STUDENT EXPECTATIONS AS A FUNCTION OF STUDENT RETENTION
FOR ADULT ONLINE LEARNERS

by

Herman Carl Kastroll V

Liberty University

A Dissertation Presented in Partial Fulfillment
Of the Requirements for the Degree

Doctor of Education

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ABSTRACT

The study of retention is important to the institution, to assist in ensuring financial stability, and to the student, to provide an environment supportive of student needs for success. The purpose of this correlational study was to examine the relationship between the subscales of the Priorities Survey of Online Learners (PSOL) and the enrollment decision of adult, online students at a Christian university in the southeast United States. This quantitative, non-experimental, predictive study used a correlational research design and a survey strategy of inquiry. The participants for the study were drawn from archival data consisting of 5,221 undergraduate and 3,799 graduate students enrolled in online classes in the fall of 2009 and the fall of 2014. A binary logistic regression was used to analyze the data to examine if a statistically significant and meaningful connection existed. The findings of this study indicate that there are select educational experiences that do have an impact on retention for online adult learners. For 2009 undergraduate students, the expectation gap of their perceptions of the institution itself had a statistically significant impact on their retention; however, for 2014 undergraduates and 2009 and 2014 graduate students there was no significant predictive relationship between the expectation gap on the survey scales and student retention. The data has shown that the needs of graduate students and undergraduate students is different, and the needs of one class of undergraduate students is not necessarily the same as those of a different class. It is suggested that future research should be focused on more specific subpopulations, and it should also look at the homogeneity of the specific predictor variables in the chosen survey within the context of the institution.

Keywords: student retention, student attrition, Christian institution, student satisfaction, student importance, expectations
Dedication

I would like to dedicate this study to my amazing wife Emily, my son Tripp, and my daughter Lilli. Emily, you have stood beside me through all of the ebb and flow of this process; through late nights, frustrations, as well as the joyful times. Each time I wanted to slow down, or pull back, you pushed me harder to continue and always instilled the confidence in me to finish. Your patience and drive to see me succeed is literally immeasurable. If I did not have a strong spouse to support me, this study would not have been possible. I love you more than I can express in words, and I cannot thank you enough for walking beside me for my entire higher education journey. It is because of you that I made it to where I am today. Tripp and Lilli, it is an absolute honor to be your father. You were both born during my doctoral journey and are two of the main reasons I worked to finish this dissertation. I look forward to watching you grow and learn to achieve your own dreams.
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First and foremost, I want to give thanks to my Lord and Savior Jesus Christ. I truly believe that all knowledge comes from Him above, and as He has ordained my path, it is also He who sustains and guides me daily.

To my brothers, Matt, Ben, and Caleb, I am as inquisitive as I am today because of how many questions you asked me growing up. I am thankful for your curiosity and for the privilege of being your oldest brother.

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List of Abbreviations

Expectation Confirmation Theory (ECT)

Noel Levitz Priorities Survey of Online Learners (PSOL)

Noel Levitz Student Satisfaction Inventory (SSI)

National Center for Education Statistics (NCES)

Organization for Economic Cooperation and Development (OECD)
CHAPTER ONE: INTRODUCTION

Overview

Despite increasing online growth (Allen & Seaman, 2013; Baker, 2010) and the continued national attention placed on college completion (Miller, Valle, Engle, & Cooper, 2014; Seidman, 2005, 2012), retention rates are decreasing (Kilburn, Kilburn, & Cates, 2014). From Fall 2012 to Fall 2013, the 3.7% increase for online enrollment far exceeded the 1.2% growth of the higher education student population in the United States. The 2014 Survey of Online Learning shows that in Fall 2013, 25.1% (5,257,379 individuals) of all students were taking at least one online course. Further, at private, non-profit, four-year institutions online enrollment is up by 12.7% (Allen & Seaman, 2015). Despite the popularity of online education, increasing retention rates remain a problem faced by many colleges (Harper, 2014; Hart, 2012; Hillman, Tandbert, & Fryar, 2015; Petty, 2014). The purpose of this non-experimental, predictive, correlational quantitative study is to determine if student expectations of various educational experiences are related to the retention of online undergraduate and graduate students at a Christian university. Chapter One presents a framework for the current study, builds a foundation for the research, and presents the basis for the problem of the current study. This chapter covers the following areas: background, the problem statement, the purpose statement, the significance of the study, the research questions, the research plan, and delimitations.

Background

Research on student retention has been conducted for decades, but initially was viewed through the lens of psychology. Student attrition was the reflection of individual attributes; that is, students failed, not institutions (Tinto, 2005). In the 1970s the view of retention began to shift to take factor the role of the environment (i.e., the institution) in student decisions to stay or
leave (Spady, 1970). This led to research on student retention linked to student contact or involvement (Astin, 1984; Endo & Harpel, 1982; Pascarella, 1980; Pascarella & Chapman, 1983; Pascarella & Terenzini, 1980; Terenzini, Lorang, & Pascarella, 1981). Essentially it was learned that involvement matters most during the student’s initial college years. Following that time the study of retention has undergone a number of changes: (a) an understanding of different student backgrounds and experiences has increased (e.g., Allen, 1992; Bennett & Okinaka, 1990; Clewell & Ficklen, 1986; Solorzano, Ceja, & Yosso, 2000; Thompson & Fretz, 1991; Torres, 2003; Zurita, 2005); and (b) an understanding of how the process of student retention differs in different institutional settings, residential and distance education, two- and four-year (e.g., Allen, 1992; Borglum & Kubala, 2000; Padilla & Pavel, 1986; Pascarella & Chapman, 1983; Pascarella, Smart, & Ethington, 1986; Tinto, Russo, & Kadel, 1994). With the advent of the computer and the internet this more diverse population emerged to participate in higher education. This new population was (and is) quite different from the traditional student; and, because this population has characteristics not found in the traditional population, there needed to be new ways to address retention (Halsne & Gatta, 2002).

Tinto (2005) claimed that the more integrative the college experience is, the more likely the student will stay at the institution until graduation. Tinto’s student integration model uses the fit between social, academic, and institutional commitment to explain the process of retention in higher education. His model establishes the institutional role in fostering an environment of integration between the student and the institution. Since his model focuses on the traditional student, Bean and Metzner (1985) developed their Conceptual Model of Nontraditional Undergraduate Student Attrition to add to Tinto’s model by identifying variables (e.g., age, enrollment status, residence, goals, high school performance, and gender) to explain retention in
nontraditional students. This model provided a framework for additional studies with distance education programs of study like the framework from Berge and Huang (2004) that is based on three categories of variables (personal, institutional, and circumstantial) affecting retention among online education students. Their framework takes a more holistic approach by allowing individuals to identify the variables “most relevant to an institution’s context and stresses institutional interventions that may be more conducive and relevant in enhancing student retention” (Levitch & Shaw, 2014, p. 5).

Research has recognized the importance of a close relationship between learners’ expectation of their academic experience and their satisfaction with how the experience is perceived (Noel-Levitz, 2008; Tinto, 1993). Tinto (1993) stated,

Specifically, they mirror the degree in which those experiences serve to integrate individuals into the social and intellectual life of the institution. Generally, the more satisfying those experiences are felt to be, the more likely are individuals to persist until degree completion. Conversely, the less integrative they are, the more likely are individuals to withdraw voluntarily prior to degree completion. (pp. 49-50)

It is beneficial for institutions to understand the relationship between what online learners expect and what they actually experience. This can be done by looking at the gaps that are identified between combined student importance and satisfaction data. Additionally, research indicates that integration with faculty and the institution is a significant variable in students’ intent to complete a program (Herbert, 2006) along with an online advising program (Luna & Medina, 2007).

Further, Expectation Confirmation Theory (ECT) posits that consumers’ expectations directly correlate with satisfaction and retention, such that consumer expectations, together with
performance perceptions can lead to greater satisfaction after the purchase. This effect is facilitated through confirmation (or disconfirmation) between expectations and performance in that, if a product outperforms expectations (referred to as positive disconfirmation) post-purchase satisfaction will result (Oliver, 1980; Spreng, MacKenzie, & Olshavsky, 1996). On the other hand, if a product does not meet expectations (e.g., negative disconfirmation) consumer dissatisfaction will likely occur. Additionally, ECT holds that the intention of buyers to purchase a product or service again is greatly determined by their satisfaction with previous use (Anderson & Sullivan, 1993). Within the context of online education and retention/attrition analyses, ECT theorizes that how well a student’s expectations are met in distance education courses will impact whether the student will continue taking those courses. Harris, Larrier, and Castano-Bishop (2011) stated that, “Having knowledge and understanding of student expectations and how those expectations impact student performance and persistence is the first step in developing programs for helping students develop realistic expectations for online courses” (p. 3). It should be noted that ECT does not seek to add to the argument/discussion on whether or not students should be labeled as customers. Instead, it is reflective of the base premise of ECT in noting that students enroll in college with certain expectations, and when they believe that their goals have been met, they stay.

**Problem Statement**

Models such as Tinto’s (1975) student integrative model and Bean and Metzner’s (1985) conceptual model of nontraditional undergraduate student attrition have classified drop out attributes in mainly traditional environments (Tinto, 1975) and while some models have attempted to focus on the drop out attributes of distance education environments, (Berge & Huang, 2004; Kember, 1989) minimal research has focused on the relationship between retention
and attributes in the online adult learner population. Further, previous research that studied the relationship between satisfaction and retention neglected to address the importance (or priority) of the experiences a student encountered; additionally, the adult demographic is so diverse (Clauss-Ehlers & Parham, 2014; Cuaresma, Lutz, & Sanderson, 2014; Hossler, Ziskin, Moore, & Wakhungu, 2008; Thiel, Singleton, Pope, & Stanistreet, 2016; Tinto, 1982) that generic retention studies may not uncover the unique needs affecting a particular subgroup. It is for this reason that researchers have recommended studies to/delineate specific subpopulations within the adult cohort to best understand their retention needs (Hayek, 2011; Heimberg, 2014; Martirosyan, Saxon, & Wanjohi, 2014). One unique subpopulation is students attending a Christian university. The problem is the lack of literature concerning the expectation gap between the level of student satisfaction and importance and the resulting impact on retention for online students at a Christian university.

**Purpose Statement**

The purpose of this non-experimental, predictive, correlational quantitative study is to determine if student expectations of various educational experiences are related to the retention of online undergraduate and graduate students at a Christian university. The predictor variable was defined as the expectation gap between the level of student satisfaction and importance levels for each item. The predictor variables will be measured by the educational experience indices derived by the Priorities Survey for Online Learners (PSOL). In this tool, twenty-six items are divided into five subscales that evaluate academic services, enrollment services, institutional perceptions, instructional services, and student services, for undergraduate and graduate online Christian students at a four-year private, nonprofit, Christian institution. The criterion variable is defined as Fall to Fall retention from the university. Specifically, this study
will explore if retention for undergraduate and graduate online students at a Christian university will be affected when there is an expectation gap. An expectation gap exists between items that are rated highly important but with low levels of satisfaction, or rated less important but with high levels of satisfaction. For example, an expectation gap variable would be if, on a scale of 1-7, a student rated their level of importance with academic advising services at a 6, and also rated their level of satisfaction with the same service at a 5, the expectation gap variable for academic advising services would be -1. This implies that the student’s expectation of that service (i.e., their level of importance) is less than their actual perception of that service (i.e., satisfaction).

**Significance of the Study**

Retention is important for many reasons. First, it is important to the institution since the retention of students is primary to ensuring financial and program stability and sustainability (Levitch & Shaw, 2014). Second, providing an environment that supports student educational needs has a heavy bearing on the credibility of the institution as retention rates are viewed as indicators of quality (Angelino, Williams & Natvig, 2007; Thompson, 1999); essentially, the lower the retention rate, the lower the perceived quality by prospective students and regulatory bodies. Lastly, the online student demographic is so diverse (Hossler et al., 2008; Tinto, 1982) that generic retention studies may not uncover the unique needs affecting a particular subgroup. It is for these reasons that researchers have recommended studies that delineate specific subpopulations within the adult cohort to best understand their retention needs (Hayek, 2011; Heimberg, 2014; Martirosyan et al., 2014). While some research has been done in this regard including predicting student satisfaction in online programs (Kuo, Walker, Belland, & Schroder, 2013), developing instruments to measure student expectations of online learning (Harris et al., 2011), and correlating learning expectations with faculty instructional responsibilities (Bailie,
2014), there is little research on varying and specific subpopulations of online students and how their specific expectations might predict student retention. Understanding the relationship between student expectations and retention in an online population at a Christian university is important because it provides a framework for Christian institutions to use expectation data to make changes to help this population persist toward degree completion.

**Research Question**

**RQ1:** How accurately can the retention of students at a Christian university be predicated by the linear combination of expectation gap variables (*academic services, enrollment services, institutional perceptions, instructional services, and student services*) as measured by the Noel Levitz Priorities Survey of Online Learners (PSOL)?

**Definitions**

1. **Academic year** - The time usually extending from September to June; consists of 2 semesters. There may be an additional summer semester (Integrated Postsecondary Education Data System, 2015).

2. **Attrition** - The act of discontinuing coursework in a year subsequent to a student’s previous year in their academic program (Johnson, 2012). Attrition and persistence combined are the measure for retention (Hagedorn, 2005)

3. **Academic services** - “…the services students utilize to achieve their academic goals. These services include advising, course offerings, technical assistance, online library resources, and tutoring services” (Noel-Levitz, 2015, p. 3).

4. **Adult learner** - Someone 25 years of age or older involved in postsecondary learning activities (Voorhees & Lingenfelter, 2003)
5. **Drop out** - A previously enrolled student who does not reenroll or does not complete their intended educational program (Tinto, 1993)

6. **Enrollment services** - “…the processes and services related to enrolling students in the online program, including financial aid, registration and payment procedures” (Noel-Levitz, 2015, p. 3).

7. **Expectation gap** - The mathematical difference between importance and satisfaction (Noel-Levitz, 2015). For example, if a student was Not Very Satisfied (3) with the institution, but felt the institution was Very Important (7), the expectation gap would equal 4.

8. **Importance** - A measure of the level of value a student places on an area/topic. It was rated using a seven-point Likert scale that ranges from Very Important to Not Important at All. Responses were as follows: Very Important = 7, Important = 6, Somewhat Important = 5, Neutral = 4, Somewhat Unimportant = 3, Not Very Important = 2, and Not Important at All = 1 (Noel-Levitz, 2015).

9. **Institutional perceptions** - “…how students perceive [the] institution” (Noel-Levitz, 2015, p. 3).

10. **Instructional services** - “Students’ academic experience, the instructional materials, the faculty/student interactions, evaluation procedures, and the quality of instruction” (Noel-Levitz, 2015, p. 3).

11. **Persistence** - A student’s decision to continue with his or her educational program to completion (Johnson, 2012).

12. **Retention** - A measure of the rate at which students persist in their educational program at the institution, expressed as a percentage (Hagedorn, 2005). For this study, this is the
percentage of degree-seeking students from the previous fall who are again enrolled in the following fall semester or graduated.

13. *Satisfaction* - A measure of the level of a student’s feelings or perceptions that was rated using a seven-point Likert scale that ranges from Very Satisfied to Not Satisfied at All. Responses were as follows: Very Satisfied = 7, Satisfied = 6, Somewhat Satisfied = 5, Neutral = 4, Somewhat Dissatisfied = 3, Not Very Satisfied = 2, and Not Satisfied at All = 1 (Noel-Levitz, 2015).

14. *Semester* – Half of an academic calendar year, on average about 15-18 weeks of instruction in each semester (Integrated Postsecondary Education Data System, 2015).

15. *Student services* - “…the quality of student programs and services, including responses to student requests, online career services, and the bookstore” (Noel-Levitz, 2015, p. 3).

CHAPTER TWO: LITERATURE REVIEW

Overview

The study of perception covers numerous fields and cultures, including economics (Caraballo & McLaughlin, 2012), business (van Riel et al., 2013), and psychology (Fandokht, Salmabadi, Pardakhti, Davoudi, & Hosseini, 2014). In the education sector, there are studies of how teacher perceptions of large-scale ideas like educational technology (Chong, 2012; Whitworth, 2012), teacher ideologies (Kock, 2009), and educational value (Davis, 2012) affect their teaching. Other studies hone in on very specific aspects of educational needs or innovations like social media in the classroom (Brake, 2014) or mobile device usage (O'Bannon, 2014).

Further, studies show how perceptions of teachers and faculty on administration affect their instruction (Karademir, Karakaya, & Sirin, 2014) as well as student perceptions affecting their learning. And, there are some works on how students learn and ways to change practice to meet student needs (Weimer, 2013) as well as discussion on how misperceptions on student performance can lead to mistakes in teaching (Popovich & Green, 2012). The following review of literature will address several topics relevant to the topic of student retention in the context of an increasing growth in online/distance education and a continued national attention placed on college completion (Miller et al., 2014; Seidman, 2005; 2012), various theories and conceptual frameworks that undergird retention studies beginning with Vygotsky’s work and continued forward with a discussion on Tinto’s student integration model, that is followed by Berge and Huang’s correlating theory that expands on Tinto’s model. Expectation confirmation theory is discussed in as much as it relates individual’s expectations to continued use of a product/service. The review continues with a brief history of higher education from 1950 to present (to include discussion on traditional and distance education); the development of retention analyses; the
The social impact of student retention on individual students, individual institutions and society at large; the importance and relevance of student support for all types of students, and will conclude with a brief treatment of the relevance of a biblical worldview for student support, retention, and services. These above topics highlight the importance of the study of student retention for students, institutions, and society while also highlighting the lack of literature concerning students at a faith-based institution.

**Theoretical and Conceptual Framework**

**Philosophical Assumptions and Worldview**

Several philosophical assumptions frame this study. For example, in the area of ontology or metaphysics, the Bible holds that the external world is real (not an illusion), but that there is also an area of unseen reality (Gutek, 2011). In the area of epistemology, the Bible opposes the assumption, common since the time of Kant, that human beings cannot have objective knowledge of nominal or metaphysical reality (Thornbury, 2007, p. 38). While one cannot ignore the effects of Kant's work in shaping the world, one should affirm that the Creator of all areas of reality has spoken an objective word giving knowledge of all areas of reality, and has so created individuals that are able, with the aid of the Holy Spirit, to understand that word. This involves philosophical assumptions about God, revelation, humanity, and language. In the area of axiology, using the biblical model of the Trinity as a foundation, it teaches that at the basis of all reality, there is not only unity, but community, and that the pattern of the Godhead is the pattern for humanity, and will be present at the consummation of God's plan.

**Basic Educational Theories**

Psychologists have long since studied the cognitive development of humans at various life stages. Jean Piaget developed theories based on the cognitive development of a human
being. Lev Vygotsky was a contemporary of Piaget but differed in one main area: Vygotsky focused on the link between input from others and cognitive development; he is most known for his theory of proximal development and describing the tasks a child has yet to learn but is capable of learning with time (i.e., scaffolding learning). Further, educators have shown that students learn easiest when they have additional support while learning within their zone of proximal development (i.e., melding the two theories). Erik Erikson was a psychosocial theorist who focused on an adaptation of the developmental theories of Sigmund Freud. The list of influential educational and developmental psychologists continues. And while every teacher operates with their own theory about what makes a good learning environment and how best to help their students grow and develop, they cannot assume that what they have always done will continue to work. The current generation thinks differently than the one before it; this is not a criticism of old thinking, but it is a reality. In order to keep students interested and engaged in the educational process and to keep students from dropping out, educational leaders need to evaluate what motivates students to learn, as well as determine what methods work best to help scaffold learning.

**Tinto’s Student Integration Model**

Tinto sought to explain the process of persistence in higher education as a fit between social, academic, and institutional commitment. He based his student integration model on the cultural rites of passage anthropology model of Van Gennep (1960). Tinto claimed that students must first *detach* from their former familial group(ing), then experience a period of *transition* where the student begins to develop new relationships and methods of interaction of the new peer group, and finally *integrate* the particular (or standardized) behaviors and values of the new group (i.e., college). Tinto believed that students who stop or drop out of college are those who
are not able to effectively leave their former familial group(ing) and assume the behaviors and values that characterize their college environment (Tinto, 1975, 1993, 2005).

Tinto put forth as complementary but independent both academic and social integration, and both as ways that students normalize to their life in college. Academic integration relates to both meeting the standard norms (e.g., passing grades) and alignment with institutions academic values (e.g., an institution that values teaching before heavy research activity). Social integration relates to how a student feels that the social atmosphere is agreeable with his or her preferences (that are formed by the student based on their past experiences and future aspirations). This is often measured as an amalgamation of student-to-student interactions, faculty-to-student interactions, where academic integration is usually measured with the student’s satisfaction with their choice of discipline and state of academic progress (Sidelinger, Frisby, & Heisler, 2016).

Tinto’s further works were framed around the idea that increases in academic and social integration lead to greater student commitment to their college/school and the goal of completion/graduation (Bean, 1983; Tinto, 1996, 2004; Tinto et al., 1994). Therefore, Tinto asserted that these commitments increase the probability a student will persist to graduation.

Berge and Huang’s Framework

Berge and Huang (2004) built upon Tinto’s work but sought to expand his model such that there would be a model based on additional variables affecting retention among online education students. They summarized the influences on retention to include: organizational influences (e.g., policies and processes), sociological influences (e.g., social forces), psychological influences, and economic influences (e.g., cost-benefit analysis). While these influences can be seen in Tinto’s (1975) model of retention, the final model proposed by Berge and Huang (2004) describes only three types of variables: personal, institutional, and
circumstantial. Personal variables subsume demographic aspects, individual aspects, and prior educational experiences; institutional variables comprised social aspects, academic aspects, and bureaucratic aspects; and circumstantial variables distinguished institutional interaction and external interaction (Gütl, Rizzardini, Chang, & Morales, 2014). According to Meyer (2013),

This combination of variables makes the model context-sensitive, and allows institutions to take the deliver method (e.g., online coursework) and the design of online courses into consideration as they develop approaches aimed to improve student retention. This model…has the advantage of being developed with online learning in mind. However, while it acknowledges the full range of influences mentioned earlier, it focuses on those elements that institutions can control (e.g., the design of online coursework) and places less emphasis on external influences like the role of finances and work obligations. (p. 325)

**Expectation Confirmation Theory (ECT)**

Keith (1960) articulated a basic marketing concept, “…every activity of the corporation—from finance to sales to production—is aimed at satisfying the needs and desires of the consumer” (p. 38, emphasis added). Despite this clear notion, up until the mid-1990s the primary model of consumer satisfaction seemingly ignored this latter aspect. The dominant model of the time was the disconfirmation of expectations model, where feelings of satisfaction come about when consumers compare their expectations of a product to their perceptions of the same product’s performance (e.g., Oliver, 1980). There is significant amount of empirical evidence that supports the idea that if perceived performance is greater than a consumer’s expectation(s) then the consumer is (or will be) satisfied; and if perceived performance is less than a consumer’s expectation(s) then the consumer is (or will be) dissatisfied (e.g., Bearden & Teel, 1983;
However, the above models ignore the extent that a product or service actually fulfills an individual’s desires. Ignoring desires leads to logical inconsistencies; for example, it could be argued that a consumer who expects and receives poor performance will be satisfied. Further, ignoring desires could skew research to show that there is no relationship between the disconfirmation of expectations and satisfaction. Spreng et al. (1996) put forth ECT and contended that consumer expectations and desires, together with perceived performance, lead to post-purchase satisfaction. They stated,

This comparison process produces not only feelings of satisfaction with the product or service, but also feelings of satisfaction with the information (often supplied by marketers in such forms as advertising, package information, and salesperson communications) on which their expectations are based. (p. 15)

**Related Literature**

Carl Haber is an experimental physicist who is most known as one of the scientists who discovered the invisible Higgs boson particle (The Atlas Collaboration, 2012), but what is more relevant to the following discussion is a side project he and a colleague worked on; they created a machine that can read the surface of very old audio recordings and reproduce them without anything having to touch them (Fadeyev & Haber, 2004). These are audio recordings that are so old and fragile that they cannot be played or they would be ruined. One of the recordings that was reproduced was one of Alexander Graham Bell's voice, the only known recording of his voice. During this recording, Bell can be heard saying, "Hear my voice," though unaware, at the time, no one for more than a century would actually hear his voice (Wilkinson, 2014). College students’ perceptions on their experience (i.e., their expectations) can also go unheard for many
years, and their voices can be just as revolutionary to college administrators when listened to appropriately.

Growth of Higher Education at Large

**Enrollment history.** According to the National Center for Education Statistics (NCES, 2013), since 1992 degree-granting colleges and universities have seen increased enrollments. Between 1992 and 2002 enrollment increased 15%, and between 2002 and 2012 enrollment increased 24% (NCES, 2013, Table 302.60). Further, both undergraduate and graduate enrollment rose 24% between 2002 and 2012 (NCES, 2013, Table 306.10). And, while between 2002 and 2012, the number of 18 to 24-year-olds increased 10% (NCES, 2013, Table 101.10), the number of 18 to 24-year-olds enrolled in college rose from 37% in 2002 to 41% in 2012 (NCES, 2013, Table 302.60). While in the years 2000-2012 the enrollment of students under age 25 and the enrollment of those age 25 and over both increased by 35%, enrollment growth is projected to slow for those under age 25 and speed up for those 25 and over by 2023; 12% and 20% respectively (NCES, 2013, Table 303.40). In general, enrollment is expected to increase 14% between fall 2011 and fall 2022 (Hussar & Bailey, 2014), and while this is decidedly slower growth than the almost 45% growth from 1997 to 2011, it is still significant given that the underlying population base (i.e., 18 to 24-year-olds) is projected to decline by 4% (Lederman, 2014).

**Accountability history.** One of the prominent challenges facing higher education today is the ability to demonstrate the quality of education that is provided. Institutional effectiveness, in all areas—curricular and co-curricular—is vital to the success of every university. This pressing challenge for accountability, effectiveness, and change has brought assessment, strategic planning, and budget planning into the forefront of administrative lives. Institutional
effectiveness has become a discipline that helps protect the institution from veering away from its mission and goals. An effectiveness program focuses on academic services, administrative services, student services, and facilities management and services. It holds these areas accountable to their purposes and outcomes as they track continual improvement. The process of institutional effectiveness includes a continuous planning, implementation, assessment, improvement cycle that is applied at each level of the organization. As institutions have developed assessment processes and sought to establish broad-based strategic planning procedures, it has become apparent that there is a need to integrate assessment and strategic planning processes with the budget planning process. However, creating the links and closing the loops has proven to be a challenge for many institutions. The following timeline shows the progress of the accountability movement that began in the 1970s.

- From the early 1970s to the early 1980s, there was a wide spread dissatisfaction with the perceived skills of high school graduates (Hanushek, 1996).
- The response from U.S. colleges resulted in the “Undergraduate Reform Reports of 1985-86” (e.g., El-Khawas, 1987).
- The National Governor’s Association issued its report “Time for Results” (Alexander, 1986).
- The early 1990s showed a transition of the accreditation associations replacing the states as the primary external stimulus for accountability (Lubinescu, Ratcliff, & Gaffney, 2001).
• The Higher Education Act Reauthorization in 1998 was a major step of federal involvement in the issue of accountability. The primary incentive around the act was a result of the increased costs of Title IV funding (i.e., financial aid to students) (American Council on Education, 2008).

• President Bill Clinton initiated his “Goals 2000” initiative (2000).

• President George W. Bush initiated No Child Left Behind, a K-12 mandate which has dispersion effects on the colleges and universities (No Child Left Behind [NCLB], 2002).

• 2005-present has shown an increased level of accountability by the various regional and national accrediting agencies for effectiveness and efficiency in all areas of the colleges. Beginning in 2012, more emphasis was placed on the practice of continuous improvement among regional and programmatic accreditors as universities are now required to demonstrate this kind of improvement in academic and co-curricular departments (Deming & Figlio, 2016).

**Growth of Distance Education**

Many sources indicate massive growth in online education over the last decade (Allen & Seaman, 2011, 2013, 2015). This is true across all education sectors, including unaccredited for-profit and nonprofit organizations (Allen & Seaman, 2015). The most recent data supported the following conclusions:

• More than 1 in 4 students (28%) now take at least one distance education course (for a total of 5.8 million students).

• Of the 5.8 million students taking online courses last year, 2.85 million take all of their courses strictly online.
• A majority of chief academic leaders say online learning is critical to their long-term strategy (approximately 65%).

• Of chief academic leaders, 71% claim online education learning outcomes are equal or superior to those in face-to-face instruction (Allen & Seaman, 2015).

Equally important, students are increasingly looking to online courses as a means of supplementing their residential education. This is particularly true of general education and elective courses which can be taken online through community colleges and other, more affordable institutions.

**Growth of Alternate Higher Education Credentials**

The notion of alternate credentials is not a new idea. The Morrill Act of 1852 was pivotal in creating land grant colleges and universities with the purpose of focusing on mechanical, agricultural, and professional education, rather than focusing on only educating the elite (Lee, 1963). These new institutions would have been seen as quite alternate to those in the 1870s that were still operating with the classical curriculum. Following came the birth of the American research university with the addition of graduate education and research; with this new (or alternate) model, came a greater alignment with higher education and economic interests (Reuben, 1996). It was not until the 1890s that the bachelor’s degree became characterized as a basic hiring qualification and professional credential (Brown, 1995). The master’s degree was also relatively new and it grew significantly in the 1800s along with the first PhD programs in America (Glazer-Raymo, 2005). Similar trends are seen in more recent history with the growth of online (or distance education) degrees as alternates to a traditional residential degree.

Coupled with aforementioned online education growth, there has also been more recent expansion of certificate programs for students seeking to attain specific skills without pursuing
an entire degree program. Whereas educational degrees have much more standardization and comparability across higher education, certificate programs can vary significantly in depth and scope even within the same educational institution (Gallagher, 2016). In the 2011-2012 academic year, 31,900 students were pursuing graduate certificates, and that figure grew 5% by 2014 (Council of Graduate Schools, 2015).

**Importance of Student Retention**

With declining retention and graduation rates, a challenge facing educational leaders is how to deal with drop outs or disengaged students. When schools do not offer what the students need or desire, they check-out. They become disengaged with the product of education that the school is trying to offer them (Allensworth, 2015). Similar to an electronic company attempting to sell old technology to a current population base, the old technology is disengaged from the needs of the current market. When education is disengaged from the needs of the students, then the students begin to distance themselves from education. If a student stays in a disengaged climate, with no outside motivation to stay, they eventually drop out (Bosworth & Sloboda, 2015). While there are some factors in a student’s background that make success or failure in school more likely (on average), after they begin school, certain risk factors, such as poor reading performance, grade repetition, and poor behavior, become more important predictors of later school problems (e.g., dropping out) than family background (Slavin, 2009).

**Brief History of Higher Education from 1950-Current**

In the wake of the end of World War II, the 1950s brought the beginnings of some changes to the face of higher education. Perhaps most noticeable is The President’s Commission on Higher Education’s (also known as the Truman Commission) report titled “Higher Education
for American Democracy.” In a statement about the report, Truman (1947) listed several recommendations to change higher education,

[To] include the abandonment of European concepts of education and the development of a curriculum attuned to the needs of a democracy; the doubling of college attendance by 1960; the integration of vocational and liberal education; the extension of free public education through the first 2 years of college for all youth who can profit from such education; the elimination of racial and religious discrimination; revision of the goals of graduate and professional school education to make them effective in training well-rounded persons as well as research specialists and technicians; and the expansion of Federal support for higher education through scholarships, fellowships, and general aid. (p. 2)

**Distance education.** The internet has helped further reform the landscape of higher education. Distance (or online) education has its beginnings at the University of California at Los Angeles, and its launch of its Instructional Enhancement Initiative in 1997 that sought to “provide students with improved electronic access to course information and new on-line connections to faculty, lecturers and teaching assistants” (Lebo, 1997, p. 1).

**History on the Development of Student Retention**

**Individual student view.** Early in psychology history many psychologists viewed the individual person as the smallest meaningful unit of study. Thus, they would not look only at the movement of a person’s nose to explain something about the person, but they would look at the person as a whole, i.e., the combination of their parts. This can be exemplified through Piaget’s thoughts on genetic epistemology where he viewed knowledge as a process and not a state, a process specific to the individual (Miller, 2002, pp. 32-35). However, Vygotsky and other
sociocultural psychologists believed that the “child-in-context participating in some event [was] the smallest meaningful unit of student” (Miller, 2002, p. 170). This view is similar to a linguistic statement that asserts that a word out of context does not have any definition; Vygotsky would say that a child out of context (i.e., culture) has no explanatory value. Vygotsky stated, “The path from object to child and from child to object passes through another person” (as cited in Miller, 2002, pp. 170-171).

Psychologists have long since studied the cognitive development of humans at various life stages (Allport, 1937; Jung, 1971). Piaget developed theories based on the cognitive development of a human being. Cognitive development is defined as gradual, orderly changes by which mental processes become more complex and sophisticated (Ormrod, 2008; Slavin, 2009). His theories divide the human life into four separate phases. Two of those phases apply to a child during their grammar school years. The first is called the Preoperational stage and includes children between the ages of 2 to 7. The second is the Concrete Operational stage and consists of students between the ages of 7 to 11 (Miller, 2002). Piaget then broke down each phase into four to five characteristics that define children at each stage of life. Vygotsky was a contemporary of Piaget but differed in one main area: Vygotsky focused on the link between input from others and cognitive development. The theory of proximal development is defined as the level of development immediately above a person’s present level; zone of proximal development is simply describing the tasks a child has yet to learn but is capable of learning with time. The theory of scaffolding is defined as support for learning and problem solving (Slavin, 2009, pp. 40-45). Educators have shown that students learn most easily when they have additional support while learning within their zone of proximal development (i.e., melding the two theories). Benjamin Bloom, in the late 1960s, sought to explain the variation in student
achievement. As his research progressed from individual differences in students learning to factors outside of school that affect learning, he concluded that teachers have a very strong influence on learning (Guskey, 2008). Bloom posited that almost every student could achieve mastery if the following conditions are met: education is organized intentionally, student remediation is timely (both appropriately and efficiently), and the goals are clear (Bloom, Englehart, Furst, Hill, & Krathwohl, 1956, p. 6). Further, Bloom suggested that assessment tools designed for feedback and corrective instruction (i.e., formative assessment) would be much more valuable than assessments designed to simply measure if a concept was understood (i.e., summative assessment). From the basics of how individuals learn comes the manner in which this has happened over time.

**Institutional view.** A 22-year-old graduate of a 4-year university has just been turned down for a job within the field that he has spent the past four years in preparation to begin. The interviewer simply states to the interviewee, “I just don’t see the skills that you have learned as being commensurate with the expectations of our employees.” The interviewee walks away wondering what he did for the last four years, and if he is going to have to spend another two years earning an advanced degree to meet the basic qualifications of a job. This example highlights an historical conflict within higher education, between the student and the community of practice (Gardiner, 1993). The student believes he is adequately prepared (and his University has certified him in this respect as well), but the community of practice finds him lacking skills they deem necessary (Rothman, Kelly-Woessner, & Woessner, 2011).

Within higher education institutions one way this conflict has been managed is through program level assessment practices, more specifically, the assessment of student learning outcome statements for each degree program the institution offers. However, the role of
assessment is usually one of a judge that prescribes changes as opposed to a mediator that works with both parties to come to a mutually agreed solution/decision. The problem then is defining the appropriate strategies to employ when in a mediator role and how that correlates within the assessment context in higher education (Barsky, 2007, p. 9).

One of the undertones of the conflict is the constructivist versus behaviorist argument. A constructivist approach is geared toward the value of the learning and teaching process. The behaviorist would advocate for criteria that is specified in advance and should incorporate the range of behaviors a student should be able to demonstrate. A constructivist approach allows the educator to be more reflexive in their teaching and more sensitive to the student’s needs and diversity. It emphasizes the process of learning during the studies, whereas the behaviorist emphasizes the intended result of studying (De Vos & Belluigi, 2011, pp. 1-2).

**Program level assessment.** While there is a myriad of definitions of assessment within the literature of assessment, Maki (2004) explained it as the ongoing process of establishing clear, measurable, and observable expected outcomes of student learning where the students are ensured of having sufficient opportunities to achieve these outcomes. It also involves systematically gathering, analyzing, and interpreting evidence to determine how well student learning matches expectations, concluding with using the resulting information to understand and improve student learning (pp. 3-6). Good assessments will give interested parties useful and timely information. Assessment for assessment’s sake is a misappropriation of resources, and assessments where information is shared far after the measurement lose their value. Assessments also portray accurate and truthful information, as well as fairness to students. Fairness in the sense of using tools that do not inadvertently favor some students over others (e.g., using a word problem involving business situations may be biased against students studying the humanities,
unless one is specifically assessing understanding of these topics). Assessments are also ethical (not outside the student’s knowledge) and protect the privacy of those involved (before, while, and after an assessment is conducted). Finally, assessments are cost effective and yield value that justifies the time and expense put into them (Suski, 2009, pp. 36-53).

There are two basic forms of assessment: summative and formative. Summative assessments seek to measure student learning at a specific point in time for reporting purposes. They rank or sort students in order, and are designed to certify competence. Formative assessments seek to promote further involvement of student learning during the learning process. They are designed to assist the various stakeholders in identifying and responding to potential program needs.

*Mediation.* As with assessment there are many variations of mediation. Kavach (2005) presented the following, “[Mediation is] a process which a third-party neutral, the mediator, assists disputing parties in reaching a mutually agreeable resolution” (p. 304). There are various assumptions of mediation that need to be evaluated. One, mediation is voluntary; it is not required of the interested parties. This implies that this process is entered in freely and with all necessary information (Barsky, 2007). Two, it is confidential; this assists in building trust between the mediator (assessment) and the participants (student, learning process, and community of practice) (Kavach, 2005). If the assessment cannot be trusted the students and community of practice will not value it or act upon it. Three, it is not adversarial; the assessment’s role is to encourage the parties to “cooperate rather than compete” (Barsky, 2007, p. 123), as opposed to arbitration (Cole & Blankley, 2005). Four, it is facilitated by a neutral third party, one who does not have a vested interest in the outcome (Crawford & Bodine, 2005). Five, there is equal bargaining power on both sides (Lang, 2004); when the students do not have
a say in the assessment they lack bargaining power to be a part of their education. Finally, the function of a mediator is to reach agreement; the type, level, and satisfaction with the agreement are additional questions that need to be asked when qualifying the agreement (Barsky, 2007). Within the assumptions of mediation there are four types of mediation that would explicate the assumptions in a variety of manners. Settlement focused mediation seeks to help the parties end the conflict by bringing them to agreement in a timely manner (Barsky, 2007). Interest-based mediation looks to address the primary interests of those in the conflict instead of the direct conflict (Lowry, 2004). The logic being one of treating a headache with a pain reliever when the pain is caused by a broken leg; fix the leg first. Therapeutic mediation focuses on the psychological and social issues that are contributing to the actual conflict (Barsky, 2007). Finally, transformative mediation seeks to resolve conflict with the end result being that the parties feel they have, “enhanced their sense of their own competence and autonomy with taking advantage of the other” (Bush & Pope, 2004, p. 55). Higher education institutions need to see what model of mediation best fits their mission and goals before proceeding with a strategy.

**Assessment as mediation.** Assessment and mediation have shared aspects. There is a shared rationale between assessment and mediation. Mediation is about resolving conflicts of various kinds; assessment is about conflicting understandings of various issues. For example, a student details his understanding in an assignment, which may be different than the stated desired outcome. There are shared roles between assessment and mediation. Like mediators, assessors facilitate interaction between two other parties, the student and the community of practice. Like mediators, assessors must maintain the confidence of both the student and the community of practice (De Vos & Belluigi, 2011).
Mediation to strengthen assessment. Given the commonalities between mediation and assessment it would be incumbent on the assessor to use proven mediation strategies to strengthen assessment. One way to do this would be to use taxonomies that allow for “implicatures about the manner in which student achieve the outcomes” (De Vos & Belluigi, 2011, p. 6). An example of a taxonomy that could be adapted to fit this model would be Briggs taxonomy. Another strategy would be to make sure the feedback to the student includes specific information about the quality of their work and how they can improve. When any one line of communication is barred or missing then the mediation is being less effective; this concept can be applied to assessment as well. When the students are not afforded the opportunity to hear feedback on their assessment, they lose much of their bargaining power, thus unbalancing the process.

When there exists a conflict between the student and the community of practice, assessment can mediate that conflict if practiced appropriately. Mediation is the process of assisting conflicting parties in reaching a voluntary agreement (Bowles, 2005). The similarities between assessment and mediation afford both areas increased resources. A way to strengthen assessment is to implement mediation strategies, as opposed to adjudicative, into program level assessment practices to better resolve the conflict. This process will take time and will naturally involve other conflicts (Volpe & David, 1999) but will add value to both the institution and the students.

Student demographic view. Beyond the actions and/or decisions of an individual student and the institutional changes of a college/university, retention studies progressed to looking at additional student demographics individually as well as in the aggregate. These demographic variables have been analyzed in an almost infinite combination, with a host of
revealing results (Reason, 2009). Baker, Tucker, Raynes, Aitken, and Allen (2016) discussed diverging from the heavy weighting of the typical undergraduate demographic, students’ undergraduate GPA, in favor of weighting student success more heavily on students’ ability to complete previous degrees. They found in their study that there was a statistically significant positive correlation between a student’s previous degree and their successful graduation from their current program. Juxtaposed, Bingham and Solverson (2016) posited that,

Before an institution can begin to improve its retention rate, it must better understand its current rate. By attempting to separate the effect of the student profile on retention from the institution’s role, an institution can begin to determine whether it is contributing to or deterring from its students’ ability to achieve success and complete a degree. (p. 52)

Their study analyzed enrollment data and found that the at-risk students may not be the first-year students, but those students transitioning from their sophomore year to their junior year when they are typically required to declare/change majors, or make other educational decisions, typically on their own. If this institution focused on the first-year experience it would be neglecting to support the students who needed the most assistance. Further complicating the demographic analysis is that students now often attend more than one college/university (Adelman, 2006). In this vein, Calcagno, Bailey, Jenkins, Kienzl, and Leinbach (2008) conducted a study whereby they incorporated the demographics of students as well as the institutional characteristics of every institution the student attended.

**Discussion on the Social Impact of Student Retention**

**Impact on an individual.** Some sort of postsecondary education is generally seen as resulting in greater earnings as well as a stronger economical position opportunity (Carnevale,
Further, a comparative education study from the Organization for Economic Cooperation and Development (OECD, 2016) states,

> While people with higher qualifications are generally better placed to see increases in their earnings over time, the lower-educated, who usually have lower earnings at the start of their career, tend to see a *decrease* in their earnings with age. Hence, the potential for higher earnings and faster progression can be one of the important incentives for individuals to pursue education and training. (pp. 114-115)

Beyond earning potential, completing their degrees puts the student in a better place to gain a job if they are looking. According to the U.S. Bureau of Labor Statistics (2016), for the year 2015, the unemployment rate was 3.8% for individuals with an associate’s degree, 2.8% for those with a bachelor’s degree, and 2.4% for those with a master’s degree, compared to 5.4% for those with a high school diploma and 8.0% for those with less than a high school diploma. And, while these numbers across the board are down from previous years, the trend is still supported that higher educational attainment leads to a higher chance of employment. Finally, in analyzing educational attainment during the 2007-2009 recession, Carenvale, Jayasundera, and Cheah (2012) found that those with an associate’s degree or only some college recovered 25% less jobs than those with a bachelor’s degree. Despite the growing cost of college and the stagnant wages for recent college graduates, Abel and Dietz (2014) found that there are still substantial benefits of college that far outweigh the costs.

Outside of the aforementioned fiscal benefits of completing higher education, there are also social benefits. Steven Brint (2015), Vice Provost for Undergraduate Education at UC-Riverside and author of a number of sociology texts, equates higher education attainment with
membership into American society, so much so that he states, “Today’s 18-24 year olds wouldn’t even consider not going to college if they want to be a respectable member of society” (p. 2).

**Impact on society at large.** Along with individual benefits and increases in labor market productivity previously discussed, there are associated economic benefits for society as a whole. Not surprisingly, an economy that is more productive leads to a higher standard of living. This leads to higher earnings of educated workers and the necessarily higher tax payments of these individuals, and this increases as the level of education attainment goes beyond the traditional bachelor’s degree (Carroll & Erkut, 2009). Further, spending on various social support programs such as Medicaid, Supplemental Nutrition Assistant Program, and unemployment compensation decreases.

There are also numerous studies that indicate a direct impact of higher education on society outside of fiscal benefits. Oreopaulos and Salvanes (2011) discussed the nonpecuniary benefits (i.e., benefits which are not readily quantified or valued in money). As one example, after conditioning the data for various background controls they found that high school graduates report being 8% happier than high school drop outs; college graduates report being 5% happier than high school graduates. There are also studies that posit how gaining additional skills through education makes one a more productive person; that is, one can get more done with equal amounts of money or for the same amount of time. Generally, the more skilled one is the better decisions will be made within the constraints of reality…essentially, individuals with stronger skills make better decisions in the same circumstances as those with less skills (Grossman, 2006). Lastly, there are numerous studies (Glied & Lleras-Muney, 2008; Kenkel, 1991; Wagstaff, 1993) that suggest that more and greater schooling leads to healthier individuals which leads to a healthier society.
The Importance and Relevance of Student Support for All Types of Students

With increasing pressure from the various (and increasing) regulatory bodies to meet an increasing quantity of educational standards and to adhere to ever-changing educational policy, it is no surprise that institutions are trying new concepts. At the same time, institutions are seeking to understand the best way to conduct educational change (Gundy & Berger, 2016), how it might affect outcomes (Hofman, Jansen, & Spijkboer, 2011), and what success even means (Towndrow, Silver, & Albright, 2010).

**Academic services.** Various services are tailored to specifically address students’ ability to meet their academic goals. These services include: academic advising, course scheduling and flexibility, library resources, and tutoring services (Hannover Research, 2013).

**Enrollment services.** Enrollment services focus on the administrative processes to support a student in higher education. These services are becoming more and more impactful on distance education students (Brown, Hughes, Keppel, Hard, & Smith, 2013).

**Student services.** Many student support innovations borrow from the success of sectors outside of education (Demirbas, Hussain, & Matlay, 2011; Lambert, Altheimer & Hogan, 2010).

**Institutional perceptions.** As the world of education becomes increasingly more scrutinized by both the public sector and the federal government, it also becomes increasingly more important for schools and their leaders to make sure they are actively portraying themselves to the various stakeholders. Despite the fact that the reality of public relations within an educational context is becoming clearer, many institutional leaders have little to no public relations training.

Martinson (1999) advocated for a school public relations program that is “…directed toward bringing about mutual understanding” (p. 103). While the relationships between schools
and various interest groups can be contentious and the temptation for those disinterested groups falls along the lines of giving distorted information to create a positive view, a healthy schools public relations should not fall prey to either of these situations. Instead, it should maintain that the stakeholders have a voice in how the schools are managed and run but this should be tempered by what is in their best interest. This is what Martinson called two-way symmetric public relations, a process for achieving mutual understanding. Martinson also emphasized the importance of knowing what the public thinks in order to have intelligent responses and to engage in the issues effectively. This knowledge should come from a school administrative culture of research.

Armistead (2000) claimed that quality public relations can allow a school to be “a force for educational improvement” (p. 24). He offered several pieces of advice focused on expanding the public relations aspect of a school. His advice is founded on a logical progression from research to conveying the message, with each intermediary aspect needing equal importance. After he laid the theoretical argument for effective public relations, he offered some strategies. One was to host public officials at school events; this would help create positive relations and showcase the school. Another was to donate student artwork to local and regional legislators; this would keep the school on their radar (as they see the artwork every day in their office) as well as demonstrating the students’ achievements.

Carlsmith and Railsback (2001) argued that schools cannot afford to ignore public relations. In an educational culture where there is continual news media scrutiny, competition between schools, a larger number of opinionated stakeholders and general skepticism towards public education, the leaders need to make sure they are utilizing the full gamut of public relations research and strategies. They contend that schools have become “more rigorous and
streamlined… but perceptions lag behind reality” (p. 5). An ideal public relations plan is composed of four steps: find out the public’s perception, develop a strategic plan for the school/district, form a public relations committee, and transform the data into a plan; Carlsmith and Railsback then explicated the various ways this can be accomplished. They concluded with the idea that public relations is more than information dissemination, and more about responding to the community.

The foundational theme of the necessity of public relations in schools (both public and private) is basically the same; the necessity of quality of public relations roles in schools would be difficult to dispute. Where the authors differ is in application. Some believe that an increased presence in the community is the distance that schools’ public relations should traverse, while others advocate for starting with legislators and decision makers, knowing that these individuals should understand the public opinion best. Each author ensures that public relations is not a passing fad, but something they believe will only become more important. All educational leaders would be well served if they were both educated and trained in the basics of public relations; preventing a fire is often easier than putting one out. Rebore (2001) made the observation that “there is a reciprocal relationship between a positive school culture and the method that is used to sustain such a culture” (p. 147).

**Instructional services.** Related to academic services, instructional services focus on the various elements of instruction itself, to include faculty-student interactions. Beyond the standard instructional services, some institutions are also seeking to implement individual instructor consultation services to further enhance students’ experiences with faculty (Brinkley-Etzkorn, Schumann, White, & Smith, 2016). For example, some institutions offer instructional services that tailor instruction to individual learning styles. However, Bjork, McDaniel, Pashler,
and Rohrer (2009) discussed the lack of evidence to support the popular concept of learning styles. They began by positing several conditions that must be met for the validation of research regarding learning styles. As they walked through the history of the learning style hypothesis they found no research that both met their conditions and supported the learning style hypothesis. Further, they found that those studies that closely met the preconditions had results that contradicted the popular assertion of the learning style hypothesis. As an alternative, they suggested that perhaps learning styles are better when they are mated with a specific subject as opposed to with a specific individual. For example, they stated, “the optimal curriculum for a writing course probably includes a heavy verbal emphasis, whereas the most efficient and effective method of teaching geometry obviously requires visual–spatial materials” (p. 116). Additionally, Scott (2010) discussed the evidence against the learning style theory and the rationale as to why, despite the evidence, it is commonly accepted as fact. She posited that the idea of adapting pedagogy to an unconfirmed theory is dangerous simply because it involves the choice of moving away from sound pedagogical theories that have been proven. She further explained that this learning style theory is so popular because of its associations with cultural desires of society.

Given a backdrop of Vygotsky’s sociocultural theory it can be stated that students learn better in conjunction with teachers (i.e., persons at a higher level of understanding) as opposed to individual problem solving (Miller, 2002). Thus, when any pedagogy or andragogy (i.e., teaching strategies) is intentionally implemented, student learning should increase across the board. However, based on several studies (An & Yoo, 2008; Mason, 2007, Mclean, 2005) students do not necessarily exhibit better critical thinking skills when pedagogy is matched to the student’s specific learning style. The research indicates that certain types of learners have an
innate ability to think critically and when these learners have teaching tailored to them they will naturally excel beyond those without this innate ability. But that does not imply the same result for other learning styles (Dyer & Myers, 2006). Further contaminating the research are the many varying explanations of learning styles. Since there are so many different styles it is difficult to draw a substantial conclusion from the various studies on the effectiveness and validity of learning styles. Complicating matters even more are the various definitions of critical thinking and the many correlations between critical thinking and student learning. This lends further support to the idea that institutions should be tracking student perceptions and desires for various instructional services as well as the effectiveness.

The Relevance of a Biblical Worldview for Student Support, Retention, And Services

Biblical worldview definition. A Biblical worldview affirms that God is the Creator (Gen. 1:1), that life is a gift from God (Eph. 2:8), and that life is to be used in keeping with his purposes (Phil. 2:13). It is not by chance that Scripture begins with God the Creator. It is the essential background to a relationship with God. Because individuals are created by God, they are responsible before God for how they use their lives (Rom. 3:9-19). However, all have lived, to a greater or lesser extent, according to their own desires. Even when doing what is right, they have done so not in obedience to the will of the Creator (Rom. 3:23). Because of sin, all are under God's wrath, for sin arouses his wrath (Eph. 2:3). But because God is also a God of love, he planned a way of escape. Jesus came as the expression of God's love, bearing the wrath of God toward sin on the cross. He paid the penalty of sin, and rose to show that God accepted his death in the place of guilty sinners, and that he had power over death. As Lord of life and death, and Savior from sin, he offers forgiveness, eternal life, and fellowship to all who repent from sin and trust him as Savior and Lord (John 3:15-17). Thus, the foundation of a Biblical worldview is
as follows: God, the Creator and giver of life; humans, the sinners and abusers of God's gifts; Jesus, the Savior through his life, death, and resurrection; whole-hearted faith in him as the necessary response (Akin, 2014).

**Relevance of biblical worldview.** Blackaby and Blackaby (2011) shared that voluminous material is published continuously on the subject of leadership, yet there appears to be no simple, universally accepted understanding of what leaders do. Unless they clearly understand their role, leaders as well as their followers are destined for confusion, frustration, and failure. (p. 31)

One aspect of leadership in higher education that is constant across time is that leaders interact with people. How they react, how they plan, how they communicate, and how they spend their time with others are but a few of the aspects of their role (either explicit or implicit). Christian higher education leaders are seen as leaders within the Christian community. And while Christian higher education leaders may not always or directly interact with students, their actions and choices on policies and priorities can shape the students and frame their choices on higher education. As an example, the apostle Paul was a biblical leader who dealt with several issues related to the ones Christian higher education leaders deal with. The manner in which specific issues were handled, and the consequences of the choices he made, serve as an example of how a biblical leader in higher education should act/react.

One issue that Paul dealt with was misinformation. As he toured and preached the gospel of Christ he encountered false prophets that were misrepresenting the gospel. Acts 13:4-12 records the story of Paul and Barnabas encountering one such false prophet. The proconsul, Sergius Paulus, had summoned Paul and Barnabas to hear the word of God. Before they arrived a false prophet “opposed them, seeking to turn the proconsul away from the faith” (Acts 13:8b,
ESV). When Paul encountered this misinformation, he did not back down or seek to sugarcoat a polite response. He responds with conviction and confidence, “You son of the devil, you enemy of all righteousness, full of all deceit and villainy, will you not stop making crooked the straight paths of the Lord?” (Acts 13:10, ESV). Darrell Bock (2007) in his commentary on Acts stated, “[Paul] confronts the magician directly under the Spirit’s guidance, since Paul speaks while being filled with the Spirit…and functions exclusively as a true prophet in contrast to the magician” (p. 445). It is noteworthy that Paul chose to correct a fact, not an opinion. As Christian higher education leaders are given a large swath of information on the students they serve, they should pay special attention to the accuracy of the information. Student feedback on surveys is quite valuable in this respect to understand what the students are saying.

Another issue that Paul faced was people being unfamiliar with the message he was giving. In speaking with those that did not know his message or were even hostile to the claims he was making he would default to relegating his own experiences with the gospel, and they could not deny this. In Acts 22, when Paul was called to defend himself, he reviews his Jewish past as a persecutor, he highlights his conversion at Damascus, he reviews his calling, and he also tells of the Lord leading him to leave Jerusalem because of the danger facing him there. Bock stated, “Paul’s defense is that he was where the crowd is now, a persecutor and a faithful Jew; only God’s direction has made him otherwise” (p. 663). The audience may not agree with his conclusions but they cannot argue against his experiences. Here again, often higher education leaders are unaware of what their students are saying and what their needs and desires are and how that may or may not impact their desire to continue schooling (Cole, 2014).

After his conversion experience and dramatic turn to serving the message of God, Paul was faced with a gap in knowledge. When faced with this problem the disciples (his leaders)
took him to Tarsus where he stayed for about three years. And while it is not completely clear exactly what took place there, “Apparently there [was] a safe community there to care for him” (Bock, 2007, p. 370). Paul was around other believers who would have invested in him and sought to teach him the Word and develop him as a believer to better prepare him for his public ministry. While Paul could have learned some of this on the job it was healthier for him to have an established base of knowledge and experience before he began serving. Before he dealt prominently with the public, he prepared himself.

Paul also had to deal with communicating to people so that they would understand his message. To do this he needed to understand the basic elements of the society in which he was communicating. In Acts 17 he addresses the Athenians. Instead of reciting some of his previous messages that had been spoken to the Hebrews and would have been understood in Hebrew context, he connected the message to the audience’s context. Thus, he contextualized the message to reach the right people in the best manner. He did not distort his message, but he related it to the audience in a manner that was understood. Acts 17:32 states, “Now when they heard of the resurrection of the dead some mocked, but others said, ‘we will hear you again about this’” (ESV). This implies that those listening understood what he said and made a decision on what to do with it. Not all made the decision that Paul desired, but his communicative purpose was completed. Bock (2007) stated, “Paul knows his own message and the mentality of the people he evangelizes” (p. 573).

In each of the above instances/examples the apostle Paul is faced with a choice. He is required to decide how to respond and/or react. Each situation is different and requires a well-considered follow-up. Paul exhibits confidence in the facts, shows his experiences as validation,
exemplifies humility in training and support, and exercises wisdom in responding to people in a manner they will understand.

**Summary**

As the literature supports, retention is important for many reasons: first, it is important to the institution since the retention of students is primary to ensuring financial and program stability and sustainability (Levitch & Shaw, 2014); second, since retention rates are viewed as indicators of quality (Thompson, 1999), providing an environment that supports students’ educational needs has significant bearing on the credibility of the institution; finally, the online student demographic is so diverse (Hossler et al., 2008; Tinto, 1982) that generic retention studies likely will not uncover the unique needs affecting a particular subgroup. As such, researchers have recommended studies that delineate specific subpopulations within the adult cohort to best understand their retention needs (Hayek, 2011; Heimberg, 2014; Martirosyan et al., 2014). While some research has been done in this regard from predicting student satisfaction in online programs (Kuo et al., 2013) to developing instruments to measure student expectations of online learning (Harris et al., 2011), and correlating learning expectations with faculty instructional responsibilities (Bailie, 2014), there is little research on varying and specific subpopulations of online students and how their specific expectations might predict student retention. Understanding the relationship between student expectations and retention in an online population at a Christian university is important because it can provide a framework for Christian institutions to use expectation data to make changes to help this population persist toward degree completion.
CHAPTER THREE: METHODS

Overview

The purpose of this non-experimental, predictive, correlational quantitative study was to determine if student expectations of various educational experiences are related to the retention of online undergraduate and graduate students at a Christian university. In order to best understand the effects, a survey strategy of inquiry was employed. In addition, multiple administrations of the survey responses were analyzed in order to review changes over time. This chapter describes the design of the study, including the setting, participants, data collection, and data analysis procedures.

Design

This will be a non-experimental, predictive, correlational quantitative research study employing a survey strategy of inquiry and retrieved as archival data for the school years 2009 and 2014 from a Christian university located in the American Southeast. This is the most appropriate design to identify variables that forecast academic success (Gall, Gall, & Borg, 2007, p. 342). The criterion variable is retention [dichotomous] and the predictor variables are the five subscales (academic services, enrollment services, institutional perceptions, instructional services, and student services) of the PSOL, the instrument used in the research. According to Noel Levitz (2014), academic services are the services students utilize to achieve their academic goals (e.g., advising, course offerings, technical assistance, online library resources, and tutoring services); enrollment services are the processes and services related to enrolling students in the online program, including financial aid, registration, and payment procedures; institutional perceptions are how students perceive the institution; instructional services are academic experiences, the instructional materials, the faculty/student interactions, evaluations procedures,
and the quality of instruction; and student services are the quality of student programs and services, including responses to student request, online career services, and the bookstore.

**Research Question**

**RQ1:** How accurately can the retention of students at a Christian university be predicated by the linear combination of expectation gap variables (*academic services, enrollment services, institutional perceptions, instructional services, and student services*) as measured by the Noel Levitz Priorities Survey of Online Learners (PSOL)?

**Null Hypotheses**

The null hypotheses for this study are:

**H⁰₁:** There will be no significant predictive relationship between the criterion variable (retention) and the linear combination of the expectation gap variables (*academic services, enrollment services, institutional perceptions, instructional services, and student services*) as measured by the Noel Levitz Priorities Survey of Online Learners (PSOL) for 2009 graduate students at a Christian university.

**H⁰₂:** There will be no significant predictive relationship between the criterion variable (retention) and the linear combination of the expectation gap variables (*academic services, enrollment services, institutional perceptions, instructional services, and student services*) as measured by the Noel Levitz Priorities Survey of Online Learners (PSOL) for 2009 undergraduate students at a Christian university.

**H⁰₃:** There will be no significant predictive relationship between the criterion variable (retention) and the linear combination of the expectation gap variables (*academic services, enrollment services, institutional perceptions, instructional services, and student services*) as measured by the Noel Levitz Priorities Survey of Online Learners (PSOL) for 2014 graduate
students at a Christian university.

**H04:** There will be no significant predictive relationship between the criterion variable (retention) and the linear combination of the expectation gap variables (*academic services, enrollment services, institutional perceptions, instructional services, and student services*) as measured by the Noel Levitz Priorities Survey of Online Learners (PSOL) for 2014 undergraduate students at a Christian university.

**Participants and Setting**

The Noel Levitz PSOL was administered typically every three years in the fall semester when the University was not administering other surveys. This study used the University’s PSOL data from the 2009 and 2014 school year. The participants consisted of undergraduate and graduate students enrolled in an online program at a private, non-profit, regionally accredited, Christian institution of higher education in the American Southeast in the fall semester of the 2009-2010 academic year and the fall semester of the 2014-2015 academic year. All students enrolled in online courses were asked to complete the PSOL. The student headcount as of fall 2009, consisted of 11,950 on-campus students and 34,381 distance learning students, comprised of all 50 states, U.S. properties, and 109 foreign countries, as well as Armed Forces personnel serving in the U.S. and abroad. The student body was 46% male and 54% female. Racial composition was 1.21% Asian, 16.49% Black, 3.82% Hispanic, 2.01% International, .03% two or more races, .51% Native American, .22% Pacific Islander, 57.73% white, and 17.99% ethnicity unknown. Average age for undergraduate on-campus students was 20; graduate students as 29. The average age of distance learning undergraduate students was 34; graduate students was 37. The student headcount as of fall 2014, consisted of 13,847 on-campus students and 67,612 distance learning students, comprised of all 50 states, U.S. properties, and 132
foreign countries, as well as Armed Forces personnel serving in the U.S. and abroad. The student body was 41% male and 59% female. Racial composition was .93% Asian, 17.79% Black, 1.36% Hispanic, 2.41% International, 2.17% two or more races, .55% Native American, .18% Pacific Islander, 47.73% white, and 26.89% ethnicity unknown. Average age for undergraduate on-campus students was 20; graduate students was 27. The average age of distance learning undergraduate students was 35; graduate students was 38.

A minimal requirement for logistical regression is that the sample sizes need to be at least 10 times as many cases as predictor variables (Peduzzi, Concato, Kemper, Holford & Feinstein, 1996; Warner, 2013). In the study, five predictor variables (academic services, enrollment services, institutional perceptions, instructional services, and student services) are used. Using such information, the study needed at least N = 50 samples. However, taking into account incomplete surveys and effect size, 50 samples would not suffice. For a medium effect size with a statistical power of .80 at the .05 alpha level, a minimum of N = 153 participants was needed for correlation studies (Warner, 2013, p. 300). In this study, for the 2009 year, there were 5,687 survey responses, and for the 2014 year there were 3,333 survey responses; this study used 9,020 surveys available. Warner (2013) stated,

> When the outcome variable $Y$ is binary, it has only two possible values. If the proportion of people in the two groups deviates greatly from a 50/50 split, and if the total number of $N$ in the study is very small, the number of cases in the smaller outcome group may be too small to obtain meaningful results. (p. 1033)

The large sample size should adequately address the obstacles that may come with using binary logistical regression.
Instrumentation

The Noel Levitz PSOL was the instrument used to collect student satisfaction and importance levels, ultimately constituting the expectation gap (subtracting the satisfaction score from the importance score). See Appendix A for the instrument and Appendix B for permission to use the instrument. This study used the PSOL archival data retrieved by the Office of the Registrar from the University data system with the approval of the Institutional Review Board. The PSOL survey was electronically distributed via email to students in the fall of 2009 and 2014. In both years, the original message was sent during the middle of the fall semester with two subsequent reminder messages. The first reminder was sent 14 days after the initial message and the second, a week after the first reminder.

The purpose of this instrument is to measure the satisfaction and importance of educational services offered to online learners. The PSOL was developed in 2001 by Noel-Levitz to complement the Student Satisfaction Inventory (SSI) that was designed to measure the satisfaction and importance of educational services for face-to-face learners. The text of the PSOL is a modified version of the SSI questions to be appropriate for distant learning students. The instrument has been used in numerous studies (e.g., Britto & Rush, 2013; Huss & Eastep, 2013; Levitch & Shaw, 2014), and, as of 2015, it has been administered by more than 240 institutions (Noel-Levitz, 2015). The instrument consists of 26 items rated for both importance and satisfaction and are divided into five subscales including academic services, enrollment services, institutional perceptions, instructional services, and student services. Academic services are the services students utilize to achieve their academic goals (e.g., advising, course offerings, technical assistance, online library resources, and tutoring services). Enrollment services are the processes and services related to enrolling students in the online program,
including financial aid, registration, and payment procedures. Institutional perceptions are how
students perceive the institution. Instructional services are academic experiences, the
instructional materials, the faculty/student interactions, evaluations procedures, and the quality of
instruction. The student services are the quality of student programs and services, including
responses to student request, online career services, and the bookstore (Noel-Levitz, 2015).
Table 1 details how the 26 items are distributed across the subscales.

The importance was rated using a 7-point Likert scale that ranged from Very Important to Not Important At All. Responses were as follows: Very Important = 7, Important = 6, Somewhat Important = 5, Neutral = 4, Somewhat Unimportant = 3, Not Very Important = 2, and Not Important At All = 1. The satisfaction was rated using a 7-point Likert scale that ranged from Very Satisfied to Not Satisfied at all. Responses were as follows: Very Satisfied = 7, Satisfied = 6, Somewhat Satisfied = 5, Neutral = 4, Somewhat Dissatisfied = 3, Not Very Satisfied = 2, and Not Satisfied At All = 1. The expectation gap was calculated by subtracting the satisfaction rating from the importance rating for each of the 26 items.

For each of the aforementioned subscales, the importance rating, the satisfaction rating, and the calculated expectation gap is the mean of the included items. For example, the importance rating of academic services was the mean importance rating of the following item numbers: 2, 5, 7, 12, 16, 21, and 24. The satisfaction rating for academic services was the mean satisfaction rating of the following item numbers: 2, 5, 7, 12, 16, 21, and 24. The expectation gap of academic services is the mean expectation gap of the following item numbers: 2, 5, 7, 12, 16, 21, and 24.
Table 1

*Subscales of the Priorities Survey of Online Learners (PSOL)*

<table>
<thead>
<tr>
<th>Subscales</th>
<th>Item Numbers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Academic Services</td>
<td>2, 5, 7, 12, 16, 21, 24</td>
</tr>
<tr>
<td>Enrollment Services</td>
<td>9, 14, 18, 23</td>
</tr>
<tr>
<td>Institutional Perceptions</td>
<td>1, 6</td>
</tr>
<tr>
<td>Instructional Services</td>
<td>3, 4, 8, 11, 13, 17, 20, 25</td>
</tr>
<tr>
<td>Student Services</td>
<td>10, 15, 19, 22, 26</td>
</tr>
</tbody>
</table>

While the PSOL collected 13 standard demographic variables, institutional data was used for demographic variable data to increase the accuracy of the data. The demographic information included was gender, age, ethnicity, enrollment status, class load, class level, educational goal, current major field of study, employment, marital status, current number of hours enrolled online, and previous number of credits earned online. These data will assist in segmenting, testing the existing hypotheses, and exploring areas for future research.

According to Noel-Levitiz (2015), the statistical reliability of the PSOL scales is acceptable with a Cronbach alpha coefficient of 0.77. Further, according to an internal analysis done by Noel Levitz in 2011, Table 2 shows the Cronbach alpha for each of the subscales. It shows that all values but two (Institutional Perceptions for both importance and satisfaction) were above 0.70. In both of these cases exploratory factor analysis was conducted among the scale items to determine if there was any multidimensionality, but none was detected. This supports the claim that the items within each scale are measuring like concepts. As such, all scales were used for this study.
Table 2

*Cronbach’s alpha for the Subscales of the Priorities Survey of Online Learners (PSOL)*

<table>
<thead>
<tr>
<th>Subscales</th>
<th>Cronbach’s alpha - Importance</th>
<th>Cronbach’s alpha - Satisfaction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Academic Services</td>
<td>0.831</td>
<td>0.857</td>
</tr>
<tr>
<td>Enrollment Services</td>
<td>0.774</td>
<td>0.763</td>
</tr>
<tr>
<td>Institutional Perceptions</td>
<td>0.509</td>
<td>0.699</td>
</tr>
<tr>
<td>Instructional Services</td>
<td>0.860</td>
<td>0.903</td>
</tr>
<tr>
<td>Student Services</td>
<td>0.811</td>
<td>0.827</td>
</tr>
</tbody>
</table>

In addition, the PSOL shows an acceptable validity of $r = 0.71; p < .00001$, which is high enough to indicate the survey is valid. The administration of the PSOL is appropriate at any time during the academic year; however, it is suggested to avoid surveying during intensive testing times, during the first three to four weeks of the semester, or on the day before or the day after a school break. The PSOL takes approximately 12-15 minutes to complete (Noel-Levitz, 2015).

**Procedures**

This study used PSOL archival data retrieved by the Office of the Registrar from the University data system with the approval of the Institutional Review Board (see Appendix C). The PSOL survey was electronically distributed via email to students in the fall of 2009 and 2014. In both years, the original message was sent during the middle of the fall semester with two subsequent reminder messages. The first reminder was sent 14 days after the initial message and the second, a week after the first reminder. After a student submitted the PSOL survey, Noel-Levitz calculated the expectation gap for each of the 26 items. An expectation gap was calculated by subtracting the satisfaction rating from the importance rating.

The PSOL data was obtained from the key holder of the PSOL data at the University; a
written request was made for the data. For the purposes of this study, a University official linked the PSOL data to retention data found in the institutional student information system at the student record level. Retention data was defined and recoded by the register and data was entered each semester. The matched records constituted the final research file. No names or identifiable data was left in the file once the link between the two data sets had been made. While data was linked at the student record level, the data was analyzed at the aggregate level. The linking of the two sets of data allowed for appropriate correlation analyses to be completed and the hypotheses to be tested.

**Data Analysis**

For the study, the number of participants sampled was 8,920 students, which exceeded the required minimum for a medium effect. The sample came from the students enrolled in online programs at the school. Table 3 shows the sample’s demographic information for 2009 and 2014.
Table 3

Demographic Information for Study Participants

<table>
<thead>
<tr>
<th>Gender</th>
<th>Student Level</th>
<th>Sample Size</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>2009 2014</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>Undergraduate</td>
<td>1,822 1,132</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Graduate</td>
<td>1,362 787</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>Undergraduate</td>
<td>1,367 779</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Graduate</td>
<td>1,015 622</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

A binary logistic regression was used as that is the most appropriate way to determine the correlation between a dichotomous criterion variable and a set of predictor interval variables (Gall et al., 2007, p. 354). The criterion variable is retention [dichotomous] and the predictor variables are academic services, enrollment services, institutional perceptions, instructional services, and student services. In the file from Noel-Levitz containing the PSOL data, an expectation gap on each of the educational experiences was provided. The expectation gap data was provided in a summary report and appended to individual student records for each of the 26 educational experiences. First, the PSOL data was linked to the retention data from the University student information system; this was done for both years of data. Data screening included creating boxplots to test for extreme outliers to ensure that there was not any specific demographic representation in the data that would skew the analyses.

The data was then uploaded into SPSS. The first analysis attempted to identify if there was a relationship between the expectation gap within each subscale and student retention. A correlation was conducted. The data was evaluated by reviewing the average expectation gap of
each subscale for those retained and those not retained. When a relationship was found when conducting these analyses, conclusions relating to the relationship were formulated.

When an expectation gap existed for any of the 5 subscales, a chi-squared test was built to test if any of the subscales evaluated as part of the PSOL had a more significant impact on retention. The 26 educational experiences with an expectation gap were evaluated as part of the predetermined subscales to test if there was a link to retention. The analysis assisted in determining when an expectation gap existed and if there were educational experiences that are more or less predictive of student retention.

**Assumption Testing**

Logistic regression does not require restrictive assumptions as compared to other general linear models (e.g., discriminant analysis, multiple linear regression). Assumptions for logistic regression include: making sure the outcome variable is dichotomous, scores on the outcome variable must be statistically independent of each other, the model should include all relevant predictors, and the categories on the outcome variable are assumed to be exhaustive and mutually exclusive (Warner, 2013; Wright, Grimm, & Yarnold, 1995).

**Preliminary Data Screening**

In the study, the only categorical variable was the criterion or outcome variable. According to Warner (2013), one of the most important issues in logistic regression is the distribution of scores on the criterion variable. In the study, the only possible values the outcome variable could have taken was “1” for retained or “0” for not retained. Meaningful results may not be obtained if the proportion of the two groups in the criterion variable deviate greatly from a 50/50 split and if the total number of participants is too small. In the study, the proportion
between the retained and not retained (criterion variable) is 00/00 and N = 000, adequately addressing the obstacles that may come with using binary logistical regression.

Another pitfall may be the data outliers on the quantitative predictor variables in the study. To seek and handle outliers, a baseline model that encompassed all cases was run. Then, a second model was run excluding cases where the absolute value of the standardized residual was greater than 3.0. Comparing the baseline model’s classification accuracy rate to the second model’s classification accuracy rate, the model with the better rate was used.

Method

In SPSS, there are three general options for entering explanatory variables into the model. The “Enter” method means that all explanatory variables are forced into the model at the same time. The “Forward” method adds explanatory variables to a basic model while the “Backward” method removes variables from the full model. For the study, the “Enter” method was used to minimize Type I error. Statistical methods using predictor variable selection such as the forward or backward regression can substantially increase the risk of Type I error (Warner, 2013, p. 1038).

Reporting

The first result reported was the Omnibus Tests of Model Coefficients. The Omnibus Tests return a Chi-square value to see if the null model or constant-only model was statistically significant at $p < .05$. After the binary logistic regression was performed in SPSS, the study looked at the goodness of fit through Cox and Snell’s $R^2$ and Hosmer and Lemeshow goodness-of-fit test.

Information about the individual predictor variables are presented. Model coefficients, statistical significance tests, and the nature and direction of the association are reported.
Additional reporting components include Wald statistics and estimated change in odds along with a 95% confidence interval. Effect size information will be discussed using Nagelkerke’s $R^2$. 
CHAPTER FOUR: FINDINGS

Overview

Data was analyzed using a binary logistic regression as that is the most appropriate way to determine the correlation between a dichotomous criterion variable and a set of predictor interval variables (Gall et al., 2007, p. 354). Binary logistic regression provides an odds ratio \[\exp(B)\], which measures each independent variable’s partial contribution to variations in the dependent variable. The goal is to correctly predict the category of outcome for individual cases using the most economical model. To accomplish this goal, an equation is created that includes all predictor variables (i.e., academic services, enrollment services, institutional perceptions, instructional services, and student services) that are useful in predicting the response variable (i.e., retention).

Research Question

RQ1: How accurately can the retention of students at a Christian university be predicated by the linear combination of expectation gap variables (academic services, enrollment services, institutional perceptions, instructional services, and student services) as measured by the Noel Levitz Priorities Survey of Online Learners (PSOL)?

Null Hypotheses

The null hypotheses for this study are:

H01: There will be no significant predictive relationship between the criterion variable (retention) and the linear combination of the expectation gap variables (academic services, enrollment services, institutional perceptions, instructional services, and student services) as measured by the Noel Levitz Priorities Survey of Online Learners (PSOL) for 2009 graduate students at a Christian university.
**H₀2**: There will be no significant predictive relationship between the criterion variable (retention) and the linear combination of the expectation gap variables (*academic services, enrollment services, institutional perceptions, instructional services, and student services*) as measured by the Noel Levitz Priorities Survey of Online Learners (PSOL) for 2009 undergraduate students at a Christian university.

**H₀3**: There will be no significant predictive relationship between the criterion variable (retention) and the linear combination of the expectation gap variables (*academic services, enrollment services, institutional perceptions, instructional services, and student services*) as measured by the Noel Levitz Priorities Survey of Online Learners (PSOL) for 2014 graduate students at a Christian university.

**H₀4**: There will be no significant predictive relationship between the criterion variable (retention) and the linear combination of the expectation gap variables (*academic services, enrollment services, institutional perceptions, instructional services, and student services*) as measured by the Noel Levitz Priorities Survey of Online Learners (PSOL) for 2014 undergraduate students at a Christian university.

**Descriptive Statistics**

All survey data were entered into SPSS and a frequency analysis was conducted to examine respondents’ data for outlier values or other anomalies. The data were checked for values that were out of range, and those cases were removed from further analysis. For the 2009 survey, after the screening process, 5,778 students responded to the 2009 survey in total, and the final completed sample consisted of 5,587 undergraduate and graduate online students. Thus, 191 cases did not meet the screening criteria for the analysis. This was because the class level of the student was outside the study boundary of undergraduate (first year, second year, third year,
or fourth year) or graduate. For the 2014 survey, after the screening process, 3,451 students responded to the 2014 survey in total, and the final completed sample consisted of 3,333 undergraduate and graduate online students. Thus, 118 cases did not meet the screening criteria for the analysis. As with the 2009 survey, this was because the class level of the student was outside the study boundary of undergraduate (first year, second year, third year, or fourth year) or graduate.

For those who chose to answer (95%), the 2009 sample consisted of 19% African-American students, 69% Caucasian/White students, and 4% Hispanic students. The remainder consisted of students who reported a combination of races or American Indian or Alaskan Native, or Asian or Pacific Islander, totaling a 4% of 2009 respondents. Similarly, for those who chose to answer (93%), the 2014 sample consisted of 19% African-American students, 65% Caucasian/White students, and 5% Hispanic students. The remainder consisted of students who reported a combination of races or American Indian or Alaskan Native, or Asian or Pacific Islander, totaling a 4% of 2009 respondents.

Assumption Tests

In this study, for the 2009 year, there were 5,687 survey responses, and for the 2014 year there were 3,333 survey responses; this study used all 9,020 surveys available. Warner (2013) stated,

> When the outcome variable $Y$ is binary, it has only two possible values. If the proportion of people in the two groups deviates greatly from a 50/50 split, and if the total number of $N$ in the study is very small, the number of cases in the smaller outcome group may be too small to obtain meaningful results. (p. 1033)
The large sample size adequately addresses the obstacles that may come with using binary logistical regression.

To determine the level of multicollinearity, a variance inflation factor (VIF) was computed for each variable using logistic regression. All VIFs were found to be below 4. Thus, multicollinearity was deemed not a concern for the full model (O’Brien, 2007).

**Results**

**Null Hypothesis One**

A binary logistic regression was performed to assess the impact of a number of factors on the likelihood that 2009 graduate students from a Christian university would retain. The model contained five continuous independent variables (*academic services, enrollment services, institutional perceptions, instructional services, and student services*). The full model containing all predictor variables was not statistically significant, $\chi^2 (5, N = 2,385) = 2.809, p > .05$, indicating that the model was not able to distinguish between 2009 graduate students at a Christian university who retained and who did not retain. The model as a whole explained between 0.1% (Cox and Snell R square) and 0.2% (Nagelkerke R square) of the variance in retention, and correctly classified 53.4% of cases. When explanatory variables are continuous, it is hard to analyze the lack of fit without some grouping. However, that is what the Hosmer-Lemeshow test does; it groups by the predicted probabilities such that there is roughly an equal number of observations per group. For null hypothesis one, the Hosmer-Lemeshow Chi-Square statistic of 6.175, with $df = \text{number of groups} – 2 = 8$, has a $p$-value of 0.628, indicating there is no issue with the lack-of-fit. As shown in Table 4, none of the independent variables made a unique statistically significant contribution to the model. Thus, the researcher failed to reject the null hypothesis.
Table 4

**SPSS Output from a Binary Logistic Regression Model Predicting Retention in a Christian University for 2009 Graduate Students**

<table>
<thead>
<tr>
<th></th>
<th>B</th>
<th>S.E.</th>
<th>Wald</th>
<th>Sig.</th>
<th>Exp(B)</th>
<th>Lower</th>
<th>Upper</th>
</tr>
</thead>
<tbody>
<tr>
<td>Academic Services</td>
<td>-.012</td>
<td>.008</td>
<td>2.095</td>
<td>.148</td>
<td>.988</td>
<td>.973</td>
<td>1.004</td>
</tr>
<tr>
<td>Enrollment Services</td>
<td>.005</td>
<td>.012</td>
<td>.208</td>
<td>.648</td>
<td>1.005</td>
<td>.983</td>
<td>1.028</td>
</tr>
<tr>
<td>Institutional Perceptions</td>
<td>-.002</td>
<td>.024</td>
<td>.011</td>
<td>.918</td>
<td>.998</td>
<td>.952</td>
<td>1.045</td>
</tr>
<tr>
<td>Instructional Services</td>
<td>.008</td>
<td>.008</td>
<td>1.126</td>
<td>.289</td>
<td>1.008</td>
<td>.993</td>
<td>1.023</td>
</tr>
<tr>
<td>Student Services</td>
<td>.002</td>
<td>.010</td>
<td>.036</td>
<td>.849</td>
<td>1.002</td>
<td>.983</td>
<td>1.021</td>
</tr>
</tbody>
</table>

*Note.* Degree of freedom equals 1 for each variable and the constant.

**Null Hypothesis Two**

A binary logistic regression was performed to assess the impact of a number of factors on the likelihood that 2009 undergraduate students from a Christian university would retain. The model contained five continuous independent variables (*academic services*, *enrollment services*, *institutional perceptions*, *instructional services*, and *student services*). The full model containing all predictor variables was not statistically significant, $\chi^2 (5, N = 3,202) = 5.592, p > .05$, indicating that the model was not able to distinguish between 2009 undergraduate students at a Christian university who retained and who did not retain. The model as a whole explained 0.2% (Cox and Snell R square & Nagelkerke R square) of the variance in retention, and correctly classified 56.8% of cases. When explanatory variables are continuous, it is hard to analyze the lack-of-fit without some grouping. However, that is what the Hosmer-Lemeshow test does; it groups by the predicted probabilities such that there is roughly an equal number of observations per group. For null hypothesis two, the Hosmer-Lemeshow Chi-Square statistic of 5.451, with df
= number of groups – 2 = 8, has a p-value of 0.708, indicating there is no issue with the lack-of-fit. As shown in Table 5, one of the independent variables made a unique statistically significant contribution to the model, Institutional Perceptions.

The Wald estimates provide the strength of the contribution of each variable, with the higher the relative value, the more strength of the variable to predict the outcome. For Institutional Perceptions, the exponential slope, Exp(B), is 0.960. This means that as the expectation gap increases it multiples the odds of retention by 0.96; so, the odds of retention decrease as the expectation gap for Institutional Perceptions increases. Assuming the Type I error of 0.05, we can reject the null hypothesis, so there is a weak evidence of a statistically significant relationship between the criterion variable (retention) and some combination of predictor variables for 2009 undergraduate students at a Christian university.
Table 5

*SPSS Output from a Binary Logistic Regression Model Predicting Retention in a Christian University for 2009 Undergraduate Students*

<table>
<thead>
<tr>
<th></th>
<th>B</th>
<th>S.E.</th>
<th>Wald</th>
<th>Sig.</th>
<th>Exp(B)</th>
<th>95% CI for Odds Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Academic Services</td>
<td>.001</td>
<td>.007</td>
<td>.013</td>
<td>.911</td>
<td>1.001</td>
<td>.988 - 1.014</td>
</tr>
<tr>
<td>Enrollment Services</td>
<td>-.003</td>
<td>.010</td>
<td>.107</td>
<td>.744</td>
<td>.997</td>
<td>.977 - 1.017</td>
</tr>
<tr>
<td>Institutional Perceptions</td>
<td>-.041</td>
<td>.019</td>
<td>4.475</td>
<td>.034</td>
<td>.960</td>
<td>.925 - .997</td>
</tr>
<tr>
<td>Instructional Services</td>
<td>.012</td>
<td>.007</td>
<td>2.948</td>
<td>.086</td>
<td>1.012</td>
<td>.977 - 1.026</td>
</tr>
<tr>
<td>Student Services</td>
<td>-.003</td>
<td>.009</td>
<td>.126</td>
<td>.722</td>
<td>.997</td>
<td>.980 - 1.014</td>
</tr>
</tbody>
</table>

*Notes.* Degree of freedom equals 1 for each variable and the constant.

**Null Hypothesis Three**

A binary logistic regression was performed to assess the impact of a number of factors on the likelihood that 2014 graduate students from a Christian university would retain. The model contained five continuous independent variables (*academic services, enrollment services, institutional perceptions, instructional services, and student services*). The full model containing all predictor variables was not statistically significant, \( \chi^2 (5, N = 1,414) = 1.458, p > .05, \) indicating that the model was not able to distinguish between 2014 graduate students at a Christian university who retained and who did not retain. The model as a whole explained between 0.1% (Cox and Snell R square) and 0.2% (Nagelkerke R square) of the variance in retention, and correctly classified 79.3% of cases. When explanatory variables are continuous, it is hard to analyze the lack-of-fit without some grouping. However, that is what the Hosmer-Lemeshow test does; it groups by the predicted probabilities such that there is roughly an equal number of observations per group. For null hypothesis three, the Hosmer-Lemeshow Chi-Square...
Null Hypothesis Four

A binary logistic regression was performed to assess the impact of a number of factors on the likelihood that 2014 undergraduate students from a Christian university would retain. The model contained five continuous independent variables (academic services, enrollment services, institutional perceptions, instructional services, and student services). The full model containing all predictor variables was not statistically significant, $\chi^2 (5, N = 1,919) = 1.964, p > .05$, indicating that the model was not able to distinguish between 2014 undergraduate students at a Christian university who retained and who did not retain. The model as a whole explained between 0.1% (Cox and Snell R square) and 0.2% (Nagelkerke R square) of the variance in retention, and correctly classified 77.5% of cases. When explanatory variables are continuous, it is hard to analyze the lack-of-fit without some grouping. However, that is what the Hosmer-Lemeshow test does; it groups by the predicted probabilities such that there is roughly an equal number of observations per group. For null hypothesis four, the Hosmer-Lemeshow Chi-Square statistic of 8.599, with $df = \text{number of groups} - 2 = 8$, has a $p$-value of 0.377, indicating there is no issue with the lack-of-fit. As shown in Table 7, none of the independent variables made a unique statistically significant contribution to the model. Thus, the researcher failed to reject the null hypothesis.
Table 6

SPSS Output from a Binary Logistic Regression Model Predicting Retention in a Christian University for 2014 Graduate Students

<table>
<thead>
<tr>
<th></th>
<th>B</th>
<th>S.E.</th>
<th>Wald</th>
<th>Sig.</th>
<th>Exp(B)</th>
<th>95% CI for Odds Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Lower</td>
</tr>
<tr>
<td>Academic Services</td>
<td>-.052</td>
<td>.091</td>
<td>.322</td>
<td>.570</td>
<td>.950</td>
<td>.794</td>
</tr>
<tr>
<td>Enrollment Services</td>
<td>-.042</td>
<td>.071</td>
<td>.354</td>
<td>.552</td>
<td>.959</td>
<td>.834</td>
</tr>
<tr>
<td>Institutional Perceptions</td>
<td>-.021</td>
<td>.069</td>
<td>.088</td>
<td>.767</td>
<td>.980</td>
<td>.855</td>
</tr>
<tr>
<td>Instructional Services</td>
<td>.027</td>
<td>.096</td>
<td>.083</td>
<td>.774</td>
<td>1.028</td>
<td>.852</td>
</tr>
<tr>
<td>Student Services</td>
<td>.072</td>
<td>.074</td>
<td>.938</td>
<td>.333</td>
<td>1.075</td>
<td>.929</td>
</tr>
</tbody>
</table>

Notes. Degree of freedom equals 1 for each variable and the constant.

Additional Analysis

In addition to the above analyses, two further binary logistic regressions were performed to assess the impact of a number of factors on the likelihood that 2009 and 2014 undergraduate and graduate students from a Christian university would retain.

2009 and 2014 Undergraduate Students

The model contained five continuous independent variables (academic services, enrollment services, institutional perceptions, instructional services, and student services). The full model containing all predictor variables was statistically significant, $\chi^2 (5, N = 5,121) = 12.682, p = 0.03$, indicating that the model was able to distinguish between 2009 and 2014 undergraduate students at a Christian university who retained and who did not retain. The model as a whole explained between 0.2% (Cox and Snell R square) and 0.3% (Nagelkerke R square) of the variance in retention, and correctly classified 64.7% of cases. When explanatory variables are continuous, it is hard to analyze the lack-of-fit without some grouping. However, that is
what the Hosmer-Lemeshow test does; it groups by the predicted probabilities such that there is roughly an equal number of observations per group. The Hosmer-Lemeshow Chi-Square statistic of 6.774, with \( df = \) number of groups \(-\) 2 = 8, has a p-value of 0.561, indicating that there is no issue with the lack-of-fit. As shown in Table 8, one of the independent variables made a unique statistically significant contribution to the model, Instructional Services.

The Wald estimates provide the strength of the contribution of each variable, with the higher the relative value, the more strength of the variable to predict the outcome. For Instructional Services, the exponential slope, \( \text{Exp}(B) \), is 1.134. This suggests that as the expectation gap increases it multiplies the odds of retention by 1.134; so, the odds of retention increase as the expectation gap for Instructional Services increase. However, given that the lower bound of the 95\% confidence interval is 1.04 it could be stated that this does not affect the odds of the outcome. Assuming the Type I error of 0.05, it can be concluded that there is weak evidence of a statistically significant relationship between retention and some combination of predictor variables for 2009 and 2014 undergraduate students at a Christian university.
Table 7

SPSS Output from a Binary Logistic Regression Model Predicting Retention in a Christian University for 2014 Graduate Students

<table>
<thead>
<tr>
<th>Service</th>
<th>B</th>
<th>S.E.</th>
<th>Wald</th>
<th>Sig</th>
<th>Exp(B)</th>
<th>95% CI for Odds Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Lower</td>
</tr>
<tr>
<td>Academic Services</td>
<td>-.005</td>
<td>.076</td>
<td>.004</td>
<td>.952</td>
<td>.995</td>
<td>.857</td>
</tr>
<tr>
<td>Enrollment Services</td>
<td>-.031</td>
<td>.065</td>
<td>.225</td>
<td>.635</td>
<td>.970</td>
<td>.854</td>
</tr>
<tr>
<td>Institutional Perceptions</td>
<td>-.015</td>
<td>.061</td>
<td>.057</td>
<td>.812</td>
<td>.986</td>
<td>.874</td>
</tr>
<tr>
<td>Instructional Services</td>
<td>.070</td>
<td>.088</td>
<td>.640</td>
<td>.424</td>
<td>1.073</td>
<td>.903</td>
</tr>
<tr>
<td>Student Services</td>
<td>-.051</td>
<td>.067</td>
<td>.585</td>
<td>.445</td>
<td>.950</td>
<td>.832</td>
</tr>
</tbody>
</table>

Notes. Degree of freedom equals 1 for each variable and the constant.
Table 8

SPSS Output from a Binary Logistic Regression Model Predicting Retention in a Christian University for 2009 & 2014 Graduate Students

<table>
<thead>
<tr>
<th></th>
<th>B</th>
<th>S.E.</th>
<th>Wald</th>
<th>Sig.</th>
<th>Exp(B)</th>
<th>95% CI for Odds Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Academic Services</td>
<td>-.051</td>
<td>.039</td>
<td>1.734</td>
<td>.188</td>
<td>.951</td>
<td>.881 - 1.025</td>
</tr>
<tr>
<td>Enrollment Services</td>
<td>-.022</td>
<td>.033</td>
<td>.444</td>
<td>.505</td>
<td>.978</td>
<td>.916 - 1.044</td>
</tr>
<tr>
<td>Institutional Perceptions</td>
<td>-.057</td>
<td>.032</td>
<td>3.223</td>
<td>.073</td>
<td>.945</td>
<td>.888 - 1.005</td>
</tr>
<tr>
<td>Instructional Services</td>
<td>.126</td>
<td>.046</td>
<td>7.425</td>
<td>.006</td>
<td>1.134</td>
<td>1.036 - 1.241</td>
</tr>
<tr>
<td>Student Services</td>
<td>-.029</td>
<td>.035</td>
<td>.671</td>
<td>.413</td>
<td>.971</td>
<td>.906 - 1.041</td>
</tr>
</tbody>
</table>

Notes. Degree of freedom equals 1 for each variable and the constant.

2009 and 2014 Graduate Students

The model contained five continuous independent variables (academic services, enrollment services, institutional perceptions, instructional services, and student services). The full model containing all predictor variables was not statistically significant, \( \chi^2 (5, N = 3,799) = 11.039, p = .05 \), indicating that the model was not able to distinguish between 2009 and 2014 graduate students at a Christian university who retained and who did not retain. The model as a whole explained between 0.3% (Cox and Snell R square) and 0.4% (Nagelkerke R square) of the variance in retention, and correctly classified 62.8% of cases. When explanatory variables are continuous, it is hard to analyze the lack-of-fit without some grouping. However, that is what the Hosmer-Lemeshow test does; it groups by the predicted probabilities such that there is roughly an equal number of observations per group. The Hosmer-Lemeshow Chi-Square statistic of 10.529, with \( df = \) number of groups – 2 = 8, has a p-value of 0.230 indicates that there is no issue with the lack-of-fit. While the model was not statistically significant at the \( p < .05 \).
level it seems to be trending towards significance with $p = 0.05$, and as such, the analysis by predictor variable, as shown in Table 9, is presented so it might offer some insight on the implications of this finding. One of the independent variables made a unique statistically significant contribution to the model, Academic Services.

The Wald estimates provide the strength of the contribution of each variable, with the higher the relative value, the more strength of the variable to predict the outcome. For Academic Services, the exponential slope, $\text{Exp}(B)$, is 0.867. This means that as the expectation gap increases it multiples the odds of retention by 0.867; so, the odds of retention decrease as the expectation gap for Academic Services increases. Assuming the Type I error of 0.05, it can be concluded that there is weak evidence of a statistically significant relationship between retention and some combination of predictor variables for 2009 and 2014 graduate students at a Christian university.
Table 9

*SPSS Output from a Binary Logistic Regression Model Predicting Retention in a Christian University for 2009 & 2014 Graduate Students*

<table>
<thead>
<tr>
<th>Service</th>
<th>B</th>
<th>S.E.</th>
<th>Wald</th>
<th>Sig.</th>
<th>Exp(B)</th>
<th>95% CI for Exp(B)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Lower</td>
</tr>
<tr>
<td>Academic Services</td>
<td>-.142</td>
<td>.046</td>
<td>9.686</td>
<td>.002</td>
<td>.867</td>
<td>.793 .949</td>
</tr>
<tr>
<td>Enrollment Services</td>
<td>.006</td>
<td>.037</td>
<td>.029</td>
<td>.865</td>
<td>1.006</td>
<td>.935 1.083</td>
</tr>
<tr>
<td>Institutional Perceptions</td>
<td>-.005</td>
<td>.037</td>
<td>.015</td>
<td>.902</td>
<td>.995</td>
<td>.925 1.071</td>
</tr>
<tr>
<td>Instructional Services</td>
<td>.088</td>
<td>.049</td>
<td>3.214</td>
<td>.073</td>
<td>1.092</td>
<td>.992 1.203</td>
</tr>
<tr>
<td>Student Services</td>
<td>.034</td>
<td>.039</td>
<td>.753</td>
<td>.386</td>
<td>1.034</td>
<td>.958 1.117</td>
</tr>
</tbody>
</table>

*Notes.* Degree of freedom equals 1 for each variable and the constant.
CHAPTER FIVE: DISCUSSION, CONCLUSIONS, AND RECOMMENDATIONS

Overview

Although research on student retention has been conducted for decades, there has been minimal research focused on the relationship between retention and specific attributes in the online adult learner population. The findings of this study indicate that there are various educational experiences that do have an impact on retention for online adult learners, as evidenced by the rejection of $H_0^2$ (2009 Undergraduate students), yet not for 2009 graduate students or either 2014 graduate or undergraduate students, as evidenced by the failure to reject $H_0^1$, $H_0^3$, and $H_0^4$, respectively. These results lead to the following implications, limitations, and recommendations for future research.

Discussion

The purpose of this non-experimental, predictive, correlational quantitative study was to determine if student expectations of various educational experiences are related to the retention of online undergraduate and graduate students at a Christian university. The predictor variable was defined as the expectation gap between the level of student satisfaction and student importance. These predictor variables were measured by the educational experience indices derived by the PSOL. In this tool, twenty-six items are divided into five subscales that evaluate academic services, enrollment services, institutional perceptions, instructional services, and student services. There have been numerous studies done to examine the effect of student satisfaction on the retention of online learners, and numerous studies done to examine the effect of a number of variables on the retention of traditional learners, but fewer have been found regarding the expectation gap of educational experiences on retention of online learners. This study specifically examined how the expectation gap of the aforementioned educational
experience scales impacted retention for undergraduate and graduate online Christian students at a four-year private, nonprofit, Christian institution for the years 2009 and 2014.

**Null Hypothesis One and Null Hypothesis Three**

$H_0^1$ and $H_0^3$ state that there will be no significant predictive relationship between the criterion variable (retention) and the linear combination of the expectation gap variables (academic services, enrollment services, institutional perceptions, instructional services, and student services) as measured by the PSOL for 2009 and 2014 graduate students at a Christian university, respectively. Results of the binary logistic regression indicate both of these null hypotheses are failed to be rejected. These findings may seem to be contradictory to numerous studies on the effect of various educational experiences has on student retention for traditional students; however, the adult demographic is so diverse (Clauss-Ehlers & Parham, 2014; Cuaresma, Lutz, & Sanderson, 2014; Hossler et al., 2008; Thiel et al., 2016; Tinto, 1982) that generic retention studies may not uncover the unique needs affecting a particular subgroup. It is for this reason that researchers have recommended studies to that delineate specific subpopulations within the adult cohort to best understand their retention needs. The failure to reject $H_0^1$ and $H_0^3$ contributes to this more rigorous evaluation and suggests that while educational experiences are important for graduate students, there is a disconnect between the effects at the undergraduate and graduate level; this is consistent with research on educational needs of different demographics (Quaye & Harper, 2008).

**Null Hypothesis Two**

$H_0^2$ states that there will be no significant predictive relationship between the criterion variable (retention) and the linear combination of the expectation gap variables (academic services, enrollment services, institutional perceptions, instructional services, and student services, and student
services) as measured by the PSOL for 2009 undergraduate students at a Christian university. Results of the binary logistic regression indicates the rejection of this null hypothesis. Early research has shown the importance of student contact regarding retention (Astin, 1984; Endo & Harpel, 1982; Pascarella, 1980), further research showed the importance of various student demographics (Allen, 1992; Bennett & Okinaka, 1990; Clewell & Ficklen, 1986) regarding retention, and an understanding of how these differ in institutional settings and delivery formats (Borglum & Kubala, 2000; Padilla & Pavel, 1986; Pascarella & Chapman, 1983). Student retention is more likely when students are engaged and happy. While research shows the many negative impacts of low student retention, further research is needed into how to best manage student retention within higher education. The rejection of $H_0^2$ contributes to filling the research gap. In reviewing studies that highlight the specific needs of specific subpopulations, schools are able to make informed decisions on how to better serve their constituents. The rejection of $H_0^2$ shows that an institutional focus on improving students’ perception of their chosen institution can be effective in increasing the retention rate for undergraduate students.

**Null Hypothesis Four**

$H_0^4$ states that there will be no significant predictive relationship between the criterion variable (retention) and the linear combination of the expectation gap variables (academic services, enrollment services, institutional perceptions, instructional services, and student services) as measured by the PSOL for 2014 undergraduate students at a Christian university. Results of the binary logistic regression indicates the null hypothesis is failed to be rejected. While the previous section would seem to suggest that the 2014 undergraduate students would share the perceptions of the 2009 undergraduate students, this difference further highlights the need to/delineate specific subpopulations within the adult cohort to best understand their
retention needs. While only four years separate these similar populations, much had changed in higher education between these years in regards to change in levels of student enrollment, alternate educational credentials, and educational technology. Further, for fall 2009 the average age of distance learning undergraduate students was 34, and for the fall of 2014 the average age of distance learning undergraduate students was 36. If this is converted to average year of birth and then associated with the prevailing generational titles, it shows that the 2009 distance learning undergraduates were Generation X, and the 2014 distance learning undergraduates were Millennials. There is a host of research and literature that delineates the differences of these generations that is outside the purview of this study, but noteworthy given the results of the analyses (Borges, Manuel, Elam & Jones, 2010; Duong, Badaly, Liu, Schwartz, & McCarty, 2016; Jonassen, 2004; Lai & Hong, 2015, Witkow, Huynh, & Fuligni, 2015).

**Implications**

Retention is important for many reasons. First, it is important to the institution since the retention of students is primary to ensuring financial and program stability and sustainability (Levitch & Shaw, 2014). Second, providing an environment that supports student educational needs has a heavy bearing on the credibility of the institution since retention rates are viewed as indicators of quality (Angelino et al., 2007; Thompson, 1999); essentially, the lower the retention rate, the lower the perceived quality by prospective students and regulatory bodies. Third, studies that delineate specific subpopulations within the adult cohort to best understand their retention needs (Hayek, 2011; Heimberg, 2014; Martirosyan et al., 2014) are important because they can provide a framework for institutions to use expectation data to make changes to help this population persist toward degree completion. This study provides some necessary insight regarding the impact of adult online students of a Christian institution expectations of various
educational services on their retention. It has highlighted the need to continually review the data to discern the best strategies to implement for student success.

The findings of this study indicate that there are select educational experiences/expectations that do have an impact on retention for online adult learners. For 2009 undergraduate students, the expectation gap of their perceptions of the institution itself had a statistically significant impact on their retention; however, for 2014 undergraduates it did not, nor did any other scale on the survey show a significant impact. Further, for both 2009 and 2014 graduate students there was no significant predictive relationship between the expectation gap on the survey scales and student retention. Essentially, the data has shown that the needs of graduate students and undergraduate students is different, and the needs of one class of undergraduate students is not necessarily the same as those of a different class. In the current fiscal environment of education, specifically in higher education, institutions cannot afford to expend resources on indicatives that have no effect/impact on student retention.

The findings from this study suggest that higher education leaders should pay more specific attention to the expectations and needs of their specific student subpopulations, and institute retention efforts more strategically to these populations. Further, leaders should expect these demographics to change and their efforts toward greater retention should be in constant review. Money wasted on failed student retention efforts, coupled with a decrease in student retention, costs institutions tens of thousands of dollars. Additionally, as the federal government is becoming more keenly aware of student success in higher education, there will be an increased level of accountability for institutions of higher education.
Limitations

The first limitation of this study is the findings cannot be generalized beyond the population of this study. The students in the study are attending the same school and had largely the same opportunities for educational services. Because the study was based on a sample of students enrolled at one institution, the results are not necessarily directly generalizable to other institutions. Additionally, the institution is a private, religious school that only offers certain programs at the undergraduate and graduate levels. Further, as mentioned earlier, the technology available for the student populations of this study changed, and the same can be said for future populations (for example, the technology available to 2014 undergraduates could be different than the technology that will be available for 2020 undergraduates).

The second limitation of this study is related to the construct of the predictor variables from the survey instrument. There are likely other variables that were not measured in the current survey and such variables might account for additional explanation of the variance in the outcomes. As there are many other more significant predicative variables of student retention within higher education that prove to be more reliable, such as first generation college students or socioeconomic status, the fact that the variables from this survey instrument show any predictive power, is noteworthy.

A third limitation of this study is that the information reported on the survey was based on students’ perceptions and so might not be accurate to the reality of the institutional context.

Recommendations for Future Research

It is suggested that future research should be focused on more specific subpopulations, based on the student’s chosen discipline. Results might have been different if the study was specific to academic disciplines geared towards specific vocations (e.g., nursing, engineering,
accounting), because the educational expectations of these students may be different than those of a more liberal arts tradition. If this study were focused on undergraduate, adult, online learners from vocationally driven academic disciplines the hypothesis would be more narrowly focused and data would have been more specifically collected. Further, a qualitative case study could be conducted to better gauge specific expectations.

Future researchers should also look at the homogeneity of the specific predictor variables in the chosen survey within the context of the institution. For example, for the 2009 graduate students while none of the five predictor variables were significant, two of the predictor variables had a much higher z-score than the other variables; this suggests more variance/separation of answers with these constructs. As such, the data may point toward that they were better or worse in a broader range of answers. Essentially, there was a more varied opinion within these two constructs. If these constructs were more homogenous/streamlined, their perceptions may be less diverse which would give more impact to the score and thus show significance.

Since the current study did not find a significant relationship between the predictor variables and graduate students, future researchers should examine the graduate student population to discern the educational experiences that might contribute to student retention at the graduate level.
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Appendix A: Survey Instrument

Dear Buffalo State [university] student,

Your thoughtful and careful responses to this survey are very important to your institution. Your responses will give you campus leadership insights about the aspects of the program that are important to you as well as how satisfied you are with them.

Thank you for your participation.

INSTRUCTIONS:

- Indicate your responses to each item as requested.
- At the end of each section, this will automatically post.
- Be sure to complete the survey in one sitting. If you will and return to the survey, your answers will not be lost.

Please note:
You will need approximately 20-30 minutes to complete the survey. If you do not complete the survey all at once, you may need to refresh your browser window.

ASA-Compliant version
RUFFalo State is committed to complying with ADA standards. To accommodate those with disabilities, an ADA-compliant version of the survey can be accessed here.

Copyright © 2021, RUFFalo State. All rights reserved.
Prepared by: [Your Name]
12.31.2021 15:40
<table>
<thead>
<tr>
<th>Level of importance...</th>
<th>Level of satisfaction</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 - Not important at all</td>
<td>1 - Not satisfied at all</td>
</tr>
<tr>
<td>2 - Not very important</td>
<td>2 - Not very satisfied</td>
</tr>
<tr>
<td>3 - Somewhat unimportant</td>
<td>3 - Somewhat dissatisfied</td>
</tr>
<tr>
<td>4 - Neutral</td>
<td>4 - Neutral</td>
</tr>
<tr>
<td>N/A - Does not apply</td>
<td>N/A - Not available/not used</td>
</tr>
</tbody>
</table>

1. This institution has a good reputation.

2. My program advisor is accessible by telephone and e-mail.

3. Instructional materials are appropriate for program content.

4. Faculty provide timely feedback about student progress.

5. My program advisor helps me work toward career goals.

6. Tuition paid is a worthwhile investment.

7. Program requirements are clear and reasonable.

8. Student-to-student collaborations are valuable to me.

9. Adequate financial aid is available.

10. This institution responds quickly when I request information.

11. Student assignments are clearly defined in the syllabus.

12. There are sufficient offerings within my program of study.
<table>
<thead>
<tr>
<th>Item</th>
<th>Question</th>
</tr>
</thead>
<tbody>
<tr>
<td>13</td>
<td>The frequency of student and instructor interactions is adequate.</td>
</tr>
<tr>
<td>14</td>
<td>I receive timely information on the availability of financial aid.</td>
</tr>
<tr>
<td>15</td>
<td>Channels are available for providing timely responses to student complaints.</td>
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<tr>
<td>16</td>
<td>Appropriate technical assistance is readily available.</td>
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<tr>
<td>17</td>
<td>Assessment and evaluation procedures are clear and reasonable.</td>
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<tr>
<td>18</td>
<td>Registration for online courses is convenient.</td>
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<tr>
<td>19</td>
<td>Online career services are available.</td>
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<tr>
<td>20</td>
<td>The quality of online instruction is excellent.</td>
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<tr>
<td>21</td>
<td>Adequate online library resources are provided.</td>
</tr>
<tr>
<td>22</td>
<td>I am aware of whom to contact for questions about programs and services.</td>
</tr>
<tr>
<td>23</td>
<td>Billing and payment procedures are convenient for me.</td>
</tr>
<tr>
<td>24</td>
<td>Tutoring services are readily available for online courses.</td>
</tr>
</tbody>
</table>
25. Faculty are responsive to student needs.

26. The bookstore provides timely service to students.

27. Campus defined item defined by institution

28. Campus defined item defined by institution

29. Campus defined item defined by institution

30. Campus defined item defined by institution

31. Campus defined item defined by institution

32. Campus defined item defined by institution

33. Campus defined item defined by institution

34. Campus defined item defined by institution

35. Campus defined item defined by institution

36. Campus defined item defined by institution
## About the responses

Each item below describes an expectation about your experiences with this program.

### Level of importance...

1. Not important at all  
2. Not very important  
3. Somewhat unimportant  
4. Neutral  
5. Somewhat important  
6. Important  
7. Very important  
N/A - Does not apply

On the left, tell us how important each of the following sources of information were in your decision to enroll in this program.

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>N/A</th>
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</thead>
<tbody>
<tr>
<td>37. Source of information: Catalog and brochures (printed)</td>
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<td>38. Source of information: Catalog (online)</td>
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<td>39. Source of information: College representatives</td>
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<td>40. Source of information: Web site</td>
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<td>41. Source of information: Advertisements</td>
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<td>42. Source of information: Recommendation from instructor or program advisor</td>
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<tr>
<td>43. Source of information: Contact with current students and/or recent graduates of the program</td>
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</table>

On the left, tell us how important each of the following factors were in your decision to enroll in this program.

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<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>N/A</th>
</tr>
</thead>
<tbody>
<tr>
<td>44. Factor to enroll: Ability to transfer credits</td>
<td></td>
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<td>45. Factor to enroll: Cost</td>
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<tr>
<td>46. Factor to enroll: Financial assistance available</td>
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<tr>
<td>47. Factor to enroll: Future employment opportunities</td>
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<tr>
<td>48. Factor to enroll: Reputation of institution</td>
<td></td>
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</tr>
</tbody>
</table>
110

About the responses

Each item below describes an expectation about your experiences with this program.

On the left, tell us how important it is for your institution to meet this expectation.

Level of importance...
1 - Not important at all
2 - Not very important
3 - Somewhat unimportant
4 - Neutral
5 - Somewhat important
6 - Important
7 - Very important
N/A - Does not apply

On the left, tell us how important each of the following factors were in your decision to enroll in this program.

50% Complete

49. Factor to enroll: Work schedule
50. Factor to enroll: Flexible pacing for completing a program
51. Factor to enroll: Convenience
52. Factor to enroll: Distance from campus
53. Factor to enroll: Program requirements
54. Factor to enroll: Recommendations from employer

About the responses

Choose the one response that best applies to you for each of the questions below:

63% Complete

Summary Questions

1. So far how has your online experience met your expectations?

2. Rate your overall satisfaction with your online experience thus far.

3. If you had to do it over, would you enroll in this program again?

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1.0.20170515.01
About the responses

The following demographic items are asked to help us better respond to the data you have provided. Please indicate the best response for each of the following items.

Demographic Questions

1. Gender
   
2. Age
   
3. Ethnicity/Race
   
4. Current Enrollment Status
   
5. Current Class Load
   
6. Class Level
   
7. Educational Goal
   
8. Employment
   
9. Current Residence
   
10. Marital Status
    
11. Current Plans
    
12. Current Online Enrollment

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Powered by RNL Surveys
1.0.20170515.01
About the responses

The following demographic items are asked to help us better respond to the data you have provided. Please indicate the best response for each of the following items.

Demographic Questions

13. Previous Online Enrollment:

14. Campus demographic item #1

15. Campus demographic item #2

16. Selection of Program/Major:

Final Thoughts:

17. How likely is it that you would recommend our institution to a friend or colleague?

- 0 - Not at all likely
- 1
- 2
- 3
- 4
- 5 - Neutral
- 6
- 7
- 8
- 9
- 10 - Extremely likely

18. Please enter any comments you would like to share with this institution

Remaining Characters: 2048

Complete Survey
Thank you for taking the time to complete this survey.
Yes, you have permission to include a copy of the Priorities Survey for Online Learners (PSOL) in your dissertation appendix.

Let me know how else I can be helpful.

Rufalo Noel Levitz

Visit www.RufaloNL.com/SPSOverview for more information about the Satisfaction-Priorities Surveys from Rufalo Noel Levitz

Good Morning,

I am writing to request approval to include the PSOL instrument as an appendix in my dissertation. An email reply will suffice.

Please let me know if you need additional information.

Best,
Appendix C: Institutional Review Board Approval

INSTITUTIONAL REVIEW BOARD

March 30, 2017

IRB Application 2824: Student Expectations as a Function of Student Retention for Adult Online Learners

Dear [Name],

The [Name] Institutional Review Board has reviewed your application in accordance with the Office for Human Research Protections (OHRP) and Food and Drug Administration (FDA) regulations and finds your study does not classify as human subjects research. This means you may begin your research with the data safeguarding methods mentioned in your IRB application.

Your study does not classify as human subjects research because it will not involve the collection of identifiable, private information.

Please note that this decision only applies to your current research application, and any changes to your protocol must be reported to the [Name] IRB for verification of continued non-human subjects research status. You may report these changes by submitting a new application to the IRB and referencing the above IRB Application number.

If you have any questions about this determination or need assistance in identifying whether possible changes to your protocol would change your application’s status, please email us.

Sincerely,

[Name]