & Hughey, 2016); however, Ingrassia (2016) concluded that student persistence cannot be predicted using admission criteria alone. Therefore, the student persistence from enrollment to graduation in radiologic technology programs is pertinent to the local study site as well as higher education institutions across the United States (Demo et al., 2015). The literature review provides details concerning the framework that underpins the study, including student persistence models and factors affecting student persistence; institutional factors, non-traditional student persistence, persistence in higher education, and persistence in health-related education are also addressed.

Literature Search Strategy

To gather relevant sources to review, I searched the following databases: ERIC, ProQuest, Academic Search Complete, Google Scholar, SAGE Journals, American

Society of Radiologic Technology *Radiologic Technology Journals*, *Journal of the Scholarship of Teaching and Learning*, *Sociology of Education*, *Review of Higher Education*, *Review of Educational Research*, *The Journal of Higher Education*, *The Journal of Continuing Higher Education*, and *Journal of College Student Retention: Research, Theory & Practice*. The following keywords were used to search these databases: *college persistence*, *persistence in higher education*, *student persistence in radiologic technology programs*, *student persistence in allied health programs*, *community college persistence*, *non-traditional student persistence*, *student retention*, *higher education retention*, *community college retention*, *student retention in radiologic technology programs*, and *student retention in allied health programs*. As terminology has evolved throughout the decades, I used multiple search terms to find student persistence literature. I began with a generic search of ERIC, ProQuest, Academic Search Complete, Google Scholar, SAGE Journals using the keywords *student retention*, *higher education retention*, *community college retention*, *college persistence*, and *persistence in higher education*. The broad search strategy provided articles and dissertations on student persistence; however, most of the information was more than 5 years old and did not pertain to radiologic technology programs. I expanded my search of these databases by including the keywords *student retention in radiologic technology programs* and *persistence in radiologic technology programs*. This search yielded only a few current research articles. I limited the search to the American Society of Radiologic Technology *Radiologic Technology Journals* and found only two recent articles on student persistence in radiologic technology programs. Because the research was limited on

student persistence in radiologic technology programs, I expanded my search using the keywords *student retention in allied health programs* and *student persistence in allied health programs*. The findings from these searches were focused on nursing education, physical therapy education, and respiratory education. However, some of the research helped to inform additional areas of health care education concerns regarding projected workforce shortages.

Some of the research focused on the non-traditional student within higher education. I again searched ERIC, ProQuest, Academic Search Complete, Google Scholar, SAGE Journals using the keywords *non-traditional student persistence* and found several research articles. Continuing to use the same keywords, I searched the following journals: *Journal of the Scholarship of Teaching and Learning*, *Sociology of Education*, *Review of Higher Education*, *Review of Educational Research*, *The Journal of Higher Education*, *The Journal of Continuing Higher Education*, and *Journal of College Student Retention: Research, Theory & Practice*. Again, the keywords *student retention in radiologic technology programs* and *student persistence in radiologic technology programs* produced limited results. The lack of research on student persistence in radiologic technology programs was evident and reinforced the importance of additional research in this area of higher education.

Conceptual Framework

A conceptual framework is vital in illustrating the significance of a research topic. Ravitch and Carl (2016) described the conceptual framework as "a means of explaining why your topic is important practically and theoretically as well as detailing how your

methods will answer your research questions" (p. 35). The conceptual framework of a study allows the researcher to learn from previous research while integrating new knowledge. For the current study, Bean and Metzner's (1985) non-traditional undergraduate student attrition model and the self-determination theory of Deci and Ryan (1985) provided the conceptual frameworks. Bean and Metzner's model for student retention was important to this study due to the population of students to which it refers. Bean and Metzner defined non-traditional students as "(a) older than 24 years, (b) do not live in a campus residence, and (c) a part-time student, or some combination of these factors" (p. 492). The self-determination theory (Deci & Ryan, 1985) states that individuals have three basic needs: (a) autonomy, (b) competence, and (c) relatedness. This conceptual model can be applied to many different situations and settings.

The non-traditional undergraduate student attrition model has been used in several studies. Researchers have used this framework to study student attrition in community colleges (Mason, 1998; Summers, 2003) while others have used it to study student retention and the influence of internal and external factors (Naretto, 1995). Su and Waugh (2018) used this conceptual framework to study online student persistence or attrition. These studies represent a small portion of the researchers who have used Bean and Metzner's (1985) model for student retention; however, it continues to be a consistent model used in research.

Ryan and Deci's (1985) self-determination theory has been applied to a variety of study topics including family relationships (Grolnick, Deci, & Ryan, 1997; Prentice, Jayawickreme, & Fleeson, 2018), work settings (Gagne & Deci, 2005; Howard, Gagne,

& Morin, 2016), and education (Dulfer, Rice, & Clarke, 2017; Huang, Backman, Backman, McGuire, & Moore, 2019; Reeve, 2002). Conducting qualitative research using both conceptual frameworks was intended to provide a more holistic view of student persistence.

Literature Review Related to Key Variables and Concepts

Student Persistence Models: Early Theories

Student persistence has been a major concern for educational institutions and educators since the 1600s (Aljohani, 2016). Prior to the 1970s, theorists referred to student persistence as student attrition and focused on individual student characteristics with no regard to student interactions with college environments (Bayer, 1968; Campbell & Fiske, 1959; Feldman & Newcomb, 1969; Marks, 1967; Marsh, 1966; Panos & Astin, 1968; Summerskill, 1962). These studies were grounded in psychology, not sociology, which provided data reflective of the individual rather than the society. Beginning in the late 1960s and early1970s, the terminology changed to student retention with a focus on the student-college relationship (Bean, 1980; Spady, 1970, 1971; Terenzini & Pascarella, 1977; Tinto, 1975). This sociological approach to student retention combined the academic and social systems, and was more inclusive and representative of society.

Spady's undergraduate dropout process model. Spady (1970) identified two different definitions of student retention that required two different research approaches. The first definition of retention involved individuals who leave an institution of higher education where they are registered (Spady, 1970). The second definition referred to those individuals who never receive a degree (Spady, 1970). In addition to these

definitions, Spady recognized a distinction between those who are forcibly dismissed from an institution for academic or disciplinary reasons and for those who voluntarily withdraw. For individuals who are academically unsuccessful or who are dismissed for disciplinary reasons, predictive models and equations looking at GPA can be directly applied (Spady, 1970). Spady concluded that a more complex predictive model is needed when analyzing why a student chooses to withdraw from a college or university.

Spady's (1970) undergraduate dropout process model was developed using Parson's four function paradigm: (a) latent pattern-maintenance, (b) integration, (c) adaption, and (d) goal attainment. Spady's conceptual model implied temporal order and depicted the assumed direct causal connections between pairs of variables. "Spady's path model suggested the result of the entire model may lead to changes in students' attitudes, interest, goals, or motivations that will have either positive or negative effects at later stages of the college or university career" (Kerby, 2015, p. 147). One of the first attempts to move toward an interdisciplinary approach to understanding student retention rates that involves individual student interaction and the higher education environment was Spady's undergraduate dropout process model. The theory assumes that students operate within the academic system and the social system. As students are challenged academically and exposed to external influences, the systems impact them differently; the academic system measures success by grades whereas attitudes, interests, and personality dispositions that align with the higher education institution are measures of success in the social system (Spady, 1970). Spady's undergraduate dropout process model linked student retention rates to "intellectual development, social integration, satisfaction, and

institutional commitment" (p. 76). The undergraduate dropout process model (Spady, 1970) depends on two assumptions: (a) that one's satisfaction with the college experience will depend on the available social and academic rewards and (b) that sustaining one's commitment to the college requires both integration into the system and a sufficient number of positive rewards, either academic or social. Spady's use of sociological approach to research provided valuable information on student retention within higher education.

Tinto's theory of student retention. Although Spady's (1970) undergraduate dropout process model described the processes that brought individuals to leave institutions of higher education, Tinto (1975) concluded that the model lacked explanation of these processes. Building upon Spady's conceptual model for student retention, Tinto agreed that it was not uncommon for research on student retention to fail to distinguish between academic or disciplinary dismissal and voluntary withdrawal. Because colleges and universities comprise academic and social systems, Tinto stated the importance of distinguishing between normative and structural academic integration of the college or university and that of the social domain. Therefore, Tinto's theoretical model of student retention included individual characteristics and dispositions relevant to student retention. Tinto (as cited in Kerby, 2015) suggested that researchers not only include background characteristics of individuals, but also the individual expectations and motivational attributes of individuals. Tinto's model of student retention is a longitudinal model in which the withdrawal process from an institution of higher education is derived from interactions between academic and social systems. Burke

(2019) identified that a student must have an unquestionable level of commitment to personal goals to continue to be motivated and persist in an academic system. However, a certain level of institutional commitment must also be demonstrated by a student, typically shown through school pride and social network (Burke, 2019). When a student's personal goals and institutional commitment are combined, the result is a positive decision to persist in their educational endeavors.

Until 2012, Tinto's (1975) theory of student retention was referred to as the "theory of student departure," "interactive model of student departure," and "integration theory." Tinto's theory of student retention has spanned several decades and is one of the most widely used frameworks concerning student retention. Tinto's theory has experienced widespread use because it addresses the relationships between students and their college experiences. Individuals enter a college or a university with a variety of attributes, experiences, and family backgrounds, all of which directly and indirectly impact academic performance. Tinto's and Spady's (1970) research set the stage for future research on predictive models in the retention of students within higher education.

Some researchers have identified deficits in Tinto's theory including the lack of student diversity in the research. The original research by Tinto included mainly White college students attending 4-year institutions. Pascarella and Terenzini (2005) contended that Tinto's theory of student retention cannot be applied across races and ethnicities. Tinto's (1975) theory emphasizes the concept of academic and social integration as a key to increasing student retention regardless of race or gender. Academic integration connects the student to the educational institution while social integration helps the

student feel connected with others. Although Tinto's theory of student retention has received both accolades and criticism, it is known as the foundational theory for student retention.

Bean's student attrition model. Continuing to build off predecessors' research on student retention, Bean (1980) sought to explain why students withdraw from institutions of higher education. Bean's (1980) student attrition model was different from previous predictive models for student retention because Bean concluded the motivations for student departure from a college or university are similar to the motivations seen in an employee unsatisfied with their career or employer (Kinsey, 2017). Bean substituted variables such as GPA, student development, and career relevance and in a revised version of the model that included a set of four additional variables: (a) background, (b) organizational, (c) environmental, and (d) attitudinal. Bean (1983) found that institutional factors played the most influential role in student retention.

Bean and Metzner's non-traditional undergraduate student attrition model. Bean's (1983) student attrition model helped to increase knowledge regarding student retention in higher education; however, the research was limited to traditional students. Traditional students were defined as students attending a 2- or 4-year college or university full-time, age 18-23, and living on the campus of the institution they attend. Non-traditional students were defined as students attending a 2- or 4-year college or university part-time, age 24 and older, and living off campus or commuting. Bean and Metzner's (1985) non-traditional student attrition model included four sets of variables: (a) academic performance, (b) intent to leave, (c) background, and (d) environmental

factors. Because previous student retention research indicated the importance of institutional integration and culture building with traditional students, environmental and external factors were the main factors in the retention of non-traditional students.

Cabrera, Nora, and Castaneda's integrated model of student retention. While early theorists researched student retention and attrition in higher education, the focus began to switch to student persistence in the 1990s and 2000s (Kinsey, 2017). Persistence was historically defined as students consistently enrolled in a higher education institution, whereas attrition pertained to the loss of students from the institution before the completion of their program of study (Manyanga, Sithole, & Hanson, 2017). Persistence was defined as an individual student successfully fulfilling specific course requirements leading to graduation (Manyanga et al., 2017). Tinto's (1973) and Bean's (1980) theories focused on students departing from higher education institutions and provide a comprehensive framework in student retention and attrition; however, no efforts had been made to merge these two models to enhance knowledge and understanding of why students stay, or persist, in higher education institutions.

Cabrera, Nora, and Castaneda (1993) researched student persistence using an inclusive approach, merging the models of Tinto (1975) and Bean (1980), and creating the integrated model of student retention. Each model brings a different perspective to what affects student persistence the most, and Cabrera et al. expanded the research by providing a more holistic view on student persistence. There is considerable overlap between the two models; however, Cabrera et al. also tested all non-overlapping propositions underlying both conceptual frameworks. The results indicated that when the

two theories were merged into one integrated model, a more comprehensive understanding of the relationship among individual, environmental, and institutional factors was achieved.

The self-determination theory of student persistence. As research on student persistence continued into the 21st century, Chen and Jang (2010) used the theory of self-determination (Ryan & Deci, 2000) to study student persistence in online and distance learning. The underpinning of the self-determination theory is that individuals have three basic needs: (a) autonomy, (b) competence, and (c) relatedness. Using student motivation as the key driver in the research, Chen and Jang found that when the three basic needs of individuals were met, students experienced a heightened sense of self and increased potential for growth. Kinsey (2017) reviewed Chen and Jang's research on student motivation and concurred that supporting the individual's three basic needs positively affected their self-determination. Cheng and Jang concluded that as the student's self-determination increased, student persistence also increased.

Factors Affecting Student Persistence

For decades, researchers have studied student persistence from many different perspectives. Early theorists studied individual student characteristics as they related to persistence, looking at the student independent from the educational environment (Bayer, 1968; Campbell & Fiske, 1959; Feldman & Newcomb, 1969; Marks, 1967; Marsh, 1966; Panos & Astin, 1968; Summerskill, 1962). Beginning in the early 1970s, theorists began studying the relationships between the student and the higher education institution (Bean, 1980; Spady, 1970, 1971; Terenzini & Pascarella, 1977; Tinto, 1975). Throughout the

research, theorists identified various factors related to student persistence. Student motivations and institutional factors are some of the most noted factors pertaining to student persistence in higher education.

Motivation

Motivation is defined as "the process that initiates, guides, and maintains goal-oriented behavior" (Cherry, 2019, para. 1). The term motivation is used to describe 'why' a person does something. Motivation is multifaceted as it involves biological, emotional, social, and cognitive forces that initiate behavior (Cherry, 2019). Motivation is reflective of an individual student and cannot be generalized to a population of students. Rizkallah and Seitz (2017) studied motivation and student retention reflecting the duration of students' academic careers. During their research, they examined the dependent variables of satisfaction and motivation in relation to student retention in higher education. Over 500-students from three south-western universities participated in the study. Rizkallah and Seitz concluded that from year to year, changes occur in the needs, problems, and aspirations of students, as well as what motivates them and satisfies their needs. As quantitative research is commonly conducted to study student persistence (Fong, Acee, & Weinstein, 2018), a qualitative approach is invaluable to persistence research. Examining correlational and predictive factors for student persistence provided by variable-centered research is critical; however, it is also important to use prescriptive measures that assess students' personal qualities affecting success and persistence (Fong et al., 2018). In a study of 768 students within a southwestern community college, Fong et al. (2018) utilized a person-centered approach to identify distinct motivational and academic

profiles that predict student success. The diverse population of participants was assessed on their individual perceptions of motivation toward goal orientation, help-seeking, and persistence, while student achievement was determined by individual GPAs. The results of the study highlighted the importance of students' noncognitive traits and personal qualities.

When focused on the student, instructors can better identify their needs and adapt teaching styles to meet these needs. As students' needs change, instructors should continue to meet students' needs to foster success and persistence (Fong et al., 2018). Dumke, Tyndall, Naff, Crowder, and Cauley (2018) explored student perceptions of motivational and contextual factors as promoters of success in a 4-year university. Dumke's et al. qualitative research on high-achieving pre-health care students and the effect of psychological factors and motivation on student success and persistence adds to the empirical reports about the importance of motivational factors in success and persistence within higher education. The participants in Dumke et al.'s study did not emphasize natural gifts talents or intelligence as keys to success and persistence. Instead, the motivational factors of grit, mindsets, and mastery goals were identified as keys to success and persistence (Dumke et al., 2018). Motivational factors have been studied extensively over the years. These factors stand out as important considerations regarding student persistence.

As motivation is dependent on the person (Cherry, 2019), intrinsic and extrinsic factors provide valuable insight as to why a person behaves in a certain manner. Intrinsic motivation is defined as internal to the person and promotes them to engage in behavior

they find personally rewarding. Sass, Castro-Villarreal, Wilkerson, Guerra, and Sullivan (2018) studied the psychosocial variables of academic efficacy, connectedness to professors, and connectedness to college and its relationship to student persistence in a 4-year university. Sass et al. determined that a student's generation status, Pell grant eligibility, and SAT scores did not directly or indirectly predict connectedness or academic success; however, they did identify that psychosocial variables play an important role in predicting student success and persistence. Academic self-efficacy has the strongest effect on academic outcomes (Sass et al., 2018), which is important for success and persistence in higher education. As a student's perceived academic self-efficacy increased, so did their problem-solving skills. Additionally, the results also revealed student connectedness to professors and the college indirectly affected student persistence. A direct relationship existed between connectedness to professors and college and intent to remain enrolled in a higher education institution (Sass et al., 2018). To support a student's need for increased internal motivation, Sass et al. recommended higher education curricula contain activities related to problem-solving which will support continued positive growth in academic self-efficacy. Ryan and Deci (1985, 2000) determined that students must meet the three psychological needs of competence or self-efficacy, autonomy, and relatedness in order to enhance his or her motivation, engagement, and general well-being. An individual's feelings of competence must also be accompanied by a sense of autonomy in order to increase intrinsic motivation (Ryan & Deci, 1985, 2000). Relatedness is essential for internalization and considered to be a strong motivator when coupled with a sense of autonomy (Ryan & Deci, 2000). Dulfer,

Rice, and Clarke (2017) asserted:

> Creating education settings which meets a student's need for autonomy, competence, and relatedness will increase the internalization of positive higher education related behaviors, sense of relatedness between students and academic staff, student engagement, student motivation, student initiative, and improve the students learning outcomes. (p. 44)

The interacting relationship between these factors imply all three of these psychological needs must be met to foster a student's motivation, general well-being, and increase persistence within higher education settings (Ryan & Deci, 2000).

Han, Farruggia, and Moss (2017) conducted a quantitative study examining noncognitive factors of perceived academic self-efficacy, sense of belonging, and academic motivation along with academic performance and first-to-second-year retention in an urban research university. The results of this study revealed that academic self-efficacy, or competence, was more closely associated with academic performance, whereas belonging, or relatedness, was more closely associated with persistence. Therefore, the importance of autonomy, competence, and relatedness for motivation and engagement within higher education is significant.

Self-Efficacy

The belief in oneself to succeed, or self-efficacy, is a highly recognized intrinsic motivator for student persistence (Bandura, 1997; Conefrey, 2018; Sogunro, 2015). Using an exploratory mixed method research design, Sogunro (2015) studied over 200 adult learners to identify motivating factors for success. Through the utilization of focus

groups, important themes were identified. Autonomy was listed as one of the top factors in motivation; however, the relationship between autonomy and level of self-efficacy was noted. Students with higher levels of autonomy were likely to exhibit higher levels of self-efficacy and higher levels of motivation toward academic success and persistence (Sogunro, 2015). Conefrey (2018) conducted a qualitative case study of some of the issues faced by incoming first-generation college students at a private, 4-year institution in the northwest United States. The findings suggest that the cumulative impact of engaging students in multiple high-impact practices, which promote meaningful interaction and collaboration with others, improve academic success. In addition, these activities supported an increase in students' academic self-efficacy and their institutional commitment. As a consequence of their increased self-efficacy and engagement, students are more likely to experience better academic success, leading to increased persistence.

Academic self-efficacy and social self-efficacy beliefs are pertinent in student persistence (Elliott, 2016). Elliot (2016) examined the role of academic self-efficacy and social self-efficacy and persistence at twenty-five 4-year higher education institutions across the United States. The results of this longitudinal quantitative study demonstrated that academic and social self-efficacy beliefs were associated with first-year college persistence. Tinto's (1997, 2005) student integration model indicated the roots of persistence lie in the educational aspirations and intentions students form prior to enrollment in a higher education institution; however, as aspirations and intentions are likely to change over time, post-matriculation interactions and integration into the institution are important in understanding persistence. Students who have increased self-

efficacy and engagement within their first year in the higher education institution have a greater persistence rate (Conefrey, 2018; Elliot, 2016). Academic self-efficacy was associated with a greater persistence with students at highly selective institutions whereas social self-efficacy had the greatest impact on the persistence of students at less selective institutions (Elliott, 2016). Although studies show the importance of self-efficacy in student success and persistence, every student is unique and encounters different life experiences. Goals and aspirations of the student may change throughout their educational journey; however, self-efficacy remains an important motivational factor in persistence within the institution and achieving the goals.

In Bandura's (1997) social cognitive theory, Bandura argued that self-efficacy beliefs are influential in all aspects of goal achievement from the formation of intentions to aspirations to the execution of behavior necessary to achieve those goals because efficacy beliefs regulate cognitive, motivational, selective, and affective processes. Self-efficacy also affects motivational processes in educational environments where it impacts the drive to learn (Elliott, 2016). Bandura concluded that self-efficacy influences effort, the choices students make, the courses of action they pursue, and task persistence. Enhancing self-efficacy so students feel prepared and capable of achieving academic tasks and fulfilling their academic potential can lead to greater persistence and graduation rates (Soria, Laumer, Morrow, & Marttinen, 2017). Soria et al. (2017) conducted a qualitative study of advising practices for over 1200 students within a 4-year institution. The study revealed that students who participated in strengths-based advising experienced higher rates of academic self-efficacy and showed higher rates of first-year

persistence and graduation in four years. Although the study was designed to look at advising practices, the importance of self-efficacy was noted, continuing to support previous studies. However, Walker (2016) concluded that increased self-efficacy was important as it helps to decrease perceived stress levels but provides minimal positive change in student persistence. Every student is different, and a one-size fits all approach to self-efficacy will not work. Higher education institutions should be aware of the possible impacts of self-efficacy on student persistence and success.

Ryan and Deci (2000) referred to self-efficacy as competence. Competence is when individuals feel effective in the environment in which they are interacting. Competence satisfaction allows the student to adapt to complex and changing environments, whereas competence frustration is likely to result in helplessness and a lack of motivation (Ryan & Deci, 2000). Ryan and Deci concluded that although self-efficacy, or competence, is important for increased student motivation and positive experiences within higher education, it is only a small part of student persistence.

Autonomy

Motivated actions are understood as self-determined when they are engaged in volitionally and driven by personal values, as opposed to being mandated by the environment. With respect to student persistence, autonomy within the educational environment should be supported. Autonomy refers to the students' perceptions that the learning environment is interactive rather than controlled (Simon, Aulls, Dedic, Hubbard, & Hall, 2015). While studying how motivational factors and emotion variables account for academic achievement in science, technology, engineering, and math (STEM) courses

and persistence within a junior college in Canada, Simon et al. (2015) examined over 1300 students. Consistent with the self-determination theory (Ryan & Deci, 2000, 2012), the results showed students' achievement goals, self-efficacy, and perceived autonomy effected their intrinsic motivation, emotions, and achievement that, in turn, predicted persistence in the STEM domain. Students need to feel they have some control over what is being taught, and that their thoughts and feelings about the material are being acknowledged (Simon et al., 2015). Autonomy is believed to facilitate the integration process which allows the student to apply their own values to new information (Dulfer, Rice, & Clark, 2017; Sogunro, 2015). Dulfer et al. (2017) incorporated the factors of the self-determination theory (Ryan & Deci, 2000, 2012), to determine if a measurement tool could be developed to help predict student persistence. Although a small sample size was used in this study, Dulfer et al. (2017) concluded it was possible to develop reliable measures of the self-determination theory key concepts, including autonomy, that can be used with a larger sample of students. Ryan and Deci (2000) proposed that when students feel autonomous, rather than controlled, they are more likely to be intrinsically motivated and to adopt intrinsic goals that promote persistence. Consistent with the self-determination theory (Ryan & Deci, 1985), the results of the research by Corwin et al. (2018) concluded that students are intrinsically motivated when their need for autonomy is met, resulting in a sense of ownership. Subsequently, ownership of their coursework, cognitively and emotionally, is positively related to student success and persistence.

According to Smith and Darvas (2017) creating a learning environment that students feel comfortable when interacting with faculty and peers increases intrinsic

motivation and encourages students to take responsibility for their own learning. Interactive learning strategies provide students with more opportunities to take charge of their learning and control their learning process. This increase in autonomy within higher education leads to increased motivation and learning, which has a positive effect on persistence (Simon et al., 2015; Smith & Darvas, 2017). Additionally, interactive learning allows students to interact more with faculty and their peers. This interaction can lead to a sense of belonging. Ryan and Deci (2000) termed the sense of belonging as relatedness. In addition to autonomy, relatedness is an important factor in determining student persistence.

Relatedness

A sense of belonging within a higher education environment stems from academic and social relatedness. In a study of first-year college students, Davis, Hanzsek-Brill, Petzold, and Robinson (2019) indicated that the prediction of student persistence goes beyond academic performance. Davis et al. measured students' sense of belonging at key transition points during the first year in their educational journey. Using the Sense of Belonging index, which Davis et al. created, the results indicated that the students' sense of belonging, social and academic belonging, were predictive of persistence to their second year of education at the institution. Research by Jorgenson, Farrell, Fudge, and Pritchard (2018) have shown the importance of engaging students in defining what holistic social connectedness looks like on campus. Interventions such as orientation experiences, first-year seminar courses, mentoring, and promoting more intentional engagement with campus activities have all been shown to improve students' sense of

belonging and their persistence (Jorgenson et al., 2018). Within higher education, social belonging efforts tailored to specific student needs are important to promote positive academic outcomes and persistence.

Tinto's (1997, 2005) student integration model suggested that positive interactions promote integration into the academic and social aspects of a higher education institution. A balanced social network, social integration into the education institution community and a sense of belonging are positive indicators for student persistence (Godor, 2017; Wright, Lenette, Lewis-Driver, & Lamar, 2017). Godor (2017) identified the need for higher education institutions to take ownership in providing a culture that promotes academic and social integration. Institutions of higher education need to meet students at their current level and help in the transitional process of integration. Research by Wright et al. (2017) demonstrated the important role of the institution in the integration process through their Common Time program (CTP). As the program is required for all first-year undergraduate students, the course was designed to "enhance the student life cycle and increase student success in academic learning and facilitate student engagement with staff and fellow students" (Wright et al., 2017, p. 80). The course provided students with consistent tools aimed at engaging and equipping them with necessary skills to achieve socially and academically throughout their first year at the institution, leading to increased persistence. The students would have a solid foundation of institutional support to help them through their entire education process. The likelihood of persistence from year one to year two increases when students' sense of belonging increases (Burke, 2019; Logan, 2017). In a study by Logan (2017), the results

support the recommendation of institutional involvement for providing practices that foster positive social integration opportunities to increase a sense of belonging. Burke's (2019) review of the literature reinforced Logan's findings through the reiteration that persistence is a complicated multivariate issue. The diverse student characteristics and lived experiences potentially impact students' ability to succeed and persist in higher education. Non-traditional students are another diverse population of students and should also be included in integration efforts (Hittepole, 2019). Burke suggested that creating positive social communities is vital to improving student's institutional commitment and educational persistence.

Extrinsic Motivation

Although intrinsic motivation has been linked with other adaptive outcomes such as improved learning, performance, and well-being, Ryan and Deci (2000) argued that understanding extrinsic motivation is also critical for educators. Not just thought as the negative form of motivation, extrinsic forms of motivation can extend to active agentic states with a sense of willingness, inner acceptance, or task value (Fong, Krause, Acee, & Weinstein, 2016). Given the difficulty of instilling intrinsic motivation or inherent interest in learning, teachers and instructors often rely on extrinsic motivation as an essential strategy in the classroom. Anderman and Gray (2015) categorized extrinsic motivation into four categories: (a) external regulation, (b) introjected regulation, (c) identified regulation, and (d) integrated regulation. Ryan and Deci further categorized extrinsic motivation into two types: (a) controlled motivation and (b) self-determined motivation, or autonomous motivation.

Controlled motivation represents behavior that is dictated by emotions imposed by others, such as pride, shame, or guilt, or external rewards (Ryan & Deci, 2000). Self-determined motivation is a combination of the intrinsic and extrinsic regulatory mechanisms of interest, internalization, and values (Ryan & Deci, 2000). Self-determined motivation "comprises external and introjected forms of extrinsic motivation, whereas controlled motivation comprises identified and integrated forms of extrinsic motivation, along with intrinsic motivation" (Ryan & Deci, 2000, p. 73). Self-determined motivation is seen as a higher quality form of motivation than controlled motivation in the sense that the forces driving an individual's behavior are all internal in nature, even if some of these forces are secondary to the enjoyment of the task itself (Ryan & Deci, 2000). Motivating students to value, self-regulate, and carry out activities on their own, without external pressures, is important as controlled motivation is not always positive or sustainable.

External Regulation

External regulation is the classic type of extrinsic motivation and is often viewed as a behavior or activity that is performed to earn a reward or avoid punishment (Cherry, 2019). This type of extrinsic motivation is one in which students are motivated by external rewards. Thus, external regulation is the least autonomous and most controlled form of extrinsic motivation. Fong et al. (2016) concluded that external regulation was a strong predictor for student persistence. One argument is that students are more externally driven because their goals are to receive the 'reward' or 'incentive' of a college degree, a desirable pathway toward a more financially stable prospect (Fong et al., 2016). Another argument may be the motivation from others that might be fueling

their desire to persist. A strong mentorship from a variety of sources: family, advisers, and peers, may also extrinsically motivate students to persist. Perhaps the inclination to want to please and impress these supportive figures is implicitly and positively encouraging them to achieve (Fong et al., 2016). Students with high extrinsic motivation may also be driven by the forces external from them, allowing them to overcome obstacles, adapt, and persist through college more easily.

Introjected Regulation

Introjected regulation results from people having partially internalized an extrinsic motivation, meaning they have taken it in but not really accepted it as their own. Introjected regulation is behavior that is dictated by emotions imposed by others. Introjection includes being motivated by contingent self-esteem, guilt, or ego-involvement. Introjected regulation has been found to be accompanied by experiences and consequences like those associated with external regulation (Anderman & Gray, 2015). Rump, Esdar, and Wild (2017) conducted a quantitative study on the intention of students to drop out, or attrition out, of higher education institutions. The study utilized four types of academic motivation and its relationship to students' intent to drop out of their institution. After surveying over 1000 first semester students, Rump et al. concluded that introjected regulation was more indicative of persistence, not attrition. Although introjection is internal to the person, it is still quite controlling.

Identified Regulation

A more fully internalized form of extrinsic motivation is referred to as identified regulation. Internalization is defined as the process whereby new knowledge is adopted

into the mental systems so that it is embedded into internal knowledge systems that inform organizational practices, or a new way of doing things (Ryan & Deci, 1985). Identification involves people identifying with the personal value and importance of the behavior for themselves and thus accepting it as their own (Anderman & Gray, 2015). In a study on motivation, learning, and instruction, Anderman and Gray (2015) used the self-determination theory (Ryan & Deci, 1985) to understand the effects of motivational variables on academic outcomes. Anderman and Gray concluded that identified regulation is important in positive academic outcomes.

Integrated Regulation

The fullest type of internalized extrinsic motivation is integrated regulation. Integration involves people having integrated new identifications with other aspects of their own integrated sense of self, that is, with other identifications, values, and needs. With integrated regulation, people act with a full sense of volition and choice. Ryan and Deci (1985) addressed that issue with the concept of internalization, which had been an important concept in developmental psychology for many years, and they suggested that people tend to internalize material endorsed by significant others to satisfy a basic psychological need for relatedness. The Ryan and Deci idea was that extrinsic contingencies, which are external to people, could be taken in by the individuals and integrated into their sense of self. If that were to happen, people could behave from their own sense of self and thus be autonomous with respect to motivations that had originally been external. However, the researchers pointed out that internalization, which is a natural part of the integrative process, may not always function wholly effectively so

motivations sometimes get only partially internalized and thus not fully integrated. Therefore, they suggested, internalization can be understood in terms of a continuum of autonomy, in which the more fully some value or regulation is internalized the more the accompanying behavior will be enacted autonomously.

Institutional Factors

Student persistence issues within higher education are multifaceted, vary from institution to institution, and continually fluctuate (Kerby, 2015). From his initial inquiries into student persistence within higher education settings, Tinto (1993) continued to evolve the student integration theory. Tinto's research went beyond student responsibility and included institutional factors that may impact student persistence within higher education. Tinto identified the need for student support programs within higher educational institutions that focus on all students, not just particular populations of students. Students should have access to support programs that truly support students' needs, not the institution. The student support program must offer academic and social integration for the students (Tinto, 1993; Schmitt & Duggan, 2011). For maximum effectiveness, student support programs must offer both formal and informal methods for academic and social integration (Chrysikos, Ahmed, & Ward, 2017; Tinto, 1993). Formal academic integration includes organizing activities in which students participate by researching topics in the library, attend labs and classes, and engage in other various activities related to academic success. Formal social integration includes scheduling extra-curricular activities in which students participate. Informal academic integration pertains to the engagement of students with faculty or staff outside of class hours.

Informal social integration comes from students interacting with peers outside of the learning environment. These informal interactions can lead to an increased bond between students and students and their higher education institution (Chrysikos et al., 2017; Pascarella & Terenzini, 1983). As important as formal and informal social interactions are in increasing a sense of belonging and engagement within an institution, these interactions are also integral in helping a student transition to a college environment.

As informal integration methods are not always easily accomplished within higher education settings, academic advising provides the opportunity for the development of strong relationships between students and faculty (Drake, 2011; Gatrix & Barrett, 2017; Perkins-Holtzclaw & Lampley, 2018). Tinto (2012) continued his research in student persistence, particularly in improving institutional practices and behaviors designed to help students persist within higher education. Using Tinto's framework for institutional action to improve practices and behaviors to help student success, Perkins-Holtzclaw and Lampley (2018) conducted a study to determine the extent to which institutional characteristics predicted first-time, full-time, fall-to-fall retention rates and 6-year graduation rates at 4-year colleges and universities. "Once the institution admitted a student, the institutional leaders accepted responsibility for providing that student with the services and resources needed for success" (Perkins-Holtzclaw & Lampley, 2018, p. 2). Tinto determined that student persistence and success is more of the responsibility of the higher education institution rather than student based. Tinto established four institutional conditions to increase student success and persistence that include: (a) expectations, (b) support, (c) assessment and feedback, and (d) engagement. Of these four

institutional conditions, positive engagement between faculty and students has been known to increase the probability of student persistence (Schmitt & Duggan, 2011; Perkins-Holtzclaw & Lampley, 2018). Research by Schmitt and Duggan (2011) utilized Tinto's (2005) research on the importance of the relationship between student characteristics and college interactions in relation to student persistence to determine the impact of staff interactions on student persistence. Although later research by Tinto (2012) determined the importance of positive engagement between faculty and students to increase persistence, Schmitt and Duggan showed that staff interactions with students also impacts persistence. Perkins-Holtzclaw and Lampley also concluded that positive engagement between faculty and students is a good predictor of student persistence to graduation, reinforcing the need for institutions to take action to increase student success. This type of faculty or staff and student engagement can be accomplished through academic advising. As advisors are tasked with the responsibility of identifying students' needs and helping them succeed (Perkins-Holtzclaw & Lampley, 2018), positive engagement may establish a strong relationship between the student and faculty advisor (Gatrix & Barrett, 2017). Using a consistent approach to the amount and content of feedback given, effective academic advising not only strengthens the student/faculty relationship but strengthens the student's relationship with the higher education institution as well (Chrysikos et al., 2017; Gatrix & Barrett, 2017). Faculty and staff serving in the role of an advisor is important as they can recognize needs and empower students by helping them learn life skills, encourage responsibility, and grow in their relationship with others.

In addition to positive engagement and consistency in the approach and content of feedback, the use of strengths-related discussions should be employed during advising sessions (Soria et al., 2017). Strength-related discussions allow students to explore personal attributes and academic goals while focusing on their strengths and positive attributes. “Advising conversations are often the most personal conversations students have with any staff on campus, even compared with faculty, although they may see faculty more often” (Soria et al., 2017, p. 60). Soria et al. (2017) found that students who engage in strengths-related discussions with advisors had higher levels of engagement, demonstrated greater academic self-efficacy, and had significantly higher rates of persistence to graduation than their peers who did not engage in strengths-related conversations. Academic advising that focuses on the student rather than the institution helps to build relationships between the student and faculty, staff, and institution, thus supporting student engagement, persistence, and graduation (Soria et al., 2017). Purposeful advising is not only effective; it deepens the advisor/student relationship and establishes a support system for the student within the higher education institution.

Non-traditional Student Persistence

A traditional student within higher education institutions is between 18-22 years old who enrolls directly from high school, attends full-time, and does not have major life or work responsibilities (MacDonald, 2018). However, non-traditional, or adult learners are the new majority in any sector within higher education according to the National Center for Education Statistics (2018). Students are classified as non-traditional if they identify with at least one of the following criteria: be at least 25 years old, attend school

part-time, work full-time, be a veteran, have children, wait at least one year after high school before entering college, have a general education development degree instead of a high school diploma, being a first-generation student, are enrolled in non-degree programs, or have reentered a college program (MacDonald, 2018). Non-traditional students have different needs than traditional students (Bohl, Haak, & Shrestha, 2017; MacDonald, 2018). Bohl et al. (2017) identified motivations on return, academic challenges, generation gaps, and support systems as distinct differences between non-traditional and traditional students.

Today's student populations in higher education are increasingly non-traditional. Estimates suggest 40% of the current undergraduate population at American colleges and universities are non-traditional (The Center for Law and Social Policy, 2015). Throughout the United States, the non-traditional student population is growing rapidly (The Center for Law and Social Policy, 2015). Non-traditional students are on their way to becoming the new majority amongst students enrolled in higher education institutions (Hittepole, 2019). However, most institutions continue to cater to the traditional student population. Non-traditional students enrolled in higher education institutions tend to have unique needs which include feelings of social isolation, inter-role conflict, and lack of academic flexibility (Hittepole, 2019). Social isolation is often experienced by non-traditional students as many find it difficult to connect with traditional students (Hittepole, 2019). As non-traditional students lack a sense of belonging, their satisfaction and success within the higher education institution tends to decrease (Hittepole, 2019). In addition to their role as a student, many non-traditional students may be a parent, an

employee, a caregiver, on top of many other competing roles. These students often experience a great deal of inter-role conflict as fulfillment of one role hinders their ability to fulfill their role as a student, and vice versa (Hittepole, 2019; Markle, 2015). Some inter-role conflict occurs due to structural barriers within institutions, as non-traditional students have difficulty finding classes that fit into their existing roles. Because most courses are designed for traditional students, non-traditional students frequently report frustration in the lack of course availability and course times (Hittepole, 2019; Singh, 2019). “These obstacles to success are not only challenging for non-traditional students, in some cases they prevent students from obtaining their degrees” (Hittepole, 2019, p. 3). Institutions must recognize that non-traditional students enter higher education institutions for a variety of reasons. Some enter colleges and universities to reenter the workforce, for intrinsic reasons such as self-improvement and a desire to increase knowledge, as well as to meet family needs (Hittepole, 2019). When non-traditional students are interested, motivated, and supported in their studies, they are more likely to engage, contribute to the classroom, and persist (Hittepole, 2019). As the needs of non-traditional students are diverse, higher education institutions must recognize and address these needs to help this population of students persist in their educational endeavors.

Persistence in Higher Education

Student persistence in higher education has been a consistent topic of research since the 1970s (Tinto, 1975, 1997, 2005). Increased knowledge of the context in which the lack of persistence occurs is critical in positively addressing this issue within higher education; however, research typically focuses on variables that affect persistence but lie

beyond the control of the higher education institution. The lack of persistence to graduation has serious effects on the student, institution, and society (Bernardo et al., 2016), thus increasing the importance of finding solutions to increasing student persistence within higher education.

Low completion rates yield significant costs. Students end up burdened with debt, waste their time, and see their earnings distinctly reduced. The median yearly income gap between high school and college graduates is around $17,500 (Osborn, 2016). On average, college graduates earn $1 million in learning over their lifetime (Osborn, 2016). The United States Bureau of Labor Statistics (2018) reported that, on average, workers who hold at least a bachelor's degree earned more than the median weekly earnings for all workers in 2018. Additionally, the unemployment rate for those with higher education degrees is significantly less than those without. The unemployment rate for those with a high school degree or less is three times higher compared to those who did attend college (Osborn, 2016). Persistence in higher education is essential to acquire higher income and earnings annually and throughout one's life while making it easier to find a job.

As the cost of an education continues to rise, student persistence from higher education is a growing concern for institutions, funding bodies, students, and the economy. According to the U.S. Department of Education (2016), billions of dollars each year are allocated to financial aid in the United States. In 2016, the federal government reported it made $94.7 billion in net loans to 9.8 million recipients in the 2016-2017 academic year (U.S. Department of Education, 2016). Each year, an estimated $46 billion in grants and scholarship money is awarded by the U.S. Department of Education and the

nation's colleges and universities. In addition, about $3.3 billion in gift aid is awarded by private sources, including individuals, foundations, corporations, churches, nonprofit groups, civic societies, veteran's groups, professional groups, associations, and many other organizations. When students invest in higher education through loans and do not graduate, serious negative consequences result for the students and the economy. Boggs, Elsner, and Irwin (2017) reported to compete in the global economy one must possess some form of postsecondary education. Interest in entering college has increased, although completion has been on the decline. This factor impacts more than only the college one chooses to attend. It also impacts the individual's ability to provide for their family and reduces the chance of becoming unemployed. Student persistence is an area of concern within higher education, and the effect is costly.

Heller (2001) identified three major challenges that higher education institutions face in the future: (a) affordability, (b) access, and (c) accountability. Since this timeframe, government involvement has increased. Taxpayers also began demanding that higher education become more accountable. Lawmakers no longer freely provide funding for higher education. The government has placed a stronger hold on these funds and threatens actual measures to limit tuition unless higher education institutions demonstrate responsible spending practices. Legislators mandate institutions submit persistence figures. In addition to setting performance benchmarks, legislators also pay close attention to the way that colleges spend and save the money they receive. This performance-based funding approach provides institutions with a larger share of public subsidies to the organizations that deliver impressive performance metrics. This

economic incentive requires states to redefine relationships by pressuring institutions to become more accountable, more efficient, and more productive in the use of government funding.

Persistence in Health-Related Education

Due to the growing demands from an aging population on the healthcare system and the potential for additional people accessing healthcare due to the Affordable Care Act, there is an increased need for qualified health care workers in the United States (Finnel, 2018; Gaus, 2017; Menser, 2015). Americans born between 1946 and 1964 make up one of the largest generations in the United States (Ezequiel, 2016). Approximately 10,000 Americans turn 65 years old each day, making them eligible for Medicare and retirement (Ezequiel, 2016). "As a result, the number of Medicare enrollees will increase from its current 54 million to more than 80 million by 2030, when 20% of the United State's population will be aged 65 years or older" (Ezequiel, 2016, p. 242). As the population ages, the United States Bureau of Labor Statistics (2018) indicated an increased need for health providers. Not only are health care providers retiring at a rapid rate, but there are not enough new graduates to replenish the workforce (Kavilanz, 2018). Kavilanz (2018) stated the United States will need to hire 2.3 million new healthcare workers by 2025 to adequately take care of its aging population. In the most recent comprehensive global study by the World Health Organization (2013), there is an estimated global shortfall of 12.9 million health care workers by 2035. When there are fewer health care workers to take care of a larger volume of patients, it adversely affects patient outcomes. A shortage of healthcare workers creates a blockage to timely care for

the patient, including lab work, medical imaging, surgical procedures, and treatment from a physician. Kavilanz noted, “Patients are more likely to be readmitted after 30 days of first being seen and they can also be at a higher risk of a hospital acquired infection” (para. 10). In health-related studies, the lack of student persistence to graduation negatively impacted health care on many levels while contributing negatively to patients, our communities, and global societies.

Summary and Conclusions

Chapter 2 included an exhaustive search of theories, models, and research that relate to student persistence. From the foundational persistence theories of Spady (1970, 1971), Tinto (1975, 1993, 1997, 2005, 2012), and Bean (1980, 1983) to the more inclusive theories of Bean and Metzner (1985) and Cabrera, Nora, and Castaneda (1993), student persistence was presented as not single-dimensional but multi-faceted in nature. Individual factors, as well as institutional factors, were noted throughout research as contributors to student persistence. The focus of Chapter 2 captured the significance of previous research of student persistence in higher education; however, there have been no studies on the subjective experiences of radiologic technology students regarding persistence. Increased persistence from enrollment to graduation for students in radiologic technology programs is beneficial not only for the students and higher education institution but for the community as well, who will be provided with appropriate health care personnel for the future. Participants in this qualitative study contributed to the field of radiologic technology education by revealing their personal experiences of persistence from enrollment to graduation in a 2-year radiologic

technology program. As previous research lacks the subjective experiences of individuals and persistence, I conducted my research in a manner that may close this gap in the literature. Using a basic qualitative approach and semi-structured interview questions, I sought to identify individual experiences with persistence. Chapter 3 provides the groundwork to begin the comprehensive process of gathering and analyzing data from previous radiologic technology students who wanted to share their perceptions of their experiences related to persistence at their institution or reasons for leaving.

Chapter 3: Research Method

As indicated in the literature review, there was a gap in knowledge about student persistence in 2-year radiologic technology programs. The purpose of this study was to explore how students describe their perceptions of experiences at the local college that encouraged them to persist to graduation or quit attending in a metropolitan area of the southern United States. A basic qualitative design was used to explore what impediments may influence students to drop out of radiologic technology programs while addressing a gap in practice at the local site and a gap in the literature about student persistence.

Qualitative methodology is used to explore the perspectives, feelings, and beliefs of participants while providing insight to gain an understanding of underlying reasons, opinions, and motivations of others (Ravitch & Carl, 2016). I chose a qualitative approach to answer the research questions because it would provide subjective information on student persistence in 2-year radiologic technology programs. Qualitative methodology allows data to be collected in various manners including the use of interviews (Merriam & Tisdell, 2016; Ravitch & Carl, 2016). Chapter 3 includes (a) the research design and rationale, (b) my role as a researcher, (c) participant recruitment and selection, (d) instrumentation, (e) the research setting, (f) data collection and analysis, and (g) the measures I took to protect the participants.

Research Design and Rationale

Research methodology includes the procedures or techniques used to identify, select, process, and analyze information about a topic. The research method is a tool that helps the researcher answer the research question(s). For the current study, a basic

qualitative approach was used. Qualitative methodology involves viewing, understanding, and engaging with people (Ravitch & Carl, 2016). Qualitative methodology is more subjective and does not allow for generalizability of data. Concerned with *how* and *why* questions, qualitative research is about words and stories. Although different research methods have their strengths and weaknesses, the research questions of a study should drive the methodology chosen for the study.

Students who persisted and students who did not persist from enrollment to graduation in a 2-year radiologic technology program from 2014 to 2019 were interviewed to learn their perspectives regarding these influences. The research questions for this study guided the exploration of student experiences relating to Ryan and Deci's (1985) self-determination theory concepts of motivation and success. The following questions were designed to promote understanding of how intrinsic and extrinsic motivation supported persistence or did not support persistence of students from enrollment to graduation in a 2-year radiologic technology program in a metropolitan area of the southern United States:

RQ1: What are students' perceptions of experiences that encouraged them to persist to graduation in a 2-year radiologic technology programs in a metropolitan area of the southern United States?

RQ2: What are students' perceptions of experiences that resulted in their leaving the 2-year radiologic technology programs in a metropolitan area of the southern United States?

To answer these research questions, I used qualitative methodology to understand participants' perceptions of their experiences. Qualitative designs include ethnography, grounded theory, narrative, phenomenology, case study, and generic or basic. Ethnography requires immersion in the participants' environment and observation in the natural setting (Mihas, 2019). Ethnographers seek to study the participants over an extended period of time through close examination and analysis of their culture (Creswell, 2014). I did not intend to study the culture of the institution. Therefore, I concluded that this design would not be appropriate to answer my research questions. The grounded theory design involves using the results and literature collected from a variety of settings to generalize to other settings and create a theory (Mihas, 2019). I did not seek to create a theory. Therefore, this was not the appropriate mode of inquiry to answer the research questions.

The narrative design allows a participant to tell the story of their life and allows the researcher to find meaning through the stories (Creswell, 2014; Mihas, 2019). The research questions of this study did not lend themselves to this design of inquiry because I did not aspire to find meaning through stories. In addition, phenomenology is a design best suited for a researcher investigating a shared phenomenon or lived experiences of a group of individuals (Creswell, 2014; Mihas, 2019). The goal of this approach is to describe the nature of a phenomenon (Creswell, 2014). Although every participant in the current study attended a 2-year radiologic technology program, each had different lived experiences and was unique individuals. A one-size-fits-all approach would not have

been appropriate; therefore, a phenomenological approach was not chosen to answer my research questions.

A case study design is an empirical inquiry that addresses a phenomenon within its real-life context (Ravitch & Carl, 2016). Case studies are based on an in-depth investigation of a single individual, group, or event to explore the causes of underlying principles (Ravitch & Carl, 2016; Yin, 2009). A case study is understood as bounded by time and place (Creswell, 2014; Ravitch & Carl, 2016). Case study research methods include a variety of data sources (Ravitch & Carl, 2016; Yin, 2009). Because I used only interviews to gather data, a case study approach was not appropriate to answer my research questions.

Basic qualitative research is the preferred approach when trying to "solve a problem, effect a change, or identify relevant themes rather than attempting to position their work in a particular epistemological or ontological paradigm" (Mihas, 2019, para. 1). The basic qualitative approach was ideal for my study for several reasons. First, the basic qualitative approach allowed for investigation of the current problem at the institution by understanding what the problem means to the participants. These results cannot be generalized (Ravitch & Carl, 2016). Second, the basic qualitative approach enables the researcher to gain an in-depth understanding of the problem (Creswell, 2014) by collecting detailed and descriptive data (Nassaji, 2015). Third, the basic qualitative methodology allows for flexibility (Ravitch & Carl, 2016) and requires much less control than a quantitative study because it occurs in the natural setting (Flick, 2018). Creswell and Creswell (2018) explained that quantitative researchers seek to establish conclusions

about populations that address a hypothesis, that are either experimental or descriptive, that are statistically significant, and that can be generalized to a larger population. In the current study, I sought to understand the phenomenon of student persistence at a specific institution; therefore, quantitative methodology was not appropriate.

Role of the Researcher

In my role as the researcher, it was necessary to identify any possible conflict of interests. At the time of the study, I was the chair of a 2-year radiologic technology program in the southern United States. One facet of my position is administrative. As a leader within my institution and chair of the radiologic technology program, I know that student persistence from enrollment to graduation is important. I have a responsibility to ensure students are retained and succeed in the program. I also teach several courses a semester in the radiologic technology program. My roles as an administrator and faculty member provide me with views of student persistence from different perspectives.

Because I am the direct supervisor for three faculty members and actively teach within the radiologic technology at my institution, a different institution was chosen for this study. I had no direct authority at the study location, and I did not serve on any committees, councils, or boards. Therefore, my position at my institution did not affect the responses of any students in the study. Interviews were conducted with previous students at the study location.

With my limited affiliation to the institution or its students, there was no conflict of interest. I considered my role as a researcher and kept a research journal to manage any bias that could have occurred. To ensure quality, I identified major themes from the

data, included personal reflections in the data, used research literature to support my findings, and acknowledged the limitations of the study. Additionally, I used an external transcription agency to reduce the risk of bias in the study.

Methodology

A basic qualitative approach was chosen for this study because I had an interest in students' perceptions of their experiences while attending a 2-year radiologic technology program in a metropolitan area of the southern United States. Because student persistence is lower than desired at the study site, I wanted to learn from students who persisted from enrollment to graduation and from the students who did not persist from enrollment to graduation. I used a qualitative approach in which interviews were conducted to collect and analyze data that would provide valuable information on student persistence in a 2-year radiologic technology program in a metropolitan area of the southern United States.

Participant Selection

Population. The population of interest was individuals who did and did not persist from enrollment to graduation in a 2-year radiologic technology program. The 2-year radiologic technology program is accredited by the JRCERT and is part of a public community college in a metropolitan area of the southern United States. Because the purpose of this study was to explore how students describe their perceptions of experiences at the local college that encouraged them to persist to graduation or quit attending in a metropolitan area of the southern United States, the population identified was ideal for this study.

The setting. The student population at the institution ranges in age from under 20 to 50+ years old. The institution has a population of over 9,000 students with the male gender comprising over 50% of the student population. Over half of the student population is White, and the remaining students are Black, American Indian, Hispanic, Asian, Other, Unknown, or Multiple.

The 2-year radiologic technology program enrolls 18-20 students each academic year. There are two full-time faculty members who consist of the program director and clinical coordinator. The program employs multiple adjunct faculty to teach the didactic portion of the curriculum. Additionally, staff radiologic technologists within the clinical setting serve as clinical instructors or preceptors to teach the clinical components of the curriculum. For this study, I interacted with only the participants of the study. My goal was to interview a minimum of seven previous students who did not persist and a minimum of seven students who persisted from enrollment to graduation in a 2-year radiologic technology program in a metropolitan area of the southern United States during the years 2014-2019. I began data collection once I had recruited seven participants in each category.

Sampling strategy. Purposeful sampling was used to select participants. Purposeful sampling is a nonprobability sampling method in which participants are selected based on characteristics of a population and the objective of the study (Ravitch & Carl, 2016). This approach promotes the selections of participants who can provide rich experiences and personal perceptions to the problem being studied. Creswell (2014) described purposeful sampling as a method in which to identify and select individuals

who are knowledgeable about or experienced with a phenomenon of interest. The goal of purposeful sampling is to focus on the characteristics of a population of interest, which will enable the researcher to answer the research questions.

Selection criteria. The criteria for selection included students enrolled in and having attended the 2-year radiologic technology program at the selected institution during the years 2014-2019. The criteria also included students who did and did not persist from enrollment to graduation in this 2-year radiologic technology program. The selection criteria allowed me to achieve data saturation to answer the research questions. Participants in this study consisted of seven individuals who persisted and seven individuals who did not persist from enrollment to graduation in a 2-year radiologic technology program in a metropolitan area of the southern United States. Creswell (1998) recommended a sample size of 5-25 for basic qualitative studies, while Hagaman and Wutich (2016) recommended a sample size of 16 or fewer. My chosen sample size allowed for data saturation.

Relationship between saturation and sample size. The participants provided their experiences and perceptions regarding persistence from enrollment to graduation in the 2-year radiologic technology program; therefore, the relationship between saturation and the desired sample size can be viewed in a cultural context. As a result of the shared experiences of the participants, saturation can be achieved with the sample size (Creswell, 1998). Hagaman and Wutich (2016) concluded that saturation can occur with 16 or fewer participants when they compose a relatively homogeneous group.

Instrumentation

The instrumentation for this study was a semistructured interview protocol. In addition to audio recording the interviews, I kept a field journal to note observations during the interview process. The interview questions were developed by me based on related literature and the experiences at my educational institution. To ensure content validity, I asked subject experts to review the interview questions. The subject experts, who consisted of radiologic technology program faculty, provided feedback on how well each question aligned with the research questions. The use of interviews in qualitative research is valuable because they allow the researcher to focus of the why and how of human interactions (Ravitch & Carl, 2012). Open-ended interview questions allowed for deeper understanding of student persistence in 2-year radiologic technology programs.

A semistructured interview approach was used in this study, and the interviews were audio-recorded to ensure accuracy of transcripts. The interviews lasted 45 minutes to 1 hour. The semistructured interview encouraged the participant to answer at length and in detail. If the need arose, I asked probing or follow-up questions. For example, if there was a contradiction in the answers of any participant, I utilized iterative questioning. This systematic and repetitive process enables the researcher to collect specific data that are necessary for trustworthy qualitative research (Rubin & Rubin, 2012). The intent of the interview questions (see Appendix A) was to identify the perceptions of what the participants had experienced regarding persistence from enrollment to graduation in a 2-year radiologic technology program in a metropolitan area of the southern United States.

Procedures for Recruitment, Participation, and Data Collection

Prior to beginning any data collection, I obtained IRB approval from the higher education setting used for the study. I ensured I meet the research standards of their institution by completing all necessary paperwork and supplying them with the required documentation for the study. I also obtained IRB approval from Walden University. Walden University's IRB approval number for this study is 05-06-20-0736052. Once I obtained IRB approval from both institutions, I started the process of data collection by inviting interviewees.

The higher education institution setting for this study reached out to participants on my behalf. Participants received email correspondence outlining the purpose of the study, a timeline for the study, and information regarding the receipt of a $25.00 gift card for their participation in the study. Interested individuals contacted the institutional research coordinator at the higher education institution. The institutional research coordinator communicated with me when the desired number of participants had been met. At that time, I obtained the contact information for the interested participants. I emailed each interested participant and introduced myself, restated the purpose of the study, reminded them that it wasvoluntary, and sent a copy of the consent for participation in the study. For those who consented to participate, I assigned all interviewees an alphanumeric signifier which was used in the interview recording, audio recordings, transcriptions, and reflective log. I did not reveal the names of the participants to any other person and maintained a digital record of assigned codes on an encrypted flash drive.

After weighing different designs of inquiry to determine which would be most useful, semi-structured interviews was chosen. In the interviews, the participants were provided an opportunity to discuss their experiences that contributed to persistence in the higher education institution. The interviews aided in understanding the current reasons for the lower student persistence rate in 2-year radiologic technology programs in a metropolitan area of the southern United States.

Because I used semi-structured interviews with participants but cannot control the data collected, this approach provided the best opportunity for insight into the problem (see Merriam & Tisdell, 2016; Yin, 2014). The recorded conversations were instrumental in eliciting in-depth, detailed experiences. Rubin and Rubin's (2012) guidelines for interviewing were utilized when conducting the interviews. The interview guidelines promoted a positive interview environment and allowed me to complete the interviews in a professional and neutral manner. Rubin and Rubin recommend using semi-structured, open-ended questions that allow the participants to express themselves. The questions reflected continuity and I clarified meanings and indicated understanding throughout the interview process. Using positive body language, I encouraged responses and I maintained control of the interview. Rubin and Rubin's method accentuated the importance of fostering an informative conversation to gain insights into participants' perspectives.

I arranged a time and place with each participant in which to conduct the interview. Ravitch and Carl (2016) recommended conducting interviews in a safe space where participants feel comfortable and relaxed. I did not rush through the interview

questions but maintained consistency in question delivery. Prior to starting the interviews, I explained the process and clarified any questions posed by the participant. I reminded the participants that the interview would last 45-60 minutes, clarified any questions posed by the interviewee about the study or the consent form, and told them the interview would be audio recorded. Once all questions were answered I began the interview process. The semi-structured interview approach allowed participants to provide rich and detailed information pertaining to the research questions. After the interviews were completed, each participant received a transcript of their interview via email and validated it for accuracy. Interviewees were advised that follow-up interviews may be necessary.

Data Analysis Plan

To manage the interview and background information of the participants, I used the interview protocol (see Appendix A). In addition, the interview questions and any probing questions used were included in the field notes. The interview responses and field notes made up the data. As recommended by Tracy (2019) the initial coding of field notes and interviews was done manually using pencil and paper. I read and reread the data and noted emerging ideas. In addition to organizing data sources into a collection of key phrases, patterns of primary themes, and potential subthemes, I used Microsoft Excel and Word software to document the analysis of keywords-in-context or word-repetitions. According to LaPelle (2004), simplifying qualitative data analysis using Microsoft Word is beneficial for retrieving coded text segments, building a hierarchy list of “code categories via indexing, global editing of theme codes, coding of

'face sheet' data, exploring relationships between face-sheet codes and conceptual codes, quantifying the frequency of code instances, and annotating text" (p. 85). Additional analysis was implemented as I used one of the recommended software programs, NVivo 12 (see Tracy, 2019), to electronically code, organize, store, manage, and reconfigure the recorded data. As the goal of this study was to understand the phenomenon of student persistence from enrollment to graduation in 2-year radiologic technology programs in a metropolitan area of the southern United States, all collected data were analyzed. Discrepant data were included in data analysis and reporting as contraindications in data can give rise to unexpected findings, which could ultimately strengthen the research.

Trustworthiness

The concept of developing valid and trustworthy studies is essential in qualitative research. Ravitch and Carl (2016) identified the term trustworthiness as "the process and approach that qualitative researchers use to assess the rigor of qualitative studies" (p. 187). To assess rigor, the fundamental elements of credibility, transferability, dependability, and conformability were used to help the researcher conceptualize, engage with, and plan for various aspects of validity.

Guba (1981) defined credibility as the "researcher's ability to account for the complexities that present themselves in a study and to deal with patterns that are not easily explained" (as cited in Ravitch and Carl, 2016, p. 188). Electronic recording devices were utilized throughout the data collection process to ensure credibility. To establish credibility, I acknowledged my role as an educator in radiologic sciences with

each participant. In so doing, I hoped to establish trust and rapport with the participants and included member checks into my research (see Ravitch & Carl, 2016). Ravitch and Carl (2016) identified that building relationships with participants through trust and rapport is a vital process that is at the heart of qualitative research. The purposeful participant selection process provided multiple viewpoints and perspectives specific to student persistence from enrollment to graduation in the 2-year radiologic technology program. I had each participant review their transcript and provide feedback to validate it for accuracy. I ensured the transcript captured the entire essence of the interview while maintaining accuracy. Upon completion of the transcription process, I emailed the final transcript to the participant to ascertain I understood the participant's responses. These individuals informed the body of knowledge (see Amankwaa, 2016) regarding student persistence from enrollment to graduation in the 2-year radiologic technology program in a metropolitan area of the southern United States from multiple perspectives.

Transferability is "the way in which qualitative studies can be applicable, or transferable, to broader contexts while still maintaining their context-specific richness" (Ravitch & Carl, 2016, p. 189). To ensure transferability, I used detailed descriptions of the data and context so the readers can make comparisons to other contexts with as much information as possible. To allow for reflection and interpretation of the data collected, I maintained a journal. All the data collected through audio recordings and note taking were given to a professional transcription agency. I had the professional transcription agency sign a confidentiality agreement to honor the privacy of each participant. Once the transcriptions were complete, I began analyzing the information.

Dependability of research is achieved by using a solid research design. I vetted my choice to use a qualitative research design with previous professors and my dissertation chair. I wanted to ensure I used the most effective research design to answer my research questions. As I strive to make a positive impact on student persistence in 2-year radiologic technology programs, I am confident that a qualitative approach was appropriate for data collection.

Acknowledging and exploring the ways that our biases and prejudices affect our interpretation of the data is the goal of confirmability. Through frequent debriefing sessions with my dissertation chair, I reviewed my thoughts and theories. This process allowed me to address any flaws and allowed me to develop ideas and interpretations in a forum that called attention to any bias I had as a researcher. The discussions provided guidance and alternative strategies. I held myself accountable which increased dependability of the study. I coded the data in the same way throughout the coding process which enhanced intra-coder reliability. The discussions allowed me to check and recheck the data throughout the study, increasing confirmability. In addition, the use of an external transcription agency lessened the chance of any personal bias in transcribing the interview logs. The coding of data was done manually and by using the NVivo 12 coding software program. NVivo 12 offered a wide range of tools to assist with managing the data collected from the in-depth interviews. The NVivo 12 software had the capacity to record, organize, sort, match, and link enriched information. By employing two mechanisms in which to code the transcribed data intercoder reliability increases, thus increasing the trustworthiness of the results.

Ethical Procedures

Ethical considerations for this study included maintaining confidentiality, following IRB and federal guidelines, following the guidelines set forth by the chosen higher education institution used in the study, and protecting the privacy of the participants in the study. I obtained informed consent from each participant, but also reiterated they could leave the study at any time without consequences. I did not reveal the names of any participant. Each participant was assigned an alphanumeric signifier that was used for the interview recording, audio recording, transcriptions, and the reflective log. For increased protection of the participants' information, a copy of all electronic forms, transcripts, and notes was stored on encrypted flash drives. To ensure no other person had access to the confidential data, the use of alphanumeric coding of the participants' information was employed. I stored this information separately on my personal password-protected computer and all electronic files and flash drives were kept secured in my home.

I offered participants an incentive to participate as compensation for their time. The use of incentives in participant recruitment has shown quicker recruitment times and increased engagement (see Rubin & Rubin, 2012). If a participant started the interview process and decided to stop before it was finished, they still received the incentive.

No participant was penalized for not answering all the questions or stopping the interview early. To ensure accuracy and integrity of the interview data, I emailed each participant a copy of their interview transcript and asked them to review and verify the information. I amended the summary of the interview transcript based on the participant

feedback. To ensure the data was kept confidential, a copy of all electronic forms, transcripts, and notes were stored on encrypted flash drives. To ensure no other person had access to the confidential data, the use of alphanumeric coding of the participants' information was employed. I stored this information separately on my personal password-protected computer and all electronic files and flash drives were kept secured in my home. All the data collected through audio recordings and note taking were given to a professional transcription agency. Once the transcriptions were complete, I began analyzing the information. After 5-years of safe storage, I will destroy all the collected data.

Summary

Chapter 3 included explanation that I used a basic qualitative methodology to explore how students describe their perceptions of experiences at the local college that encouraged them to persist to graduation or quit attending in a metropolitan area of the southern United States. I used these experiences to gain a deeper understanding in student persistence from enrollment to graduation in 2-year radiologic technology programs. Using semi-structured interviews to explore student persistence in 2-year radiologic technology programs, I acquired rich, thick descriptions from participants.

As the researcher, I was responsible for the analysis and interpretation of the data, using subjective judgment, and synthesizing participants' realities. This chapter focused on the methodology of this study, the participant selection, and my role as the researcher. Additionally, key measures to ensure the trustworthiness of this study were addressed, along with the ethical considerations I took while conducting doctoral

research. Chapter 4 includes information about the research setting, data collection and analysis, results, and evidence of trustworthiness throughout the study. Overall, Chapter 4 explains the analysis and findings from this current study.

Chapter 4: Results

The purpose of this study was to explore how students describe their perceptions of experiences at the local college that encouraged them either to persist to graduation or quit attending in a metropolitan area of the southern United States. The research questions that guided the exploration of student experiences related to Bean and Metzner's (1985) non-traditional undergraduate attrition model and to the concepts of motivation and success in Deci and Ryan's (1985) self-determination theory because they support student persistence. The following research questions guided the data collection and analysis:

RQ1: What are the students' perceptions of why they did not persist from enrollment to graduation in 2-year radiologic technology programs in a metropolitan area of the southern United States?

RQ2: What are the students' perceptions of what helped them persist from enrollment to graduation in 2-year radiologic technology programs in a metropolitan area of the southern United States?

In this chapter, the setting and demographics of the study are identified. Following a description of the data collection, the data analysis procedures that were used to determine the findings are described. After discussion of the results of this study by research question, evidence of trustworthiness, which included credibility, transferability, dependability, and confirmability, is presented.

Setting

This research took place at a 2-year college in a metropolitan area in the southern United States. I chose a 2-year college setting because of its characteristics, mission, values, goals, and affiliation with outstanding history of health care education. The institution selected has provided excellence in academics, health care education, first-time pass rates on certification exams, and job placement for over 30 years. The college grants associate's degrees but also offers program certificates, general education classes, continuing education classes in health care, and a Bachelor of Science in Nursing program. The 2-year college used in this study ensures access to quality education in current and emerging health care fields for a diverse population. Moreover, the college is regionally accredited by the Southern Association of Colleges and Schools Commission on Colleges. Finally, the college uses selective admissions criteria for all health care programs. The health care program pertinent to the current study was the radiologic technology program.

The selective admissions criteria for the radiologic technology program consists of completion of the radiologic technology program application, a minimum of 2.5 cumulative GPA, a minimum composite score of 19 on the American Colleges Testing assessment, verified absence of drug and alcohol use, background screening, verified completion of cardiopulmonary resuscitation training, a health assessment, and proof of vaccinations. Applicants who meet these criteria are academically ranked according to their cumulative GPA. The 50 highest-ranked applicants are invited to interview with college admissions' personnel. The radiologic technology program accepts 18-20

students every fall term. Participants in the current study met these requirements and enrolled in the radiologic technology program during the 2014-2019 academic years.

The participants were selected because they could provide rich responses to the interview questions. The participant selection process started after approval was received from Walden University's IRB. Because the study site is affiliated with a health care organization, I also had to apply for approval from the health care organization's IRB. An ethics training course was completed for process improvement, and the completion certificate was submitted as part of the application process. The application was approved as a process improvement study by the health care organization's IRB.

I gained access to the study site and the participants through the institutional effectiveness coordinator of the college via email and included copies of both IRB approval documents. The email provided an overview of the study and asked whether the institutional effectiveness coordinator could help with sending the study invitation and consent form to all prospective participants. I requested the study information be sent to any radiologic technology students who were enrolled during the 2014-2019 academic years. The institutional effectiveness coordinator created a list of all students who were enrolled during the years requested and divided the listing into two sections: (a) individuals who persisted from enrollment to graduation and (b) individuals who did not persist from enrollment to graduation. The study invitations and consents were sent in two rounds. The first round of invitations and consents were emailed to 45 prospective participants, 25 who persisted to graduation and 20 who did not persist to graduation. From the first round of invitations, a total of eight individuals consented to participate in

the study. Out of the eight participants, six persisted to graduation and two did not persist to graduation. The second round of invitations and consents were emailed to 62 individuals, 37 who persisted to graduation and 25 who did not persist to graduation. After the second round of invitations and consents were sent, an additional six individuals consented to participate in the study. Of these six, one persisted to graduation and five did not persist to graduation. Those who chose to participate emailed me and responded with the words "I consent." After I received an email with this confirmation from each participant, I emailed the demographic questionnaire and sent information to schedule the interview. Due to the state-mandated restriction of social distancing because of COVID-19, Zoom served as the interview platform.

The 14 participants in this study either persisted from enrollment to graduation in the 2-year radiologic technology program or did not persist from enrollment to graduation and withdrew from the program. I selected participants who represented both persistence and nonpersistence because each group would provide unique perceptions about their individual experiences in the radiologic technology program. Table 1 shows the demographic data from the questionnaire, including age, gender, highest degree completed, work status, marital status, and number of dependents while enrolled in the program. I assigned a numeric signifier to each participant to protect their identities and ensure confidentiality.

Table 1

Participant Demographics

Participant	Age	Gender	Highest level of education	Work status while enrolled	Marital status	Number of dependents
A5	44	F	SC	U	M	2
A6	20	F	SC	U	E	0
A7	22	F	BS	PT	S	0
A8	31	F	BS	U	M	0
A9	19	F	AAS	PT	S	0
A10	21	F	SC	PT	S	*0, 1
A11	25	F	BS	U	M	1
W14	20	MLE	SC	PT	S	0
W15	22	F	BS	FT	S	0
W16	19	MLE	SC	FT	S	0
W17	24	F	SC	PT	M	0
W18	20	F	SC	U	S	0
W19	22	F	SC	U	S	0
W20	22	F	BS	PT	S	0

Note. F = female, MLE = male; BS = Bachelor of Science, AAS = Associate of Applied Science, SC = some college; U = unemployed, PT = part-time, FT = full-time; M = married, S = single, E = engaged; *0,1 = started the program with zero dependents and ended the program with one dependent.

According to the demographics of this group, the participants were enrolled in the same 2-year radiologic technology program between 2014 and 2019. Participants' ages while enrolled ranged from 19 to 44 years. Twelve participants were female, and two were male. All but one of the participants had some college experience before entering the program. Eight participants worked in some capacity while enrolled in the program. Four participants were married and three had dependents while enrolled in the program.

I made observations regarding the personal characteristics and ages and work status of the participants in this study. Although two participants (A9 and W16) were 19 when starting the program, one persisted to graduation while the other did not persist. Additionally, most of the participants who did not persist from enrollment to graduation worked while in the program.

Data Collection

The participants' responses to the interview questions provided data for this basic qualitative study. The interview questions were recorded via Zoom and the voice-recorded interviews were sent to a transcription agency. Follow-up emails were sent to each participant that included their individual transcribed interview.

The institutional effectiveness coordinator at the study site emailed the study invitation and consent form to a list of prospective participants. The instructions for participation in this study required the individuals to email me with the words "I consent." Fourteen individuals responded to the study invitation and consented to participate in the study. Once I received their consent, I emailed them the demographic questionnaire and sent information to schedule the interview.

During the month of July 2020, I collected the participants' responses from the interviews. One 45-minute interview was conducted with each participant using Zoom. I did not use any published instrument to collect the data; I created the interview questions for this study. The interview questions were designed to address the perspectives, feelings, and beliefs of participants while providing insight to gain an understanding of underlying reasons, opinions, and motivations (see Ravitch & Carl, 2016). To ensure credibility and dependability, I used interviews as the instrument to gather data (see Merriam & Tisdell, 2016; Ravitch & Carl, 2016). The interview questions were reviewed by subject experts at the study site to confirm validity. The subject experts, who were radiologic technology program faculty, provided feedback on how well each question addressed the research question. I emailed the interview questions to three program faculty for review and feedback. They approved the interview questions with no revisions.

I used two different sets of interview questions (see Appendix A) for this study. One set of questions was asked of participants who persisted from enrollment to graduation, while the other set of interview questions was asked of participants who did not persist from enrollment to graduation in the 2-year radiologic technology program. The synchronous interview process allowed for immediate responses from the participants, and I was able to clarify any of the responses before asking the next question. Additionally, I was able to monitor the body language of each participant during the interview. Each interview was audio recorded, and I kept a journal of each

participant interview. After completion of each interview, I emailed the participant a $25.00 Amazon gift card as appreciation for their participation in the study.

Next, I sent each audio-recorded interview to a transcription agency. The turnaround time for the transcriptions was approximately 24-hours. Once I received the transcripts, I emailed the participants their individual interview transcript for review. I allowed 10 days for the transcript review process; however, I received confirmation from all 14 participants within 7 days. One of the participants provided additional information to her transcript that she wanted reflected in her interview responses. I added this information as an addendum to her transcript to ensure all information was captured and recorded. The initial emails requesting the demographic information and scheduling the interview, the synchronous interview, and the follow-up emails helped me build rapport with each participant.

Approximately 30 days passed from the time the initial invitation and consent emails were sent to participants to the conclusion of transcript review. All 14 participants answered the interview questions and completed the interviews, resulting in a 100% response rate. Transcript review was used to ensure participants reviewed their interview transcript and confirmed the experiences captured in the interview were representative of their perceptions. Individual participant transcripts were reviewed to verify the information was honest and accurate. Additionally, participants reviewed what they said and provided feedback on any revisions needed to the documentation. After transcript review, I uploaded the participants' responses to NVivo to manage, analyze, code, and report the data. In addition, I started manually coding the data from each participant

transcript. The participants' information and a copy of all electronic forms, transcripts, and notes were stored on encrypted flash drives. To ensure confidentiality of the data, I used numeric coding of the participants' information. The data were secured in my home. No additional data were collected.

There were variations to the plan described in Chapter 3 regarding data collection. The original proposed study site rejected my study proposal, and I had to use an alternate institution. The IRB at Walden University was notified of the change and provided guidance in obtaining approval from the new study site. A Request for Change in Procedures Form was completed and sent to Walden University's IRB for review, which included updated copies of the consent form, study invitation, and interview questions. In addition, the new study site's IRB approval letter was also submitted for review by Walden University's IRB. The new study site was located in a metropolitan area of the southern United States and had a 2-year JRCERT accredited radiologic technology program. The institutional demographics of the new study site differed from the original site in the population and demographics of students. The new study site had a population of fewer than 1,000 students with the female gender comprising over 80% of the student population. The 2-year radiologic technology program at the study site had four full-time faculty members who consisted of the director, clinical coordinator, and two didactic faculty. No adjunct or part-time faculty were employed for this program at the study site.

I had to update the study invitation and consent form to identify my relationship with the new study site and clarify that my role as a researcher was different from my role at the study site. Faculty members at the new study site reviewed the interview

questions. Finally, the interviews were conducted using Zoom instead of in person due to COVID-19. The audio recording was done via the Zoom platform and not through a voice recorder device. Although these variations occurred in the data collection process, all of the necessary steps were followed to obtain approval for these changes. The integrity of this study was not compromised, and rich data were collected. Apart from one participant forgetting about the interview and having to reschedule, there were no unusual circumstances encountered during the data collection process.

Data Analysis

As I began my data analysis, I used bracketing to clear preconceptions and set aside personal experiences that may taint the research process. Also known as mind-mapping, bracketing is designed to help keep the researcher objective in the data analysis process and prevent bias (Creswell, 2005; Patton, 2015). I began the data analysis process using inductive coding which included open coding of the data. The participants provided rich responses to the interview questions and I was able to sort the data into broad categories.

The audio recorded interviews were sent to a professional transcription agency once all the interviews were completed. Next, I analyzed the transcribed interviews. The data acquired from the participants who did not persist from enrollment to graduation were analyzed first and the data from the participants who did persist from enrollment to graduation were analyzed last. During the data analysis process, I reviewed for emerging ideas several times to ensure all of the information was considered in the coding process. The emerging ideas and themes were listed in a spreadsheet (see Appendix B). At the

conclusion of the first coding cycle, 14 codes were identified for participants who did not persist from enrollment to graduation and 12 codes were identified for participants who did persist from enrollment to graduation. After completing the inductive coding process, I performed a second axial coding cycle on the data to organize the identified codes into categories. As recommended by Tracy (2019), I also entered each participants' interview transcripts into the NVivo 12 software for electronic data analysis, data management, and data reporting. Utilizing the inductive coding manual process at the beginning of the data analysis process and using the NVivo 12 software helped to solidify the correct themes for this research and ensure non-bias. Below is a discussion of the specific codes, categories, and themes that emerged from the data analysis process, followed by a discussion of discrepant cases.

Before starting the data analysis process, I printed each participant's transcript and separated the responses into two categories: (a) participants who did not persist from enrollment to graduation and (b) participants who persisted from enrollment to graduation. While reviewing the participants' responses to the interview questions, I organized and analyzed each question. I completed this for both groups of participants before moving on to open coding. Using open coding, I made notations and comments in the margins. I highlighted common words or phrases in the transcripts and began to identify the participants' experiences and perceptions regarding their persistence in the 2-year radiologic technology program at the local site. I marked information identified by the participant as important and assigned codes to excerpts from each participant's responses. I searched for related codes and established categories among the responses.

Next, I performed axial coding by grouping the open codes into the categories determined by how they were connected to develop themes. I repeated this process for each interview question for each of the two groups.

The responses to the interview questions from multiple participants who attended the 2-year radiologic technology program at different times and who have different viewpoints helped me triangulate the data, which helped facilitate a deeper understanding (see Patton, 2015). First, I identified codes using words and short phrases from each participant's responses. Second, I grouped the codes to form categories. Third, I identified each category and developed themes (see Appendix B). I determined no follow-up interviews for clarifications or explanations were needed.

As themes emerged, I reviewed the comments and bracketed any thoughts, assumptions, and preconceptions I had about student persistence in 2-year radiologic technology programs. Each participant's response was transferred into NVivo 12 to manage, analyze, and report the data. The NVivo 12 software demonstrated links and connections among different aspects of the participants' responses. Several themes emerged as I repeated the process of advancing from codes into categories and ultimately themes. The use of NVivo 12 software in the coding process confirmed the themes identified during the manual coding process.

The conceptual framework for this study was derived from the literature and served as a comparison base for the available concepts with what was found during the study. Although theory and literature formed the basis for this study, I relied on the responses of the seven participants who did not persist from enrollment to graduation and

the seven participants who persisted from enrollment to graduation in the 2-year radiologic technology program to discover emerging themes from the interviews and the open-ended questions (see Appendix A). From the initial interviews, significant themes emerged that helped provide a deeper understanding of the participants' perceptions.

Open and axial coding were used in the manual coding process. During this process, several emerging ideas were revealed and subsequently organized into themes. For the participants who did not persist from enrollment to graduation, the emerging themes identified through manual coding included the following: (a) resources, (b) family/friend support, (c) ready to learn, and (d) personal. For participants who did persist from enrollment to graduation, the emerging themes were: (a) motivation, (b) preparedness, (c) support systems, and (d) confidence. The use of NVivo 12 software provided an automated mechanism for coding the qualitative data. NVivo 12 identified (a) money/resources, (b) support, (c) preparedness/readiness, and (d) personal as categories for the participants who did not persist from enrollment to graduation. Additional categories were identified for participants who did persist from enrollment to graduation and include: (a) self-motivation, (b) preparedness, (c) emotional/social support, and (d) confidence/self-belief. These categories were organized based on the emerging ideas and resulted in a total of eight categories. Four themes were developed from the seven participants who did not persist from enrollment to graduation and four themes were developed from the seven participants who persisted from enrollment to graduation. All eight themes were synonymous with the participants' views and

perceptions of their experiences while enrolled in the 2-year radiologic technology program which led them to persistence or to leave the program.

While each participant is unique, each group provided similar responses that formed the emerging themes for each group. The overall themes identified were (a) financial issues, (b) lack of support, (c) student readiness issues, and (d) personal issues for those participants who did not persist from enrollment to graduation. For the participants who did persist from enrollment to graduation additional themes were identified and include (a) autonomy, (b) preparedness, (c) connectedness, and (d) self-efficacy. There was overlap in some of the identified themes in this study; however, each theme was perceived differently by the participants. In some cases, the identified theme was a positive influencer in the success of a student, and in other situations, the opposite was true. For example, the theme of connectedness was identified as a positive influencer for persistence in this study. However, two participants who did not persist from enrollment to graduation acknowledged they felt connected with their cohort, but this did not lead to persistence in the 2-year radiologic technology program. Additionally, preparedness was also identified as a positive influencer in student persistence. Although every participant who persisted to graduation in the program completed some or all the general education courses required in the curriculum, so did most of the participants who did not persist from enrollment to graduation. Therefore, preparedness includes more than just taking general education courses or completing some college courses and it can have very different outcomes depending on the individual's situation. Each theme will be presented and explained beginning with the four themes identified by the participants

who did not persist from enrollment to graduation and ending with the four themes identified by the participants who did persist from enrollment to graduation.

Financial Issues

The first theme to emerge from data analysis was financial issues. Many students who attended this radiologic technology program are independent and supported themselves. Participant W15 explained:

> I had to work full-time to help cover my expenses, but also try to do the program full-time as well. So that was a big struggle for me, as far as everything goes, just because, I mean, you work full-time and you get off and you're exhausted and you're trying to study but you're falling asleep.

Another participant, W16, stated:

> I was working 40 plus hours a week and the program was hard. I expected that I would be able to work more since it was a 2-year program. But I continued to work because I had to pay my bills.

In addition to financial issues the participants acknowledged, many also experienced additional challenges to their success and ultimate persistence in the radiologic technology program.

Lack of Support

The second theme to emerge from data analysis was lack of support. Lack of support refers to encouragement, positive reinforcement, respect of time, and respect of obligations from family and friends. Participant W15 stated:

> Then also, I tried to live with my parents for a while in order to do the program. I couldn't study, I couldn't focus. I'd try to study, and they would come in and all of a sudden have like an hour-long conversation with me.

Another participant, W14, explained, "There's no time to play and have fun time. My friends did not understand and tried to pressure me to go out instead of study." Multiple participants noted that because the radiologic technology program was only 2-years, family members and friends did not think it would require as much time and commitment. Instead of supporting their efforts, some family and friends used guilt to pressure the participants away from their studies.

For some students in college, maintaining a positive relationship with family and friends is a way to have a constant support system. This support system should allow students to share their ups and downs in their scholarly experiences. However, this is not always the case. As participant W16 stated, "When I would have a bad day or doubt if I made the right decision about school, my friends would tell me to quit. They would remind me that I already had a job and was making money." He also went on to explain, "My mom was no better. She always questioned why I was spending money on school when I had a job. It never made sense to her." Without the support of family and friends to listen, encourage, and build up confidence, some students have a harder time achieving their goals which can lead to a lack of persistence.

Student Readiness Issues

The third theme to emerge from data analysis was student readiness issues. Student readiness issues included lack of preparation for college, not investigating the

program, and not investigating the profession. Preparation for college included visiting the campus, getting financials in order, figuring out work schedule while going to college, and understanding the time commitment. Several participants never visited the campus before the first day at orientation. One participant, W19, moved to the area right before the program started. She stated, “So, the first day was my first time on campus. But I think if I had lived in the area, it would have been good because I would have been able to go tour the campus and everything.” Visiting a college campus before you apply, or attend is important to see the city and college in person. This provides the student the opportunity to see the surroundings, soak up the atmosphere, and see if it is what he or she wants before making the commitment.

In addition to visiting the college, it is important for students to get their financials in order and have a plan for paying for their education. Some of the participants took out loans to help pay for school; however, this just covered the cost of tuition, books, and uniforms. The remaining expenses of everyday life were never factored into their educational plan. Participant W16 stated:

> I knew how I was paying for my classes, but the cost of my apartment, food, gas, and spending money was not a priority until I began the program. The instructors talked to me about how many hours I was working and my declining academic performance, but I had to work. I had to eat. I had to live.

In addition to needing the financial support for essential daily living expenses, several participants identified other expenses they incurred prior to enrolling in the program.

Whether it was credit card debt, car payments, or previous college debt, participants described the need to work to pay for these expenses.

While some participants successfully navigated working while in the radiologic technology program, several participants were not able to develop and work schedule conducive to successful completion of the program. As several participants stated they had to work while enrolled, some worked part-time while others had to work full-time. Those who worked full-time did so during the week after class or clinical but worked until late in the evening. Participant W16 stated, "I was a bartender while in school. I worked over 40-hours a week and worked until one or two in the morning. Getting up at six to be at school at by seven was a chore." Another participant, W15 explained:

> Definitely having to work was a challenge because a lot of times I would leave from clinicals and go straight to work. When I had a day off, I said I would study, but I didn't because I was tired. So, I just kept trying to shove a lot of information in, at one time with the full-time work schedule.

The lack of a plan that allowed time for class, clinical, studying, and work while enrolled created additional stress for participants facing this issue.

In addition to navigating college preparedness by visiting the college, organizing finances, and developing a conducive work-school balance, understanding the time commitment required for the radiologic technology program is important. A misconception by several participants was the rigor of this 2-year radiologic technology program. As one participant, W14, stated, "I applied because I wanted to complete a program that I could finish in two years. I thought a 2-year program would be easier and

less time would be required to be successful." The radiologic technology program is a clinical program, meaning it includes more than didactic learning.

Attending an information session at the institution or inquiring about the radiologic technology program prior to applying or enrolling would help to identify and clarify program requirements. During the information session, information is presented about the college and the individual programs. The structure, curriculum, rigor, and time commitment are discussed during these sessions. Investigating the program before beginning the program could prove advantageous to diminish some of the misconceptions about the program.

In addition to learning more about the program, learning more about the profession is also recommended. Shadowing provides the opportunity to see the responsibilities of the profession and to ask questions of technologists working in health care. Reading about the profession or seeing it on television is not the same as seeing first-hand. One participant, W20, stated, "When I shadowed, I was surprised at all of the patient care associated with the job. I also didn't know we would have to do certain procedures like barium enemas." Investigating the profession is important as this career is not one dimensional but has many facets.

Personal Issues

The fourth theme to emerge from data analysis was personal issues. Personal issues noted as reasons for leaving included: (a) physical injury, (b) death of parent, (c) mental health, and (d) wanting to start a family.

One participant, W18 stated, “While in the program, I reinjured my left ankle following having had surgery on it earlier in the year. I ended up needing a revision.” Participant W14 explained his experience:

> But what really threw me off was the death of my father. I kept trying to bury everything the best I could, and I guess it just exploded at some point. And it just wasn’t fair for me to continue. It wasn’t genuine at that point.

Four participants stated their mental health was the reason they withdrew from the program. Participant W15 stated, “My mental health was not well. I didn’t realize it until it was too far, and it really needed to be fixed before I could proceed.” Another participant noted, “I was burnt out and overwhelmed.” In addition to these personal issues, one participant, W17, explained:

> I always envisioned having a family. And I was at a point in my life where I knew kids were in the picture sooner rather than later. So, all of that together made me start rethinking if this was the right career path for the lifestyle that I knew I wanted.

These personal issues affected the participants in different ways; however, these reasons were listed as to why every one of the participants ultimately withdrew from the program.

The data analysis revealed autonomy, preparedness, connectedness, and self-efficacy as the themes for the participants who persisted from enrollment to graduation. Again, each of these participants is unique, but their responses were similar and formed the themes for this group.

Autonomy

Autonomy was the fifth theme to emerge from the data analysis and included self-motivation, being "in control", focusing on the "end goal", achievement, success, and obtaining a job. Autonomy emerged as a theme because each participant consistently described self-motivation in and having control of their education. Participant A5 stated, "I stayed in the program because I knew my end game. I knew what I wanted and what it would take to get there." Another participant, A11, explained:

> One thing, I was very motivated to prove people wrong that told me I wasn't going to do it. That for me was a big motivation. I'm going to prove you wrong. I had a lot of motivation, but of course the fact that I liked it in itself was my biggest motivation. And then everything else pushed me even more.

Participant A7 noted, "I stayed in the program because I knew this was something I really wanted to do, and I knew it was well worth the stress and the difficulty of the classwork and the clinicals and everything." Participant A6 also stated, "I knew this is what I wanted to do and was motivated to be successful." Self-motivation and making independent decisions affected the participants' persistence from enrollment to graduation. Autonomy was instrumental in the success of these participants.

Preparedness

The sixth theme to emerge from the data analysis was preparedness. One hundred percent of the participants who persisted from enrollment to graduation had completed most, if not all, of the required general education courses outlined in the radiologic technology program. Participant A7 stated, "Having all of my general education classes

finished before I started the program was very beneficial. I was able to focus completely on my RAD courses which I think helped in my success in the program." Although not every participant who persisted to graduation completed all the required general education courses before beginning the program. Participant A9 noted:

> I started taking general education courses at a community college while applying for RAD programs. Having a majority of these courses out of the way was helpful for me. I only had to take one Gen Ed class while in the program.

Another participant, A8, explained, "Since I already had my bachelor-degree in biology, I had most of the required general education classes completed. This made my course load lighter than some of my classmates." In addition to completing coursework prior to beginning the radiologic technology program, some participants job shadowed a radiologic technologist. During the shadowing experiences, participants were able to observe a day-in-the-life of a radiologic technologist and observe them engrossed in the profession. These participants also attended an information session at the study site to obtain information about the radiologic technology program or met with a recruiter to discuss the program.

The participants willingly demonstrated their preparedness for the program in three ways: (a) they completed a majority, if not all, of the required general education courses prior to beginning the radiologic technology program; (b) they shadowed a radiologic technologist in a health care setting; and (c) they attended an information session or met with a recruiter to discuss the program. The participants indicated that their preparedness prior to beginning the radiologic technology program were

instrumental in their persistence to graduation. The participants also stated that with less courses to take each semester, they were able to focus mainly on the core radiologic technology courses because they had more time to spend on these classes. Preparedness in beginning the radiologic technology program provided these participants with additional flexibility in the program which helped to reduce some of the stress associated with a clinical program.

Connectedness

The seventh theme to emerge from the data analysis was connectedness. Connectedness refers to social and emotional relationships with others, including family, friends, peers, and instructors. Social connectedness brought comfort and support to the participants and made them feel part of a group. Participant A9 stated, “For me personally, when I started talking to my fellow students, I’m like, oh, it’s not just me? It took the pressure off and I didn’t feel so much of like, dang, I’m the only one feeling this way.” These supportive relationships gave the participants a feeling of belonging and a connectedness in achieving common goals within the program. As explained by participant A7:

> But knowing that our teachers and our clinical instructors and everybody believed in us and wanted us to keep moving forward and keep learning and get better, that really helped us through. And it was really exciting to see everyone else get excited when it would finally click and we’d get to where we were trying so hard to be, and it was really nice to just have that support system from start to finish.

> That was a really big key in keeping with the program and keep going forward each semester.

Supportive relationships with family and friends were also identified as important connections for the participants. Participants acknowledged the support of family and friends helped in their persistence from enrollment to graduation. Participant A11 explained:

> Other people were motivating me, like my husband. Throughout the whole two years, he did a lot. He was working. He struggled a lot. He has a business that he was starting at the same time I was starting school, so he was already really busy, but he motivated me because he would help me. His mom helped me a lot. She would watch [my daughter] when I would have to go to school. Just those things in my life that were that support system. If I didn't have it, I couldn't have done it.

Other participants responded the radiologic program took a lot of their time and having friends that supported their efforts was valuable in keeping them focused. These relationships positively affected participants' success in the program.

Connectedness with the institution was also identified as instrumental in students' persistence from enrollment to graduation in the radiologic technology program. Although many participants acknowledged participation in some campus events or volunteer activities, they identified their connectedness with the instructors as a major positive factor in their success. Participant A7 noted:

> And then overall, I know I talked about this earlier, but with my experience at the school, I really, really enjoyed how much camaraderie we had with our instructors

> and how we felt like we could go [them] to talk about our different questions and what we were struggling with in class or clinical, how we could get a little extra help, get support, answer questions for us. I really think that that played a big factor into all of our success in the program. Just getting that extra reassurance and that extra support to keep us moving forward and get through the different classes each semester, it was really, really, helpful, both from an education point and a personal point.

Additionally, participant A10 stated, “The instructors are great and a major factor in students’ success. They are highly one of the reasons I was able to complete the program. Their commitment to their students and the program is unmatched.” Participant A5 identified connectedness on many levels was essential by stating:

> Support, support, support - from not only the instructors but other students, and the technologists they are working with. I liked the closeness. I know for x-ray programs we had a larger class size than a lot even locally and even some that aren’t local. But I’ve still felt like we were a very tight knit group, and the teachers were very also tight knit with us, and everyone was very close and concerned and willing to help everyone out. It was not like going and doing your bachelor’s degree, where essentially you’re in a class and you’re on your own. Everyone cared how you did. Most of the techs in clinical cared how you were doing. Everyone was very excited that you were there, everyone was happy to help you learn, and everyone kind of went out of their way, especially the teachers in the school itself, to make sure that you were doing well and to reach out and to

> make sure that if you needed help, you got it. That's what I really liked, was how much everyone just kind of cared about you and was so happy that you were in the program and they were like, 'Yes, let's do this.' It was just the general excitement. Like, yes, we've got this, we can do this kind of thing. We had that attitude the whole time.

I discovered that many participants faced challenges during the program, but the social and emotional connectedness they had with others while enrolled in the program encouraged their success and persistence to graduation.

Self-Efficacy

The eighth theme to emerge from data analysis was self-efficacy. One's belief in their ability to succeed in a given task was identified as instrumental in persistence in the 2-year radiologic technology program. Participant A8 noted, "I like structure, but it's also like I'm a sink or swim person, and if you throw something at me, I'm going to swim." Self-efficacy also comes from one's past experiences and perseverance and resilience to overcome obstacles. Several participants identified challenges during their time in the program; however, high levels of self-efficacy were important in the participants' achievements and persistence in the program.

One participant, A9, stated:

> I felt like I had to rethink academics and studying altogether. Because prior to this, I have always been the top of my class type thing. I won't say, I was prideful about it, but I thought I knew how to study, and I thought I knew what studying methods worked for me and the type of learner I was. But, when I was taking the

> tests, I was passing, but I still felt like I was basically like treading water. And then of course you have the lab aspect and the clinicals. There's not a lot of times in traditional education in high school or even in college where you're asked to apply what you learned other than like maybe writing a paper. I knew it in theory, but then to make myself actually do it, it's just something completely different. And then on top of that, having to be tested. And for me for, for like a performance, and performing is something I've never enjoyed. It always makes me very anxious. So those are the two main things I had to overcome was trying to find a good study method and then the clinical aspect of working with people and constantly feeling like I had to perform.

Her previous experiences with academic success helped to facilitate a positive result in working through the obstacles encountered in the radiologic technology program. Again, a high level of self-efficacy promoted resiliency and persistence in the face of these challenges.

Some participants faced personal family obstacles while enrolled in the radiologic technology program. One participant, A11, explained:

> I understand it was my choice to go to school with a baby and being married. But a lot of people in my class, they went home, they still lived at their parents. They didn't have a lot to do when they got home other than do their homework. But I went home, I had to cook, I had to clean, had to take care of [my baby] her. There was a lot of stuff I had to do. That, in itself, always made me want to quit. I have

> too much going on in my personal life. I can't do this. It was a lot to convince myself every day, yes, I can do it.

While another participant was pregnant and had a baby during the program she stated, "I needed to start my career, I was starting a family and I could not afford to start this program and not complete it." These participants displayed a high-level of resiliency and perseverance by their proactive nature in planning and forging through difficult challenges. Belief in oneself to succeed and achieve their goals is significant in student persistence.

In addition to how the themes of connectedness and preparedness influenced participants differently one discrepancy was noted during data analysis which contradicts the theme of personal issues. Although 100% of the participants who did not persist from enrollment to graduation cited personal issues as the reason they withdrew, participant A10 also experienced personal challenges but persisted to graduation. Not only did she have a baby during her time in the program, but her father died unexpectedly. I will elaborate further how persistence is tied to the four identified themes found in this study. These discrepant cases were included in the data analysis to promote a holistic approach in the review of data. Although an identified theme affected a participant in a certain way, it is important to acknowledge its effect on all participants. These discrepancies were unexpected but illustrate the importance of capturing the subjective experiences of every participant in the study.

Results

The findings of this study center on the experiences of 14 participants, seven who did not persist from enrollment to graduation in the 2-year radiologic technology program and seven who did persist from enrollment to graduation. The participants' responses to the interview questions provided emerging themes. Each theme is presented and explained beginning with Research Question 1 and ending with Research Question 2. Two research questions guided this study.

Research Question 1

What are the students' perceptions of why they did not persist from enrollment to graduation in the 2-year radiologic technology program in a metropolitan area in the southern United States? Participants reported not persisting from enrollment to graduation due to four reasons: (a) financial issues, (b) lack of support, (c) student readiness issues, and (d) personal issues.

Financial issues. Seventy-one percent of the participants who did not persist from enrollment to graduation worked part- or full-time while attending the program. One participant worked over 40-hours a week while enrolled. The participants noted how financial issues impacted their studies, preparation for each day, motivation, and that it added stress to their lives. Financial insecurity impacted participants' studies, preparation for class and clinical, and motivation in a negative manner. Seventy-one percent of the participants said they had to work while in school. Two participants, W15 and W16, worked full-time while enrolled and one stated he worked over 40-hours per week. Of the seventy-one percent who worked while enrolled, 100% were solely responsible for the

cost of their education. Participant W20 noted, “I didn’t plan well for my education and chose work over school many weeks.” One participant, W16, stated, “I was a bartender while in school. I worked over 40-hours a week and worked until one or two in the morning.” Another participant, W15 explained:

> Definitely having to work was a challenge because a lot of times I would leave from clinicals and go straight to work. When I had a day off, I said I would study, but I didn’t because I was tired. So, I just kept trying to shove a lot of information in, at one time with the full-time work schedule.

Participant W16 stated:

> I knew how I was paying for my classes, but the cost of my apartment, food, gas, and spending money was not a priority until I began the program. The instructors talked to me about how many hours I was working and my declining academic performance, but I had to work. I had to eat. I had to live.

Participants had less time to study and prepare for their classes due to the amount of time they had to work each week. Since time was limited to fully prepare for learning, participants felt less motivated to do well. As the pressures of balancing work with their education, participants experienced increased stress-levels in their daily lives. W16 described: “I was working a full-time job, but the program schedule was also very demanding. I didn’t study like I should have and found myself playing catch-up every week.” Almost all the participants who had to work echoed this type of response. Another example of how the need to work affected their studies, preparedness, motivation, and stress is explained by participant W15: “So that [work] was a big struggle for me, as far

as everything goes, just because, I mean, you work fulltime, and you get off and you're exhausted. You're trying to study, but you're half falling asleep." Participants made the decision to work while enrolled in the program to pay for expenses. Additional participants noted that the stress of having to work added to the stress they already felt while enrolled in the program. Participant W17 stated, "I only have to work 20-hours a week but working on top of my classes and clinical requirements was mentally and emotionally exhausting. I never felt prepared." Although not all participants experienced the same level of financial issues, this was still identified as negatively affecting most student persistence.

Lack of support. Participants discussed issues with lack of emotional support from family and friends. This lack of encouragement, positive reinforcement, and respect of time and obligations had a negative effect on them personally. Participants noted that when family members did not provide encouragement or respect their educational commitment, they were quick to stop studying and engage in extracurricular activities. Participant W19 explained, "My parents supported my educational goal, but they did not want me to be so far away from home. Because of this, I did not feel supported while I was in the program." Participant W15 stated:

> Then also, I tried to live with my parents for a while in order to do the program. I couldn't study, I couldn't focus. I'd try to study, and they would come in and all of a sudden have like an hour-long conversation with me.

The mother of participant W16 questioned his choice to attend the program since he already had a job and was making money. He stated, "After a while, I began to think

the same. Why am I going to school, going into more debt, and barely getting by?" As participant W20 noted, "I liked to participate in intermural sports on the weekends, but I wouldn't hesitate to leave my studies to practice and hangout with my friends." When the emotional support and encouragement is lacking from family and friends, persisting and successful completion of educational goals becomes more difficult.

Student readiness issues. The lack of readiness for one's educational journey includes the lack of preparation for college, not investigating the program, and not investigating the profession. Of the seven participants who did not persist from enrollment to graduation, 86% noted student readiness issues. Some of the participants began the radiologic technology program without visiting the campus and without asking any questions about the program or profession. Participant W14 stated, "Well, my initial goal was to be a radiation therapist and I had to get through the rad tech program to get to that. That was my initial goal." He went on to state, "It was harder than I expected it to be." Only two participants, W18 and W20, shadowed a radiologic technologist prior to starting the program and only participant W18 attended an information session at the institution prior to enrolling in the radiologic technology program. Participant W19 stated, "So, the first day was my first time on campus." With the lack of knowledge about the college and the program she was not ready for this type of educational experience. She went on to state, "I've always been kind of a wing-it-type in school anyways, and I've done fine. But this is a program you can't wing." Although many of the participants had some college experience or even a bachelor-degree, they underestimated the rigor of the 2-year radiologic technology program. Participant W20 explained, "I think my

biggest concern during the program was not giving myself enough time post-undergrad." One participant encountered readiness issues in the lack of preparation for the program itself. Participant W17 stated, "For me, if my personal life was a little different, I wouldn't have found an issue in [the program] it. A lot of it just had to do with my drive, my having a family at home, and things like that that made me want to come home more than stay at school." Readiness for pursuing one's education is instrumental in achieving success.

Personal issues. Personal issues were acknowledged by 100% of the participants who did not persist from enrollment to graduation as the reason for leaving the radiologic technology program. No matter the personal challenge each experienced, they did not persevere and persist in the program. The participants in this study experienced medical injury, death of a father, the need to start a family, and mental health issues. Participant W14 explained, "But what really threw me off was the death of my father. I kept trying to bury everything the best I could, and I guess it just exploded at some point." Four participants stated their mental health were the reason they withdrew from the program. Participant W15 stated, "My mental health was not well. I didn't realize it until it was too far, and it really needed to be fixed before I could proceed." Another participant noted, "I was burnt out and overwhelmed." In addition to these personal issues, one participant, W17, explained:

> I always envisioned having a family. And I was at a point in my life where I knew kids were in the picture sooner rather than later. So, all of that together made me

start rethinking if this was the right career path for the lifestyle that I knew I wanted.

In all the personal challenges experienced by these participants, none of the participants relied on family or friends to work through the issues. Participant W19 explained, “I couldn’t tell my parents what I was going through. They didn’t want me to move away from home to attend school. They didn’t understand my need to get away. I wasn’t going to let them know they were right.” Another participant, W16 noted, “I had to handle things on my own. My mom wasn’t supportive, and my friends didn’t want me in school either.” Participant W18 stated, “My parents knew what I was dealing with medically, but what could they do? They said it was my decision. I had to make a decision that was right for me.” Without the support of family and friends, personal issues may have negatively influenced student persistence from enrollment to graduation in the program.

Research Question 2

What are the students’ perceptions of what helped them persist from enrollment to graduation in the 2-year radiologic technology program in a metropolitan area of the southern United States? Participants who persisted from enrollment to graduation discussed four reasons: (a) autonomy, (b) preparedness, (c) connectedness, and (d) self-efficacy.

Autonomy. Autonomy refers to independence and to the individual’s perceptions that the learning environment is interactive rather than controlled (Simon et al., 2015). Autonomy develops in individuals when they feel supported to explore, take initiative, and develop solutions to problems (Deci & Ryan, 1985). Corwin et al. (2018) concluded

that students are intrinsically motivated when their need for autonomy is met, resulting in a sense of ownership. Subsequently, ownership of their coursework is positively related to student success and persistence. One hundred percent of the seven participants who persisted from enrollment to graduation indicated self-motivation was a key to their success in persistence. Many were self-motivated and self-directed, like participant A11, who stated, "I had a lot of motivation, but of course the fact that I liked it in itself was my biggest motivation." As stated by participant A10, "People have to be very self-motivated and determined and I think the workload can be discouraging if you are not all in." Participants who did not persist from enrollment to graduation echoed this thought process.

Other participants discussed how the support from the faculty and the technologists in the clinical setting to take initiative and get involved was helpful to their learning and success in the program. Participant A8 explained:

> But I've still felt like we were a very tight knit group, and the teachers were very also tight knit with us, and everyone was very close and concerned and willing to help everyone out. It was not like going and doing your bachelor's degree, where essentially you're in a class and you're on your own. Everyone cared how you did. Most of the techs in clinical cared how you were doing.

Additionally, participant A5 stated, "Support, support, support, from not only the instructors but other students, and the technologists in clinical." Instead of feeling like their behaviors were being controlled, the participants' felt they were supported. Participant A7 stated:

> And it [the support] did prepare me to go to the senior level where you have a little more freedom. You learn to work a little bit more, thinking on your own. I think the first year really set me up for good success for the rest of the program.

Autonomy was shown to positively affect the participants' persistence from enrollment to graduation.

Preparedness. Taking ownership and being accountable for one's learning is important when beginning an education program. Asking questions, visiting the campus, and reviewing the curriculum are valuable steps in preparation to learn. Participant A9 stated, "I researched the profession in depth to decide what path to pursue. I attended several orientation sessions at different colleges, and I interviewed with someone before beginning the program." In addition to completing coursework prior to beginning the radiologic technology program, five out of the seven participants who persisted from enrollment to graduation job shadowed a radiologic technologist. Participant A6 noted,

> Well, I didn't know that I actually wanted to be a radiologic technologist. I actually went to a four-year college for a year. And then I was confused, didn't know what I wanted to do. And then that summer I actually went and shadowed at [local hospital]. I talked to someone there about radiologic technology and they told me about [the] program. I went to an information session, went through the application process, and interviewed with someone at the college.

Participant A7 explained:

> I'm going to state that I think it was helpful for me that I had my general education classes done prior to getting into the program. I think that that allowed

> me a lot more time to focus on the x-ray material and dedicating time to that aspect of it. I know that I had classmates that were doing a couple of Gen Ed classes on top of our classes in x-ray, and it felt like a lot at times. So, I think that if you are in the position to get some of those Gen Ed classes done before doing the program, I think that's a great thing to do.

Several of the participants echoed this response in their responses. Participant A10 stated, "I already had all the general education classes done when I applied." Participant A5 noted, "I transferred in the majority of the general education courses. This allowed me to focus on the radiology classes and I think this helped me be successful." Another participant, A11, acknowledged the importance of preparation by stating,

> I was exposed to radiology, through a co-op placement because I worked at the hospital in the medical physics department. I worked alongside physicists that did treatment planning for cancer patients for the radiation therapy treatments. However, once I started in the radiologic technology program, I liked it so much that I didn't want to do radiation therapy anymore.

Preparation proved to be instrumental in the participants' persistence from enrollment to graduation in the 2-year radiologic technology program.

Connectedness. Connectedness refers to social and emotional relationships with others, including family, friends, peers, and instructors. Participant A8 noted, "I think that was a big reason why I stayed in because everyone just cared so much." She went on to state:

> Everyone was very excited that you were there, everyone was happy to help you learn, and everyone kind of went out of their way, especially the teachers in the school itself, to make sure that you were doing well and to reach out and to make sure that if you needed help, you got it.

Echoing this sentiment was participant A10 who stated, “The instructors were great and a major factor in students’ success. They are highly one of the reasons I was able to complete the program.” And participant A7 explained:

> But knowing that our teachers and our clinical instructors and everybody believed in us and wanted us to keep moving forward and keep learning and get better, that’s what really helped us through. And it was really exciting to see everyone else get excited when it would finally click, and we’d get to where we were trying so hard to be. It was really nice to just have the support system from start to finish. That was a really big key in keeping with the program and keep going forward each semester.

One hundred percent of the participants studied weekly with other program students. Some participants formed weekly study groups while others carved out time to study before a test. Participant A9 stated, “I only studied with others about an hour before a test. My schedule didn’t allow me to participate in study groups.” Participant A11 noted, “The only group setting I would do is before a test or something. And that’s just due to my other commitments.” Although the time spent with other students was sometimes limited, the time spent together enhanced relationships and helped to build a support network. An emotional connection developed among the groups which facilitated a

foundation of trust, strength, and respect. Participant A8 stated, “I was having a ton of fun. I mean, I thoroughly enjoyed it. I loved the people that I was with. I loved the people in my class.” Social and emotional connectedness helped form a bond amongst the participants and their peers. Participant A6 stated, “The class size was smaller, and we really got to know one another. We became a family and were able to celebrate to accomplishments and talk each other through the bad days.” Relationships with others seemed to be significant to student persistence.

Self-efficacy. The belief in oneself to succeed comes from one’s past experiences and perseverance and resilience to overcome obstacles. Participant A8 explained:

> So, I’m okay with getting thrown into things. I like structure, but it’s also like I’m a sink or swim person, and if you throw something at me, I’m going to swim. I like staying busy and I like being busy, so I think how busy the program was, it was really good for me. I enjoyed it.

Another participant, A11, stated, “I wanted to do it and I didn’t want to quit just because it was hard. Once I got into it, I actually liked it. I’ve been successful completing hard courses before so I knew I could do this.” Although several participants identified challenges during their time in the program, each persisted in the program. Many participants discussed the difficult aspect of working with certain technologists in the clinical environment. Instead of giving up, they met the challenge head-on. Participants also learned from their challenging experiences. As stated by participant A6, “[I] definitely learned how to get along with technologists that I didn’t see eye to eye with.

That really helped me learn how to deal with those stressful type situations." Participant A9 described one experience:

> I was one of the younger people in general in the workplace, most people were older. Even with patients, it was just like, and how old are you? Are you able to do this? I just started being assertive to a certain degree in order to do what I needed to do.

Another participant, A5, experienced a larger obstacle when she imaged the wrong leg. She explained:

> I experienced an error in performing an exam on the wrong leg and the tech I was with did not want me to report it. It placed me in a dilemma ethically, but I reported it and then dealt with the ramifications of dealing with the technologist at the hospital."

Resilience and perseverance are key to self-efficacy (Elliott, 2016). According to Bandura (1997), every experience impacts one's self-efficacy. Encouraging autonomy and preparedness as well as, continuing to support and promote self-efficacy among students is vital to student achievement and success. As shown in Figure 1, autonomy, preparedness, connectedness, and self-efficacy are crucial to student persistence.

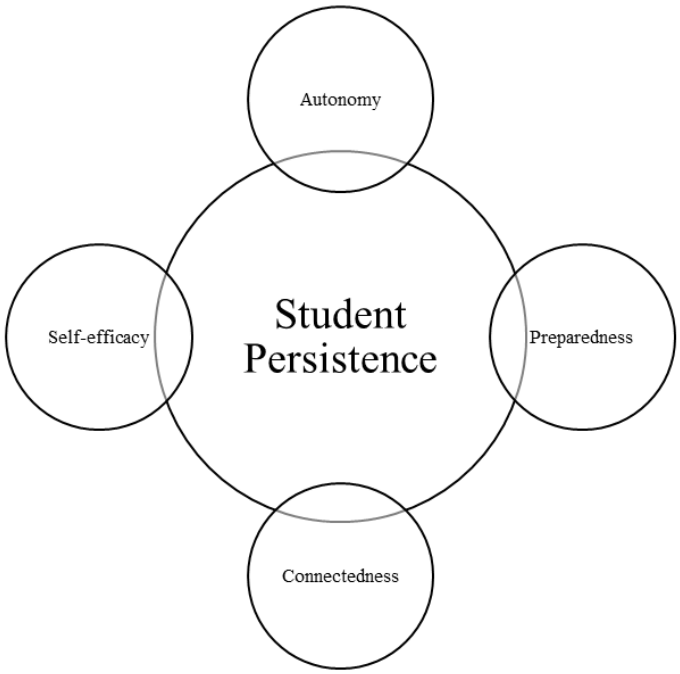

Figure 1. Student persistence themes.

In theory, with the themes that emerged from data analysis on the responses from the participants who did not persist to from enrollment to graduation, one participant who was successful should not have been successful. Participant A10 faced significant personal issues while enrolled in the program. Participant A10 stated, “I became pregnant during the program and had the baby earlier than expected. Then, my dad died unexpectedly. I didn’t give up and I graduated on time.” Additionally she had to work while in the program and her closest support system lived in a different state. This discrepancy in the data is important because it illustrates the significance that autonomy, preparedness, connectedness, and self-efficacy play in persistence.

Research Question 1 addressed the students’ perceptions of why they did not persist from enrollment to graduation in the 2-year radiologic technology program in a metropolitan area in the southern United States. The participants in the study reported not

persisting from enrollment to graduation due to four reasons: (a) financial issues, (b) lack of support, (c) student readiness issues, and (d) personal issues. Research Question 2 addressed the students' perceptions of what helped them persist from enrollment to graduation in the 2-year radiologic technology program in a metropolitan area of the southern United States? Participants who persisted from enrollment to graduation discussed four reasons for their success: (a) autonomy, (b) preparedness, (c) connectedness, and (d) self-efficacy.

Despite the age difference between these participants, they all attended the same 2-year radiologic technology program between 2014-2019. The seven participants who did not persist from enrollment to graduation provided varied responses to the interview questions while the seven participants who persisted to graduation had similar responses to the interview questions. Discrepancies were noted in the themes of connectedness, preparedness, and personal issues and their effect on student persistence. Although 100% of the participants who did not persist from enrollment to graduation cited personal issues as the reason they withdrew, participant A10 also experienced personal challenges but persisted to graduation. Not only did she have a baby during her time in the program, but her father died unexpectedly. These discrepant cases provide rich data and were included in the data analysis process. Although an identified theme affected a participant in a certain way, it is important to acknowledge its effect on all participants. Again, it is important to capture the subjective experiences of every participant in the study. This was a diverse group of participants whose individual experiences were shared in this study.

Evidence of Trustworthiness

In Chapter 3, I discussed trustworthiness for qualitative research in relation to credibility, transferability, dependability, and confirmability. In this section, I describe the implementation of strategies to enhance the trustworthiness of the research. According to Lincoln and Guba (1985) credibility suggests that the outcomes are descriptive of the participants' responses. To ensure credibility, I used strategies such as audio recording the interviews and member checking. Recording the interviews ensured accuracy of the data and allowed me to review the data often. Additionally, having the recordings and transcripts helped me eliminate any biases that I may have taken away from the interview or misinterpreting what the participant meant when responding to a question. Member checking was also significant to the credibility of my research (see Creswell, 2005); therefore, I used member checking to ensure participants reviewed their interview transcript and confirm the experiences captured in the interview were representative of their perceptions. I shared the transcripts with each participant to help verify the information was honest and accurate. This process also allowed participants to review what they said and add or edit any information, if needed. Credibility for this study occurred with data saturation (see Creswell, 2005). I achieved data saturation when no new information surfaced, and no new significant themes emerged. To further establish credibility, I acknowledged my role as an educator in radiologic sciences with each participant.

Ravitch and Carl (2016) described transferability as "the way in which qualitative studies can be applicable, or transferable, to broader contexts while still maintaining their

context specific richness" (p. 189). To ensure transferability, I used strategies such as providing detailed descriptions of the setting, participants, and findings along with sufficient quotes from the participants. The data collected through audio recordings and note taking were given to a professional transcription agency to ensure all data was captured, reviewed, and presented. I gave careful attention to selecting the study sample. I used a purposeful sample of seven individuals who did not persist from enrollment to graduation of the 2-year radiologic technology program and seven individuals who persisted from enrollment to graduation.

I used dependability strategies to make certain my findings are consistent and could be replicated. I verified the participants' responses from the interviews and the themes that emerged from the participants' responses in the interviews. I verified all responses with the participants to ensure accuracy of the data. This process of member checking (see Creswell, 2005) also enhanced trustworthiness of this basic qualitative study. Lincoln and Guba (1985) suggested that dependability could occur through an audit trail. I used participants' exact responses from their interviews to highlight themes and verified with the participants the accuracy of their perceptions.

Acknowledging and exploring the ways that our biases and prejudices affect our interpretation of the data is the goal of confirmability. I reflected critically on myself during this study. Through debriefing sessions with my dissertation chair and through the strategy of reflexivity (Lincoln & Guba, 1985), I reviewed my thoughts and theories. This process allowed me to address any flaws and allowed me to develop ideas and interpretations in a forum that would call attention to any bias I have as a researcher. The

discussions also allowed me to check and recheck the data. I held myself accountable during this study. I coded the data in the same way throughout the coding process which enhanced intra-coder reliability. The use of an external transcription agency lessened the chance of any personal bias in transcribing the interview recordings. The coding of data was done manually and by use of the NVivo 12 coding software program. NVivo 12 identified money/resources, support, preparedness/readiness, and personal as categories for the participants who did not persist from enrollment to graduation. Additional categories were identified for participants who did persist from enrollment to graduation and include self-motivation, preparedness, emotional/social support, and confidence/self-belief. These categories were organized based on the emerging ideas and resulted in a total of eight themes: (a) financial issues, (b) lack of support, (c) student readiness issues, (d) personal issues, (e) autonomy, (f) preparedness, (g) connectedness, and (h) self-efficacy. By employing two mechanisms in which to code the transcribed data, intercoder reliability increased, thus increasing the trustworthiness of the results.

Summary

The purpose of this basic qualitative study was to explore how students describe their perceptions of experiences at the local college that either encouraged them to persist to graduation or quit attending in a metropolitan area of the southern United States. The purposeful sample of participants provided their thoughts, feelings, and perceptions regarding their experiences in the 2-year radiologic technology program. From the participants' responses, a better understanding of persistence strategies emerged. Based on the research questions that guided this study, I developed semi-structured open-ended

interview questions that explored student experiences while enrolled in the 2-year radiologic technology program.

Eight themes emerged from the participants' responses to the interview questions. These included financial issues, lack of support, student readiness issues, personal issues, autonomy, preparedness, connectedness, and self-efficacy. These themes related specifically to the two research questions. The themes financial issues, lack of support, student readiness issues, and personal issues relate to the first research question on the perceptions of why participants did not persist from enrollment to graduation in the 2-year radiologic technology program. The themes of autonomy, preparedness, connectedness, and self-efficacy relate to Research Question 2 on the perceptions of why participants persisted from enrollment to graduation in the 2-year radiologic technology program.

In Chapter 5, I provide an interpretation of the findings of this study. I explain any limitations to the trustworthiness and recommendations for further research. I discuss the potential opportunities for positive social change that may arise from the findings of this study and recommendations for educational practice to assist 2-year radiologic technology students in persistence from enrollment to graduation.

Chapter 5: Discussion, Conclusions, and Recommendations

Student persistence rates in health care programs, including radiologic technology programs, continue to decrease in the United States (Donnell, 2015). Although student persistence has been a research topic for decades, there was a lack of research on student persistence in 2-year institutions. Also, there was much to be learned about persistence of students in 2-year radiologic technology programs. The purpose of this study was to explore how students describe their perceptions of experiences that encouraged them either to persist to graduation or quit attending. I used a basic qualitative design to gain an in-depth understanding of what impediments may influence students to drop out of radiologic technology programs while providing useful information to higher education leaders to improve their understanding of student persistence from enrollment to graduation. This study was needed because it focused on the participants' explanations of their experiences while enrolled in the 2-year radiologic technology program in relation to persistence versus admission criteria. Besides indicating challenges and barriers faced by the participants, this study added to the body of literature regarding student persistence and added information about a population of radiologic technology students that was limited. Additionally, this study focused on the subjective experiences of the participants rather than on the institution itself. Two research questions guided this qualitative study:

RQ1: What are the students' perceptions of why they did not persist from enrollment to graduation in the 2-year radiologic technology program in a metropolitan area of the southern United States?

RQ2: What are the students' perceptions of what helped them persist from enrollment to graduation in the 2-year radiologic technology program in a metropolitan area of the southern United States?

The key findings included the following:

- RQ1: Participants identified financial issues, lack of support, student readiness issues, and personal issues as contributing reasons why they did not persist from enrollment to graduation. Many students who attended this radiologic technology program are independent and support themselves. The participants noted how financial issues impacted their studies, preparation for each day, motivation, and stress levels. Participants had less time to study and prepare for their classes due to the amount of time they had to work each week. Because time was limited to prepare for learning, participants felt less motivated to do well. Because of the pressures of balancing work with education, participants experienced increased stress levels in their daily lives and did not persist from enrollment to graduation in the 2-year radiologic technology program. In addition, participants indicated that the lack of emotional support, encouragement, positive reinforcement, and respect of time from family and friends had a negative effect on them personally. Participants noted that when family members did not provide encouragement or respect their educational commitment, they were quick to stop studying and engage in other activities. The lack of readiness for an educational journey includes the lack of preparation for college, not investigating the program, and

not investigating the profession (Perkins-Holtzclaw & Lampley, 2018). Some of the participants began the radiologic technology program without visiting the campus and without asking questions about the program or profession. If a student embarks on an educational journey with no knowledge or preparation, the likelihood of persistence is diminished (Schmitt & Duggan, 2011). Lastly, personal issues, such as (a) physical injury, (b) death of parent, (c) mental health, and (d) wanting to start a family were identified as the reason participants left the radiologic technology program. No matter the personal challenge each experienced, they did not persist in the program.

- RQ2: Participants identified autonomy, preparedness, connectedness, and self-efficacy as contributing reasons why they persisted from enrollment to graduation. When participants were given support and encouragement to explore, take initiative in situations, and develop solutions to problems, autonomy was increased. As autonomy increased, student persistence from enrollment to graduation also increased. Asking questions, visiting the campus, and reviewing the curriculum were valuable steps in preparation to learn. In addition to completing coursework prior to beginning the radiologic technology program, job shadowing a radiologic technologist proved beneficial to student persistence. The social and emotional relationships a student has with peers, instructors, friends, and family members are integral in creating a positive learning environment. Not only is the social and emotional support of the instructors and clinical technologists important, but the support

provided by family, friends, and peers is equally meaningful. Having these relationships helped students persist. In addition to autonomy, preparedness, and connectedness, the belief in themselves, or self-efficacy, was also important in student persistence. When a student believes in their ability to achieve a goal or complete a task, they have high self-efficacy (Conefrey, 2018). High self-efficacy contributed to persistence from enrollment to graduation in 2-year radiologic technology programs.

I was surprised by the overlap in some of the themes identified in this study. I was anticipating a distinct difference between the participants' who did not persist from enrollment to graduation and the participants who did persist from enrollment to graduation. The themes identified in this study overlapped, which suggests that they affected the participants differently. For example, although connectedness was a positive influencer of participants who persisted in the program, it had no effect on participants who felt connected but withdrew from the program anyway. Moreover, participants who experienced significant personal issues while enrolled in the program withdrew before graduation while one participant persevered through two personal issues and persisted to graduation. Based on my experience as a program chair in a 2-year radiologic technology program, I expected the identified themes of work and personal responsibilities/issues. The student population is diverse, and students come to higher education with different needs, wants, experiences, and expectations. Identifying what a student needs, wants, or expects can be difficult; however, this study indicated the importance of helping students

in many areas to increase the likelihood of persistence from enrollment to graduation in 2-year radiologic technology programs.

In this chapter, I present an interpretation of the findings of this study in relation to the literature and conceptual framework. Additionally, I describe the limitations of the study and provide recommendations for further research. Finally, I discuss implications for positive social change.

Interpretation of the Findings

I interpret the findings within the context of confirmation, disconfirmation, and adding to the body of knowledge concerning the experiences of student persistence in higher education. My interpretation of the findings encompasses not only the literature but also the conceptual framework on which I based this study.

Findings and the Literature

Findings related to aspects identified in the literature explain the participants' decisions to not persist or to persist in 2-year radiologic technology programs. I discuss the themes of financial issues, lack of support, student readiness issues, and personal issues from the students who did not persist, and autonomy, preparedness, connectedness, and self-efficacy from the students who persisted. Details on these themes were presented in Chapter 4. The following sections include a discussion of what these findings confirmed, disconfirmed, and added to the literature.

Confirmed. When asked to describe experiences while enrolled in a 2-year radiologic technology program that influenced their lack of persistence to graduation (RQ1), participants' responses indicated four themes. The findings confirmed the

literature addressing financial issues (Heller, 2001; Hittepole, 2019), lack of support (Chrysikos et al., 2017; Hittepole, 2019; Tinto, 2012), and personal issues (Hittepole, 2019). For example, participants mentioned being unprepared to begin the program by not having their finances settled, which required them to have to work during the program. In addition to the issues of financial difficulty and not being academically prepared, many participants described a lack of social and emotional support from family and friends while enrolled. This finding aligned with literature that environmental factors have more influence on adult student persistence than academic variables (Bean & Metzner, 1985). As described by Bean and Metzner (1985), environmental factors include finances, hours of employment, outside encouragement, and family responsibilities. The less responsibility a student has outside of school, the more likely they are to persist and succeed in the academic environment (MacDonald, 2018). Cabrera et al. (1993) also concluded that individual, environmental, and institutional factors play a role in student persistence. Fong et al. (2016) acknowledged the important role family and friends play in motivation for student persistence. As outside motivation increases, the extrinsic motivation to please others also increases, which can lead to increased persistence. Participants in the current study also described personal issues while enrolled in the program. Personal issues included medical issues, death of a family member, wanting to start a family, and mental health issues. Rizkallah and Seitz (2017) concluded that from year to year, changes occur in the needs, problems, and aspirations of students, as well as what motivates them and satisfies their needs. Motivation is multifaceted and involves biological, emotional, social, and cognitive forces that influence behavior

(Cherry, 2019). When current participants experienced personal issues while enrolled in the program, their motivation changed. As described by Tinto (1993), personal motivation is instrumental in student persistence. Tinto (2005) concluded that student persistence was shown to increase when students felt supported and encouraged. In conjunction with at least one other identified theme, the current participants who experienced a personal issue, such as (a) physical injury, (b) death of parent, (c) mental health, and (d) wanting to start a family, while enrolled were unable to persist to graduation and withdrew from the program.

When asked to describe experiences while enrolled in a 2-year radiologic technology program that influenced their persistence to graduation (RQ2), participants' responses indicated the themes of autonomy, preparedness, connectedness, and self-efficacy. For example, participants mentioned the value of being in control of their learning and believing in themselves to accomplish their educational goals. The self-directedness and self-motivation proved instrumental in their persistence throughout the program.

In addition, participants who were prepared to begin the program by taking general education courses within the curriculum also persisted to graduation. These individuals developed a success plan before starting the program. While enrolled, they formed social and emotional relationships with their peers and maintained their relationships with family and friends. These relationships increased persistence among participants.

This study confirmed the literature regarding the importance of feeling in control of one's actions and making decisions, or autonomy. Dulfer et al. (2017) and Sogunro (2015) found that autonomy was a positive factor in student persistence. Autonomy has been shown to facilitate the integration of learning, which allows the student to apply their values to new information (Dulfer et al., 2017). An autonomous learner is self-directed and takes more responsibility and accountability for learning (Dulfer et al., 2017). Similarly, Simon et al. (2015) and Smith and Darvas (2017) concluded that increased autonomy leads to increased motivation and learning, which has a positive effect on persistence. Ryan and Deci (2000) proposed that when students feel autonomous, they are more likely to be intrinsically motivated and to adopt intrinsic goals that promote persistence.

This current study also confirmed the literature regarding the importance of connectedness through social and emotional relationships with family, friends, and peers for student persistence. Additionally, participants described the positive interactions and support of program faculty as a reason for their continued success. Fong et al. (2016) asserted that strong support from family and friends may motivate students to persist. This external motivation could help students more easily overcome obstacles, adapt, and persist through college. The participants in this current study who lacked strong support from family and friends did not persist to graduation. However, participants who reported strong social and emotional relationships with their family, friends, and peers did persist to graduation. Davis et al. (2019) indicated that a student's sense of belonging is predictive of persistence to their second year of education at the institution. Additionally,

Jorgenson et al. (2018) highlighted the importance of social connectedness and a sense of belonging with improved persistence. Likewise, Godor (2017) and Wright et al. (2017) claimed that a balanced social network, social connectedness and integration into the education institution community, and a sense of belonging are positive indicators for student persistence. Tinto (1993) identified the need for student support programs within higher educational programs to increase persistence. Based on the findings of the current study, quality support systems appear to be valuable factors in student persistence.

Lastly, this study also confirmed the literature regarding the importance of self-efficacy in relation to student persistence. The belief in oneself to succeed, or self-efficacy, is a recognized intrinsic motivator for student persistence (Bandura, 1997; Conefrey, 2018; Sogunro, 2015). Elliot (2016) demonstrated that academic and social self-efficacy beliefs were associated with first-year college persistence. Students who have increased self-efficacy and engagement within their first year in the higher education institution have a greater persistence rate (Conefrey, 2018; Elliot, 2016). Bandura (1997) concluded that self-efficacy influences effort, the choices students make, the courses of action they pursue, and task persistence. Enhancing self-efficacy so students feel prepared and capable of achieving academic tasks and fulfilling their academic potential can lead to greater persistence and graduation rates (Soria et al., 2017). Goals and aspirations of the student may change throughout their educational journey; however, self-efficacy remains an important motivational factor to persistence within the institution.

Disconfirmed. Two themes that emerged from this current study that disagreed with the literature were student readiness issues (RQ 1) and preparedness (RQ 2). In this study, I concluded that the participants' lack of readiness to begin the radiologic technology program impacted persistence in a negative way, while preparedness in planning for one's educational program was shown as a positive influence on persistence. These findings challenge previously reported data that some students do not persist in higher education due to institutional factors alone. Tinto's (1993) research included how institutional factors may impact student persistence within higher education. Perkins-Holtzclaw and Lampley (2018) concluded that the higher education institutions accept the responsibility of providing students with resources for success once they are admitted. Likewise, Tinto (2012) determined that student persistence and success is more the responsibility of the higher education institution rather than student based. Subsequently, research by Schmitt and Duggan (2011) and Perkins-Holtzclaw and Lampley concluded similar findings reinforcing the need for higher education institutions to take action to increase student persistence. According to the literature, students should persist from enrollment to graduation if the higher education institution is providing the necessary support and resources. Once a student is admitted into a higher education institution, the institution has a responsibility to provide support services and resources to all students. Not only should the institution provide academic resources, but social support as well. Helping students integrate academically and socially could prove beneficial in promoting persistence from enrollment to graduation.

These findings, especially those that disagree with the literature, suggest that future research is needed in the areas of financial, academic, and personal preparedness before enrolling in an educational program. These factors may shed light on radiologic technology students' ability to persist. Although studies show the importance of different themes in student success and persistence, every student is unique and encounters different life experiences.

Contributions to the literature. Findings from this current study add knowledge to the literature by reporting on the themes that positively influence student persistence in radiologic technology programs. The participants who persisted from enrollment to graduation identified preparedness as a factor in their success. These participants persevered because they had a plan before they started the program and executed their plan throughout the program. Although some of these participants experienced personal issues during their time in the program, their preparedness helped them overcome obstacles and persist. Whereas participants who did not persist from enrollment to graduation identified financial issues, student readiness issues, and personal issues as negative influences on their lack of persistence. Financial issues before entering the program, lack of readiness or preparedness to begin the program, and personal issues were shown to negatively impact participants' persistence in this study. Just like students, the factors that affect student persistence is multifaceted.

Conceptual Framework

I viewed the persistence of the participants through the lenses of Ryan and Deci's (1985) self-determination theory and Bean and Metzner's (1985) non-traditional

undergraduate student attrition model. The conceptual frameworks provided the preliminary basis for understanding persistence of the participants in this study.

The theoretical perspective reported in the literature regarding Ryan and Deci's (1985) self-determination theory acknowledged the intrinsic human motivations and personality that focuses on three psychological needs: (a) autonomy, (b) competence, and (c) relatedness. According to the self-determination theory, when these three psychological needs of individuals are met, students' self-determination and self-motivation are increased, thus increasing student persistence. The participants in this study who persisted from enrollment to graduation identified autonomy, connectedness, and self-efficacy as positive influences in their persistence. Ryan and Deci use the term competence instead of self-efficacy and the term relatedness instead of connectedness; however, these terms are defined the same. Participants acknowledged their intrinsic motivations of believing in themselves, making decisions on their own, self-motivation, and feeling a sense of belonging. Most of the participants who persisted described a high level of autonomy and self-efficacy. Sogunro (2015) concluded that autonomy was a top factor in motivation; however, the relationship between autonomy and self-efficacy is also important. Students with higher levels of autonomy may more likely display higher levels of self-efficacy and higher levels of motivation toward success and persistence. The self-determination theory focuses on the intrinsic motivations of an individual. The participants in this study who persisted from enrollment to graduation expressed intrinsic motivation factors, such as autonomy, self-efficacy, self-determination, and self-motivation, that positively encouraged their success and persistence. Even with this small

homogenous sample, it was evident from the participants' responses that the self-determination theory applies to their persistence in the 2-year radiologic technology program.

In their non-traditional undergraduate student attrition model, Bean and Metzner (1985) proposed that external factors were the main influencers in the persistence of non-traditional students. The non-traditional student attrition model included four sets of variables: (a) academic performance, (b) intent to leave, (c) background, and (d) environmental factors. Bean and Metzner identified finances, hours of employment, outside encouragement, family responsibilities, and opportunity to transfer as environmental factors. The findings of this study revealed that the participants who did not persist from enrollment to graduation identified themes that were primarily external factors; Financial issues, lack of support, and personal responsibilities such as work and family responsibilities, all negatively influenced the participants' persistence. Again, even with this small homogenous sample, it was evident from the participants' responses that external factors affected their lack of persistence in the 2-year radiologic technology program. The findings of the study reaffirm Bean and Metzner's findings that environmental factors, such as finances, hours of employment, outside encouragement, and family responsibilities, have a greater impact on departure decisions of adult students than academic variables. Participants in this study discussed the academic difficulties of learning; however, not one participant withdrew from the program due to failing a course. The participants who withdrew from the program attributed their lack of persistence to other factors, including financial issues and needing to work more hours, mental health

issues, physical health issues, death in the family, and starting a family. Although the participants' experiences were individually unique, the data revealed when the participants were dealing with more than one negative influencer they did not persist from enrollment to graduation.

The themes identified for participants who did not persist from enrollment to graduation included factors that were in the control of the participant and out of the control of the participant. Factors out of the control of the participants included personal issues, lack of support, and financial issues that arise after enrolling in the program. However, participants are in control of their own readiness to learn. If a student embarks on an educational journey with no knowledge or preparation, the likelihood of persistence is diminished. As so many factors are out of one's control, it is imperative that prospective students plan and prepare for their education prior to enrolling to increase the likelihood of success.

Limitations of the Study

Although this study contributed to understanding student persistence in 2-year radiologic technology programs, this study was limited in certain aspects. The first limitation is that only one institution was used to gain perceptions of participants who were enrolled in a 2-year radiologic technology program. The use of multiple study sites would provide data from different 2-year radiologic technology programs which could promote a deeper understanding of student persistence in this student population. The second limitation of the study was the use of a small sample size. Seven participants who did not persist from enrollment to graduation and seven participants who persisted from

enrollment to graduation were interviewed in the study. Although a total of 14 participants is acceptable when using a qualitative research design, a larger sample of each type of student could provide more insight into the persistence of 2-year radiologic technology students. The third limitation of this study was the change in the study site location. The need to move the study to a new location presented a challenge to the trustworthiness of the planned study. To ensure the trustworthiness of the study was not compromised, each interview was audio recorded, notes were kept in a journal and included in the transcription process, member checks were used, and NVivo 12 software was utilized in addition to manual coding. Tracy (2019) acknowledged that employing two mechanisms to code the transcribed data increases intercoder reliability, thus increasing the trustworthiness of the results.

Recommendations

There are several recommendations derived from the findings of this investigation. These recommendations are divided into two categories: Recommendations for Future Studies and Recommendations for Practice.

Recommendations for Future Studies

Recommendation 1: Replication with larger sample size. This study took place at a single 2-year college; a larger sample size could be helpful in a new study. While Creswell (1998) recommended a sample size of 5-25 and Hagaman and Wutich (2016) recommended a sample size of 16 or less for a basic qualitative study, I recommend replication with larger sample size at several 2-year radiologic technology programs. A larger sample size would also allow collection of more demographic data.

Recommendation 2: Use archived data. A mixed-methods design to included archived data, such as GPAs of previous students and interviews that consist of a larger sample at two or more 2-year radiologic technology programs, is warranted to ascertain the relationship between experiences, academic achievements, and persistence of students who attended a 2-year radiologic technology program. Future research may benefit from incorporating demographic factors, socioeconomic status, and GPAs of students who attended and did not persist and who did persist from enrollment to graduation in 2-year radiologic technology programs.

Recommendation 3: A qualitative study with faculty interviews. The participants spent the largest amount of their time on campus in the classroom and in the clinical environment. Some of the participants indicated that faculty were supportive and contributed to student persistence in 2-year radiologic technology programs. A qualitative study with faculty interviews should be conducted at a 2-year radiologic technology program to understand the perceptions of faculty experiences with student persistence and explore the role faculty play in persistence.

Recommendation 4: A mixed-methods study of persistence. The participants in this study focused on their experiences while enrolled in the 2-year radiologic technology program. Findings from this study revealed that autonomy, preparedness, connectedness, and self-efficacy were significant indicators for persistence, while financial issues, lack of support, student readiness issues, and personal issues were significant findings for lack of persistence in 2-year radiologic technology programs. A mixed-methods study could provide further insights into variables that influence student persistence in 2-year

radiologic technology programs. A mixed-methods approach allows for exploration and quantitative analysis to define the problem and potential solutions. This type of research design could be helpful in specifying attributes or characteristics in which each participant identifies while investigating their individual experiences in persistence. A mixed-methods study in student persistence could promote investigation of the problem from various angles while providing reliable, statistically verified results and subjective information about the experiences of the participants.

Recommendations for Practice

Recommendation 1: Incorporate SmarterMeasure as an entrance requirement.

Common factors for a lack of persistence in the 2-year radiologic technology program were financial issues, lack of support, student readiness issues, and personal issues. Although no one can predict personal issues, the other factors may be easier to identify prior to enrolling in the radiologic technology program. The use of a learning readiness indicator, like SmarterMeasure, helps indicate the degree to which an individual student possesses the attributes, skills and knowledge that contribute to success (“Introduction to SmarterMeasure”, 2020). SmarterMeasure assess non-cognitive factors and includes seven major assessment components which measure: (a) individual attributes like motivation and procrastination; (b) life factors such as availability of time, support from family, and finances; (c) learning styles; (d) technical competency; (e) technical knowledge; (f) on-screen reading rate and recall; and (g) typing speed and accuracy. This summative learning readiness tool measures the degree to which students possess the traits needed for success in a higher education environment.

SmarterMeasure serves as an early warning device to identify students who may be deficient in the skills and attributes necessary for success and who may, therefore, be at risk of dropping out of the program. In addition, students can recognize their strengths and identify any weaknesses prior to beginning the program. Therefore, the institution and the student can access resources that will prove advantageous for the student's success and persistence from enrollment to graduation.

Recommendation 2: Required shadowing of the radiologic technology profession. To increase preparedness for the radiologic technology program, shadowing should be an application requirement. Shadowing a radiologic technologist prior to applying for the program will provide the prospective student with information of the responsibilities of a radiologic technologist. In addition, the prospective student can experience the sights and smells in a health care setting. Prospective students can ask questions and learn some aspects related to the profession before investing time and money into the program.

Recommendation 3: Development of a mentoring program. A common factor in the persistence of students enrolled in the 2-year radiologic technology program was connectedness. The social and emotional relationships with others were a significant-reason students persisted from enrollment to graduation. The second-year radiologic technology students could serve as mentors to help first-year students with academic, personal, social, and career decisions. In addition, the second-year students can reflect on their experiences while in the program and share their stories with the first-year students.

These relationships subsequently may increase student persistence from enrollment to graduation in 2-year radiologic technology programs.

Recommendation 4: Development of a student support program. In addition to a student mentoring program, student support programs could prove beneficial in student persistence. The combination of these resources will provide students with multiple options for support and allow the student to utilize the resources that work best to meet their individual needs. Again, the connectedness a student may experience while engaged in a student support program can help foster relationships, increase a student's sense of belonging, and promote student persistence from enrollment to graduation.

Implications

This study has several implications for positive social change and educational practice. This study also has the potential to impact students in 2-year radiologic technology programs as well as higher education institutions, health care settings, and the community. The implications, in addition to my reflections, are discussed below.

Positive Social Change

This basic qualitative study provides consequential data that may be extracted to enhance higher education environments, health care facilities, and the community. These variables may influence persistence and effect positive social change in the college environment, health care facilities, and in the community. Developing a comprehensive understanding of persistence in 2-year radiologic technology programs will provide resourceful data on how faculty, staff, and administrators can improve student support services and enhance persistence in 2-year radiologic technology programs, which

ultimately impacts positive social change for students, the institution, health care facilities, and the community. This study provided data on why participants did not persist or persisted from enrollment to graduation in the 2-year radiologic technology program. The knowledge gained through this study may create awareness for higher education administrators so they can align these factors with the institution's mission, vision, and strategic initiatives. This knowledge and practice may create an economic impact in the local workforce and effect positive social change for radiologic technology students at the study site.

Positive social change within health care facilities is also possible because if more students persist to graduation, more qualified radiologic technologists can enter the workforce. As more baby boomers are aging and nearing retirement, there is an increased need for medical imaging personnel to care for these individuals and fill the vacancies within the health care environment. Higher education institutions can facilitate positive social change by creating collaborative learning opportunities for students that foster learning and autonomy, but also serve as a support system. These learning teams can increase students' knowledge and increase their connectedness to the institution. Additionally, institutions should provide counselors to discuss financial concerns before students are enrolled and during their time at the institution. Identifying available resources may help students effectively prepare for their education and alleviate some of their financial worries while enrolled in the institution. Finally, program faculty should foster an environment in which students have an active role in the learning process. If faculty teach students to think instead of how to think, self-efficacy may increase which

is a strong influencer for persistence in higher education. Institutions must be mindful that students' needs may change semester to semester solidifying the need for a robust student support program. By supporting and encouraging radiologic technology students through graduation in a 2-year radiologic technology program, educators will be assisting students in educational and employment goals that may confidently lead them to become productive citizens in the community, thereby effecting positive social change.

Implications for Educational Practice

Implications of the study are that student persistence remains an issue. An effective tool in aiding the persistence of students in a 2-year radiologic technology program is the use of SmarterMeasure learning readiness assessment as part of the admissions process. SmarterMeasure is beneficial to the student and the institution as it helps identify any barriers to student success prior to enrolling in the program. As the institution and the student see the results of the assessment, additional resources and support services can be identified to help the student prepare for entering the program and eliminate any barriers. These resources and support services provide a proactive approach to student success and persistence and should be available throughout the student's educational program.

The requirement of shadowing a radiologic technologist as part of the application process may also affect persistence in 2-year radiologic technology programs. Shadowing will provide prospective students' knowledge on the role and responsibilities of a radiologic technologist. Prospective students can also ask questions and learn more about the profession before investing in the program.

Reflections

I am a radiologic technologist, a life-long learner, and an educator in radiologic technology at a 2-year college. I am passionate about this study, which has illuminated reasons radiologic technology students did not persist or persisted from enrollment to graduation in a 2-year program. While completing this study, I did my best to avoid any biases. I dedicated time to reading, interviewing, coding, and interpreting the data without judging the participants.

This study has been a unique learning experience for me. I was pleased to understand the reasons why participants did not persist or persisted from enrollment to graduation. The participants provided rich information on their experiences while enrolled in the 2-year radiologic technology program. Financial issues, lack of support, student readiness issues, and personal issues were identified as deterrents to persistence.

Through this study, I gained a deeper awareness of how participants described their experiences in the 2-year radiologic technology program. Some participants felt a sense of inadequacy and unpreparedness, so when personal challenges arose, they did not have the support or resources to overcome these barriers. Other participants experienced personal challenges, but their internal motivations and high levels of autonomy, preparedness, connectedness, and self-efficacy drove them to persevere and persist to graduation.

Additionally, I acquired an appreciation of how the participants described the support from program faculty while enrolled in the 2-year radiologic technology

program. Faculty engagement and support impacted the participants, whether they persisted to graduation or not.

I was impressed with the willingness and dedication the participants demonstrated to complete the interviews. My observation regarding the amount of time required to complete the interview implied the participants were serious about the data and wanted it reflected in their responses. Moreover, this indicated that the participants considered my study to be worthwhile. Their responses provided me with the opportunity to collect, analyze, and expand on the rich data. I was grateful for the participants' commitment and cooperation to share their experiences with me. I am more knowledgeable and excited to make a positive change in the lives of students who aspire to enroll and attend a 2-year radiologic technology program.

Conclusion

Low persistence rates of 2-year radiologic technology students have been an issue for a long time. Although there has been an increase in the amount of research conducted on student persistence in allied health programs, there is still more work to do before student persistence in 2-year radiologic technology programs is a non-issue. Other studies have shown that certain admission criteria may be helpful in identifying students who could be academically successful and persist, but it would be unwise to assume that this is the only solution for increasing persistence from enrollment to graduation in this population of students. The results of this study showed that the lack of persistence stems from a mix of lack of preparedness and lack of emotional, financial, and social support. Although students should take responsibility of their education, higher education

institutions are also responsible for the success of its students. As shown in this study, the connections a student has with their peers, faculty, and to the institution positively affects persistence. Higher education institutions play an integral part in facilitating the connections between students and others during their educational journey. As the connections with peers, faculty, and the institution increase, students' confidence also increases. As confidence increases, autonomy and self-efficacy increases. This study highlighted the importance of autonomy and self-efficacy in student persistence. Within higher education, we all play a vital role in student success and persistence.

With the results of my study, I showed that student persistence is multifaceted. Every student has different needs, wants, experiences, and expectations. A one-size fits all approach to persistence will not suffice. I provided some results, but more research is needed to provide a holistic review of student persistence in 2-year radiologic technology programs.

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Appendix A: Interview Questions

The following is a list of interview questions that were asked of the former student participants, who did not persist from enrollment to graduation, in the study:

1. How did you come to be a student in this 2-year radiologic technology program.
2. Why did you choose to apply for this or any radiologic technology program?
3. Please discuss your experiences through your first year at the College.
4. Discuss any challenges you may have faced during your time in the program?
5. What resources did you use while in the program?
6. If you utilized any resources, how did they impact your learning and/or success in the program?
7. What types of activities did you like to participate in on campus?
8. How often did you spend studying with other students in the program?
9. How was the program different than or the same as you expected when you were accepted into the program?
10. How many hours a week did you work while enrolled in the program?
11. Describe what you like about the program and why you liked it.
12. Explain what you did not like or would like to change about the program.
13. What do you think the College or faculty could have done to better help you as a student?
14. What was your reason for leaving this 2-year radiologic technology

program?

15. Why do you think other students leave this College before completing the radiologic technology degree program?
16. What do you think would improve student persistence from enrollment to graduation?
17. What else would you want me to know about your experiences at this College?

The following is a list of interview questions that were asked of the former student participants, who persisted from enrollment to graduation, in the study:

1. How did you come to be a student in this 2-year radiologic technology program?
2. Why did you choose to apply for this or any radiologic technology program?
3. Please discuss your experiences through your first year at the College.
4. Discuss any challenges you may have faced during your time in the program?
5. How did you overcome these challenges?
6. What resources did you use while in the program?
7. If you utilized any resources, how did they impact your learning and/or success in the program?
8. What types of activities did you like to participate in on campus?
9. How often did you spend studying with other students in the program?
10. How was the program different than or the same as you expected when

you were accepted into the program?

11. How many hours a week did you work while enrolled in the program?
12. Describe what you like about the program and why you liked it.
13. Explain what you did not like or would like to change about the program.
14. What do you think the College or faculty could have done to better help you as a student?
15. What was your reason for staying in this 2-year radiologic technology program?
16. Why do you think other students leave this College before completing the radiologic technology degree program?
17. What do you think would improve student persistence from enrollment to graduation?
18. What else would you want me to know about your experiences at this College?

Appendix B: Themes by Research Questions

Research Question	Themes by Research Question	Emerging Ideas
1. What are the students' perceptions of why they did not persist from enrollment to graduation in 2-year radiologic technology programs in a metropolitan area of the southern United States?	1. Financial Issues	Financial Issues • Self-supporting • Lack of funds to pay for housing • Lack of funds to pay for bills/utilities • Lack of funds to pay for food • Lack of funds to pay for college
	2. Lack of Support	Lack of Support • Lack of encouragement from family and friends • Parents did not support going to college • Friends did not support education • Isolation from friends • Lack of emotional support from family and friends
	3. Student Readiness Issues	Student Readiness Issues • No extra time to commit to education • Full load required/need all courses in curriculum • Difficulty adjusting to coursework and clinical • Lack of confidence • Did not research college, program, or profession of Radiologic Technology • First time on campus was first day of class
	4. Personal Issues	Personal Issues • Had to work • Medical issues • Needed surgery • Anxiety • Depression • Death of family member

2. What are the students' perceptions of what helped them persist from enrollment to graduation in 2-year radiologic technology programs in a metropolitan area of the southern United States?	1. Autonomy	Autonomy • In control of education • Self-motivated • Knows the end-goal • Achievement/success • Obtain a career/job
	2. Preparedness	Preparedness • Transferred credits into college • Visited the college campus • Shadowed technologist in Radiology Department • Attended college Information Session • Met with member of the Admission's team/recruiter
	3. Connectedness	Connectedness • Positive support and encouragement to pursue education from family and friends • Support from classmates • Support from program faculty • Positive social interactions with others • Emotional closeness with others • Participated in college events
	4. Self-efficacy	Self-efficacy • Confidence in learning abilities • Assertive in interactions with technologists in clinical • Proud of performance and accomplishments • Self-respect • Belief in ability to succeed