STUDENT RETENTION: BRIDGING THEORY, RESEARCH, PRACTICE & POLICY

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STUDENT RETENTION: BRIDGING THEORY, RESEARCH, PRACTICE & POLICY

BY

CORINNE MARIE LEDEY KULESH

A DISSERTATION SUBMITTED IN PARTIAL FULFILLMENT OF THE

REQUIREMENTS FOR THE DEGREE OF DOCTOR OF PHILOSOPHY

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DOCTOR OF PHILOPHY DISSERTATION
OF
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Abstract

Institutions of higher education are under a lot of pressure to increase student retention. The focus on student retention supports many goals relating to student success, institutional reputation, rankings, recruitment, performance-based funding, and continued viability. Students, on the other hand, are not so concerned with being retained, but rather whether their experience makes them want to persist toward graduating with a degree at that institution. Additionally, historically-underrepresented students, such as first-generation students and students with low socioeconomic status (SES), are overrepresented in the number of students who do not persist, perpetuating achievement and SES gaps. Although institutions tend to be data-rich, they often fall short of making data-informed decisions. This study aims to bridge theory, research, policy, and practice to better understand and improve first-year student retention. The development of an action-focused exploratory model for student persistence, along with data analyses from various sources across campus were combined in order to gain richer insight into first-year student retention at a public research university. Lastly, an analysis of student engagement data offers a more thorough consideration of the differences in engagement for students on academic probation compared with their peers, who are more likely to persist.

An exploratory action-focused model for first-year retention for students who live on campus was developed as a means of tying retention theory with research. The model was then tested using institutional behavioral data. Despite the research showing that students who are first-generation or who come from a low socioeconomic status tend to have lower retention rates, these variables showed not to be significant predictors at the
university included in this study. The results do suggest, however, that course flag, academic probation, weekends spent on campus, and advisor meeting, variables representing both student and academic affairs, contribute significantly to predicting retention. Describing first-generation status and lower SES per se as at risk may not be accurate as their differences lie in academic and social integration to college life, which institutions can support and improve. In this study, retention is interpreted as a student’s motivation to persist. The results are then interpreted through this lens to suggest ways that practice and policy can be adapted to coordinate campus resources.
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I would also like to thank my family from the bottom of my heart. This journey was not an easy one and yet, we are somehow stronger now. I want to thank my parents, Debbie and Alain Ledey, for always believing in me, for being proud of me, and for sharing your enthusiasm of me being the first in our family to earn their doctorate. Your support especially helped at times when I questioned myself. Thank you to my children—Katrina, Shaymus, and Avery—for going on this journey with me. While doing this at a time when all of you were teenagers may have in retrospect been asking for quite the adventure, I couldn’t have asked for more love and support. Your poise Katrina, your hugs Shaymus, and your creativity Avery have been true gifts. And to Chris Caisse, my rock, my biggest cheerleader, and the reason how earning my Ph.D. was even possible—mercí, je t’adore. I promise to read your publications!
Dedication

I dedicate this dissertation to my family. No matter where I have lived, what journey I have been on, or what challenges I have been faced with, I always have and will forever belong with my family. And while formal education has been one of my greatest avenues to grow as a person, I am humbled by what so many in my family have learned and accomplished through their sheer perseverance and strength.
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Chapter 1

Introduction

Background and Research Rationale

Though retention research and theory in higher education has evolved over the past century to recognize the changing student demographics and needs, it continues to be a complex topic. The responsibility of supporting student retention has emerged to be a shared responsibility between students and institutions. And while students come to college with certain expectations, their experiences can create discrepancies as early as their first year that impact their desire to persist and graduate at that institution (Pleitz et al., 2015). However, institutions are often challenged with coordinating student support efforts across separate divisions and departments as well as understanding various students’ experiences on campus. This brings up questions on how institutions of higher education can better understand and predict student retention, and more importantly, how they can use the information to activate change and results.

Meanwhile, the opportunities for using the vast amount of data that institutions collect is only growing. Identifying the data, often collected in siloed data systems, and transforming it into meaningful and actionable variables that then help inform practice and policy becomes the challenge. Though many third-party companies offer ways to integrate data from separate systems and can create algorithms and analytics, they are not typically done in a transparent manner, nor are they routinely theory informed. This can lead to misleading results or confusing interpretations that can perpetuate a lack of adequate student support. Also, without a conceptual framework to guide analyses, the
results may not inform practice with a meaningful or intentional approach. And lastly, institutions may very well have interventions or programs in place to support their students, however, if they are not implemented with data-informed intention and through cross-department collaboration, these interventions can easily fall short of providing the support students really need.

Why First-Year Retention

The greatest loss from students not persisting typically occurs after the first year. For example, the full 2017 cohort at the institution that this study takes place had an 83.1% retention rate from first to second year. This means that 16.9% of students chose not to continue with their studies at this institution as they had initially intended. To augment the need to intervene, this group of students is always over-represented by students from under-represented populations. This same cohort had a second-year retention rate of 76.1%, which translates to an additional 7% of students deciding to leave early. And the third-year retention rate was 72.7%, amounting to an additional 3.4% loss of students. While understanding and supporting students’ motivation to persist is important for each year, the first-year is especially critical. Not only is this the time when typically, the highest number of students leave, but the first year also poses unique challenges when thinking about the student’s adaptation to the campus culture. What institutions do for the first-year can make a critical difference for a student’s self-efficacy and their sense of belonging, thereby impacting their academic success and their motivation to persist beyond that first challenging year.
Statement of the Problem

Student retention in higher education is a research topic that has been heavily theorized and analyzed, however, the results nonetheless do not inform retention research and practice in a manner that produces more than modest results (Habley et al., 2012). Statistics continue to show that students from under-represented backgrounds have lower retention rates than their counterparts (Cataldi et al., 2018). Current practices indicate an increase in companies promising to inform retention and student success in higher education by using algorithms developed through machine learning and artificial-intelligence. The issue with this method is that the models fit the data and are not necessarily theory-informed. This not only tends to make the results difficult to interpret, but they can be riddled with ethical dilemmas, especially when in the hands of practitioners who do not fully understand the shortcomings of the results. The problem is thus that though universities tend to be data-rich, the potential for utilizing data in a manner that informs student retention in a meaningful and significant way continues to be under-realized.

Purpose of Study

Communicating empirically-supported results that are contextually meaningful and actionable and which address a large audience of constituents across campus is a powerful means of impacting a campus culture that supports students to persist. This study is novel in that it incorporates an action-focused model for student-persistence with several layers of analyses that aim to address the complexity inherent in retention research. It also integrates and joins data from separate data collection systems that allows us to connect institutional variables from student life, advising, as well as in
student courses, allowing for a more holistic understanding and interpretation of the findings. Too often, these data are disparate and give one-sided information, prompting departments to help students in ways that are not cohesive, and therefore, not as impactful as they could be. Understanding the practices and policies and contextualizing them in a manner that looks at student persistence more cohesively offers a deeper understanding of how students really need to be supported. Previously, models were used to predict retention on pre-college student characteristics such as race, ethnicity, and SAT scores; but this is not very helpful for advising students who are already in college. Instead, this study incorporates aspects of the student’s first-year experience that impact their motivation to persist. Though this study does lend itself to predicting retention, more importantly, it helps us better understand what we can do to support students’ motivation to persist. Thus, the purpose of this study is to examine the effects of routinely collected institutional data in predicting first year retention as well as to better understand different experiences of first-year students for actionable policies.

**Significance of the Study**

Many studies on retention, and specifically when connecting it to student characteristics or demographics, rely on a deficit-model. They often focus on the students’ lack of academic preparedness, lack of financial support, or lack of ability to persist due to other personal conflicting responsibilities. This leaves practitioners with limited ways to help, the students often feel even more marginalized, and it can even give institutions excuses not to admit or prioritize these students, thereby negatively contributing to already-disadvantaged populations.
Instead, Terenzini et al. (1996) suggested a shift to a value-based approach that communicates students are competent learners, that they can succeed, that they have a rightful place in the academic community, and that their background and past experiences are sources of knowledge and pride. Even though students must achieve academic requirements to persist and graduate, there is much more that the student experiences during this time of their lives. Linking personal responsibility and enlightenment to support is a powerful way of keeping students in higher education (Moxley et al., 2001).

Longwell-Grice et al. (2016) found that students credited working through their issues with mentors and peers as critical to their successful navigation of the campus environment and culture, and to their academic success. These relationships often help students better understand and experience the sociocultural capital that exists in higher education (Pascarella et al., 2004). In addition to the positive mitigating factors of high expectations, strong work ethics and living on campus in residence halls, Pascarella et al. (2004) found that students who partook in campus activities demonstrated greater critical thinking skills, greater advancement in degree plans, a sense of control over and responsibility for their academic success and a preference for higher-order cognitive tasks.

Institutions have a greater opportunity than ever to utilize their data to understand how they can better support students. With a conceptual framework that leverages theory and research, institutions of higher education can glean better results to inform practice. Perna and Thomas (2006) point out that while institutions in higher education are not necessarily lacking in policies for student success, that these policies are not aligned to work together, and therefore are not as effective standing on their own, or
sometimes are even at risk of working in competition with each other by unintentionally creating obstacles. They go on to explain that student success theories and policies often are derived from a specific discipline, such as psychology, sociology, or economics, and that they typically do not leverage the strength of considering all of these disciplines for a more comprehensive model for student success. Through a concerted effort and desire to understand the students at an institution and a commitment to providing students with the opportunity to be academically successful, a culturally responsive campus can be created and strengthened so that students feel like they belong there and that they can succeed, inherently increasing students’ motivation to persist and graduate.

The significance of this exploratory quantitative study is to help inform education researchers on how they may leverage their data to better inform policy and decision-making in ensuring a student experience that supports students to want to persist. Education researchers can provide the culmination of theory, research, and practice to help inform policy and decision-making in supporting retention efforts. By better understanding how educational research can inform policy and practice, we can bridge the gap between results and policy-decision-making in higher education (Ion et al., 2019).
Chapter 2

Literature Review

This chapter begins with an overview of the various retention theories, including the shift from psychological to sociological factors. Additionally, the review of institutional policy as it relates to academic progress and success, as well as its practice, are reviewed. Collectively, the theory and research then inform the exploratory development of an action-focused model for first-year student persistence. Lastly, the research questions that allow for the critical analyses of each component of the model are introduced.

Student Retention Theory and Context

Early Years with a Focus on Homogeneity

Student retention has long been deemed one of the most critical topics in higher education and therefore, has been researched extensively (Aljohani, 2016). Prior to the 1970s, the psychological focus was on student attrition and analyzing personal attributes and student shortcomings, such as gender or a lack on the student’s behalf to integrate, that might indicate whether a student was considered at high risk for leaving an institution prior to earning their degree. The Morrill Land Grant Act of 1862, the urbanization of lifestyles and the industrialization of the job sector created a demand for more institutions of higher education to offer greater opportunities for individuals to attend college and earn their college degrees (Demetriou & Schmitz-Sciborski, 2011). This was a time when institutions were largely focused on attracting and retaining students who were more apt to stay, graduate and be successful, which, at that time,
meant largely leaving out female students, students of color, and students who came from a lower socioeconomic background.

**Middle Years with Growth in Diversity**

The GI Bill from the 1950s, the Civil Rights Movement and the War on Poverty from the 1960s, and the Higher Education Act of 1965 collectively increased access to higher education by providing financial support for a much more diverse student population to enroll in colleges and universities (Demetriou & Schmitz-Sciborski, 2011). Recognizing that higher education served more diverse students, retention models that incorporated sociological factors started showing up in the 1970s and were spawned from Spady’s “Dropout from Higher Education: An Interdisciplinary Review and Synthesis” (Aljohani, 2016, Spady, 1970). It was at this time that Spady identified that there were two systems in colleges that impacted students, the academic and the social. He expanded this theory by saying there were two factors in each system that influenced a student’s decision to withdraw—grades and intellectual development in the academic system and normative congruence and friendship support in the social system. It is important to mention that it was during this time that the focus of student attrition turned to student retention. This change in terms was to highlight that institutions shared a responsibility in impacting students’ decisions to stay or drop out of an institution (Habley et al., 2012).

With a move toward a sociological focus, many new models were developed. Some of the most prominent models include Tinto’s Institutional Departure Model, Bean’s Student Attrition Model, and Astin’s Student Involvement Model. The inclusion of student characteristics as well as measures of student integration on campus became...
the hallmarks for these models (Aljohani, 2016). Additionally, these models called for examining common factors and variables that can be grouped into the following categories—intentions, institutional environment, student demographic characteristics, commitment, academic preparation and success factors, psychosocial and study skills, integration and fit, student finances, and environmental pulls (Bean, 2005). These models leveraged largely on Durkheim’s sociological Suicide Theory, Van Gennep’s social-anthropological Rites of Passage in Tribal Societies Theory and Price’s Labor Turnover Concept from the field of human resources (Aljohani, 2016). These early retention theorists linked Durkheim’s suicidal behavior with student attrition behavior by attributing an individual’s lack of social and intellectual integration into their social life—Tinto, in specific, viewed this as a voluntary withdrawal from society in his earlier retention models, one that would make a student want to withdraw from their university as well. Van Gennep’s theory described the stages of separation, transition, and incorporation as aspects of relationships between groups. Tinto incorporated Van Gennep’s theory into his retention model as well through linking the rites of passage to the longitudinal process of a student assimilating and then integrating to college life and their campus community—a student would have to first shed the norms and behaviors from their pre-college life, transition to adapting the ones of their new college life, and finally incorporate the values and norms of their college community. A student, at any point of this process, could fail to fully integrate and assimilate into their new college community, and therefore decide to leave. Bean especially leveraged on Price’s human resource theory on why employees leave their companies, by suggesting that students leave their institutions for similar reasons, namely their satisfaction levels, which for
students is impacted by Grade Point Average (GPA), development and institutional quality and value (Aljohani, 2016). Therefore, a student not earning an acceptable GPA, or feeling like their development or the institutional quality and value are not advanced enough, would impact a student’s decision to leave their college community. We see the impact of this theory, but explained as motivation theory, in Tinto’s more recent model.

**More Recently with a Student-Centered Approach**

Tinto’s (2017) most recent conceptual framework represents a clear shift of looking at retention not by studying students who did not persist, but rather by focusing on what makes a student want to persist. He incorporates a model of motivation, which stems from the field of psychology, and adds the sociological factors of the college experience, to help explain a student’s desire to persist at a particular institution. In his model, Tinto (2017) explains that intrinsic motivation is malleable, giving institutions insight on how they may support the student experience to increase motivation and therefore impact a student’s motivation to persist at that institution. Tinto concludes that institutions, in addition to helping students clarify their goals and augment needed academic skills, need to support students’ performance, need to provide forms of activity that require shared academic and social experiences, and they must ensure that students find themselves in a field of study appropriate to their needs and interests.

Tinto included self-efficacy in his model of retention, integrating Bandura’s theory of self-efficacy. Bandura’s (1977) theory of self-efficacy is defined as a person’s belief in their ability to succeed in a specific situation or at a specific task. Self-efficacy is learned and is derived from experiences and a student’s sense of control over their environment; it is task and challenge specific. While Tinto (2017) specifies that students
need to believe they can succeed in college in order to continue, his model specifies that
self-efficacy impacts a student’s sense of belonging, however, he does not specify a
reciprocal relationship between self-efficacy and sense of belonging. Students’
perception of their engagement with others on campus matters as it relates to their sense
of belonging. Tinto (2017) refers to measuring the student’s daily interactions with other
students, faculty, staff, and administrators on campus as a measure of their engagement
which in turn is used as a proxy for their sense of belonging. Ultimately, he poses that
students who are engaged in their campus life feel a sense of belonging and are more
likely to persist. A student’s perception of the quality and relevance of the curriculum,
Tinto explains, is derived from a mix of teaching methods, institutional quality, and
student values (Tinto, 2017). The model of motivation that Tinto offers, see Figure 1, is
specific to a student’s desire to persist and acknowledges more specific areas in which an
institution has the ability and capacity to impact a student’s motivation.

**Figure 1**

*Vincent Tinto’s Model of Student Motivation and Persistence (2017)*
These retention theories have since influenced research to focus on the sociological aspects of a student’s experience in and outside of college in addition to their pre-college characteristics, such as high school GPA and SAT scores (Aljohani, 2016). This still has left institutions with very little information on how to support their students and instead has had the detrimental influence of impacting admission criteria or lowering academic rigor in order to sustain higher retention rates (Umbricht et al., 2017). Terenzini et al. (1996) suggested we move away from a deficit model and shift to a value-based approach that communicates all students are competent learners, that they can succeed, that they have a rightful place in the academic community, and that their background and past experiences are sources of knowledge and pride.

**Academic Engagement and Self-Efficacy**

As students adjust to college and fortify their academic selves, institutional indicators of academic and social isolation can give further insight to which students need added supports as well as to how the campus culture can adapt. Academic Probation, a nearly universal policy in higher education that has been shown to impact retention significantly, is under-researched in higher education (Moss & Yeaton, 2015). It is common for institutions of higher education to have policies on what constitutes good academic standing. One such policy is for students whose cumulative GPA drops below a certain threshold. Students whose cumulative GPA drops below this threshold, typically 2.0, are placed on academic probation until they can earn a cumulative GPA at or above the threshold. This is not to punish students but rather to alert them that prolonged status on academic probation will lead to dismissal if they are not able to earn a cumulative GPA above the threshold. In addition to alerting the students of their academic pathway,
this also ensures that students are not paying money or adding to their school loan debt by continuing to pay for college courses that are not counting towards a college degree due to non-
progressive grades or by paying for the same course several times.

Although going on academic probation can be a motivator for some students, for far too many, it has a discouragement effect as evidenced by significantly lower rates of retention (Lindo et al., 2010; Snevers & De Witte, 2018). Little research exists on why student retention and graduation are lower for students on academic probation that would help explain above and beyond the obvious lack of academic progress. There are various reasons that students may have a lower GPA, some include: not being prepared for the rigor of college work or not having strong learning strategies, having difficulties expressing or managing their anxieties, tending to have an external locus of control, and experiencing a new autonomy requiring time-management and organizational skills not yet mastered (Seirup & Sage, 2011). As a result, for some students their low GPA is a total surprise and for others, it is perceived as a message that they cannot be successful in college or that they don’t belong at that institution. Being on academic probation can also impact a student’s financial aid. The Federal Pell Grant, which is initially awarded based on a student’s financial need, is renewed each year for up to five years total when a student demonstrates satisfactory academic progress (SAP). Therefore, going on academic probation can put a student’s financial aid in jeopardy, creating further barriers to earning a college degree.

Often, institutions of higher education lack an understanding of why these student outcomes merit academic probation and how probation might play a role in student success (Brawner et al., 2010). The act of alerting students that they are on academic
probation without a powerful intervention, does little to change student behavior, and can contribute to a student’s lack of engagement and feelings of belonging, and ultimately their desire to persist (Tinto, 2017). However, if students feel isolated, separated, or socially alienated from their overall college experience, they are likely to be less motivated to persist, which can be manifested through their academics (Kerby, 2015). A meta-analysis on three interventions for students on academic probation showed that student-faculty mentoring had the largest positive effect on student retention and graduation, showing a 7.5% increase in retention and a 5% increase in graduation rates (Sneyers & De Witte, 2017). Ultimately, in order to improve retention for groups of students who are not persisting at the same rate as their peers and are experiencing isolation, we must understand how this policy, while developed to protect students, can also impact students’ sense of belonging, and therefore their effort to do well academically as well as their motivation to persist (Allen & Boyle, 2018).

Social Belonging and Engagement

To meaningfully impact the motivation to persist for groups of students who are not persisting at the same rate as their peers and are experiencing isolation, we must understand how those students feel about their sense of belonging at that institution (Allen & Boyle, 2018). Examining data from the only national study that asks a question on student belonging, Gopalan and Brandy (2019) found that student belonging in 4-year colleges was found to be positively associated with persistence, use of campus services, and mental health; the results were equally predictive for students from different backgrounds. And while student engagement and sense of belonging were similar for first- and multi-generation students, first-generation students were found to be especially
sensitive to the daily connection between engagement and sense of belonging (Gillen-O’Neel, 2021). Studies are now starting to focus on understanding how institutions can cultivate a sense of belonging, with a focus on cultural relevance and cultural responsiveness (Museus, et al., 2021). One way is by providing a culturally responsive campus, which involves programs and practices that effectively respond to the needs of culturally diverse student populations (Museus, et al., 2017). All students, regardless of their cultural backgrounds, can be supported to succeed academically, intellectually, and socially in a rigorous academic environment. Geneva Gay (2013), the leading author on cultural responsiveness in instruction, has conceptualized the following four specific actions necessary for its implementation: restructuring attitudes and beliefs about cultural, ethnic, and racial diversity; resisting resistance to cultural diversity in education and instruction; centering culture and difference in the teaching process; and establishing pedagogical connections between cultural responsiveness in instruction and curriculum. Gay emphasizes that this can and needs to be accomplished while maintaining a high standard for academic rigor.

Proxies for measuring a student’s sense of belonging within a system can be measured by the quality of their interactions on campus, both academically as well as socially (Kuh, 2001; Pascarella et al., 2004). Engaging students in higher education in the various activities that contribute to student success and learning outcomes matters more than who the students are or where they go to college (Kuh, 2001). Kuh, one of the key founders of the National Survey of Student Engagement (NSSE), and his research supports that focusing on practices that emphasize student-faculty contact, cooperation among students, active learning, prompt feedback, time on task, high expectations and
respect for diverse talents and ways of learning is key. Ensuring high student engagement in these practices results in greater student outcomes such as critical thinking, problem solving, effective communication and responsible citizenship. Ultimately, engaged students learn more and are more motivated to persist in attaining their degree.

**Differences in Student Experience and Sociocultural Capital**

Current research on retention is starting to look at what happens *after* students start attending college and show predictive value as early as the end of the first semester. Decision trees and logistic regression models indicate that first semester GPA, earned credit hours after the end of first semester, and status (full/part time) at the end of the semester are some indicators that can be used in retention and graduation models (Deason, 2003; Raju & Schumacker, 2015). It is important to note that these retention algorithms use readily available data. Although they can point to some of the academic indicators and behaviors a student can be made aware of to help increase their success in persisting and graduating from college, these models do not consider other variables that also impact a student’s experience, and therefore ability or opportunity to persist and graduate. Additionally, one major false assumption these models make is that the student experience is the same for all students.

Some of the major limitations to retention theories vis a vis the student experience on campus relates to sociocultural capital. To understand this better, we first need to recognize that institutions of higher education were developed mainly by and for a very homogeneous group of students representing higher socioeconomic levels. However, the demographics of students have drastically changed and continue to change. It is critical
that we look to our educational institutions of higher education, albeit slow to change and adapt, to intentionally support an experience that promotes success for all students equally.

Bourdieu (1986) describes the connection between economic capital and cultural and social capital. And while cultural and social capital are humanistic by nature, their ties to economics and education make them accessible and transparent only to those who already “belong”. Social capital refers to membership in a group and to the homogeneity of the group as well as the benefits of being a part of the homogeneous group. Bourdieu (1986) defines cultural capital as unidimensional and tied to one’s education and academic qualifications. Both social and cultural capital assume limitations brought on by opportunity, access, homogeneity or a sense of belonging, a lack of transparency of unwritten rules, time, money, and inherited connections.

People live culture, they are not culture. Therefore, Gutierrez and Rogoff (2003) argue that we view cultural differences as a dynamic variable and not equate it to an individual’s traits, which tend to be static. They go on to say that it is imperative that we not only look at individual differences when trying to understand a student’s learning style, but that we also consider shared commonalities. This allows us to focus on group experiences versus traits and offers educators a more impactful means of furthering learning.

Ishitani (2003) ran a longitudinal study that showed that even after controlling for factors such as race, gender, high school GPA and family income, the risk of attrition for first-generation students was 71 percent higher than that of students with two-college educated parents. First-generation students, as a widely accepted definition, are college
students who neither of their parents/caretakers received a 4-year college degree. Pascarella et al. (2004) relied on the theoretical perspective of cultural and social capital to relate the first-generation student’s experience in college. They concluded that first-generation students tend to be less aware of the culture of higher education and its role in personal development and socioeconomic attainment. Pike and Kuh’s (2005) first large-scale research study on the experience of first-generation college students suggests that they perceive the college environment as less supportive and report making less progress in their learning and intellectual development. Longwell-Grice et al. (2016) interviewed first-generation students and found that they did not express anxiety about academic competency or competitiveness, instead, the students described discomfort with academic discourse and the culture of academia with which they reported a struggle to overcome. Likewise, students with low SES often question their commitment to earning their degree based on their experience and are more likely to leave college after their first year (Zembrodt, 2019; Jury et al., 2017). Stephens and Brannon (2015) studied several interventions for college students around fit and empowerment. Their findings support that when students have the opportunity to fortify and develop school-relevant selves, their educational experiences are characterized by a sense of fit and empowerment, relating to their self-efficacy at that institution.

**Institutional Data**

Kerby (2015) calls for reconceptualizing our predictive models for student retention to include paradigms of social alienation. She calls for incorporating an understanding that if students feel isolated, separated, or socially alienated from their overall college experience, they are likely to be less motivated to persist. As students
adjust to their first year in college and fortify their academic selves, institutional indicators of academic and social isolation can give further insight to how the campus practice and culture can adapt.

Using institutional data as proxies for motivation to persist is one way of explaining and predicting retention. Institutional indicators as early as the first year can help predict students who will retain from those who are at higher risk of not retaining (Raju & Schumaker, 2015). While Raju and Schumaker’s study (2015) utilized first-year data to predict student retention that leads to graduation, they did so by using an inductive quantitative method. Rather than relying on theory to inform their data analysis, they instead focused on fitting their model to the data, thereby omitting theory. Although this method can produce algorithms with predictability properties, they tend to be harder to interpret and make meaning out of the results, thereby adding potential confusion to interpretation and decision-making for policies and practice.

Caison (2007) demonstrated that when comparing student survey data developed from, arguably the leading retention theorist, Vincent Tinto’s retention theory to student predictors commonly found in institutional research databases, the predictors significantly outperformed the survey data in predicting first-year retention at a public research university. She stated one of the reasons was that even with a 38% response rate on the survey, the results were not representative for the entire cohort of students.

Indicators that derive from self-efficacy and sense of belonging can give insight to student experience and motivation across campus. And some of the indicators are collected by separate divisions such as academic and student affairs, but institutions need to investigate student engagement from both academic and social perspectives (Cochran,
Therefore, it is important to include institutional indicators that indicate student engagement across both divisions.

Context matters when relying on academic social research; being able to translate and communicate the results to end users adds to the utilization of the findings (Cherney et al., 2013). Universities tend to operate through various organizational structures, such as separate colleges, campuses, or departments. These structures are often by nature different from each other—they may attract different types of students, have different admissions criteria, be responsible for de-centralized operations, and they may even develop sub-cultures of their own. These differences can have an impact on students’ retention above and beyond when accounting for institutional indicators that predict retention.

**Action-Focused Model**

This study builds on and contributes to the current work on first-year retention in higher education as understood from the students’ experience and desire to persist. Although theories and studies in student retention have shifted towards a shared model of responsibility and a focus on what institutions can do to better support their students and their desire to persist, there still exists a challenge of how to tie theory to institutional research and then to practice. As such, this study provides a conceptual model derived from theory and research on the student experience which lends itself to then applying the results to practice and policy. The analytic focus on institutional variables, contextual differences captured by the structure of colleges within an institution, as well as accounting for, rather than holding constant, that first-generation and lower SES students very often experience college differently than their counterparts, offers a way to analyze
data in a manner that helps to inform practice and policy. Although many studies have identified self-efficacy and sense of belonging as critical to the student experience, little attention has been paid to helping institutions understand how their data can inform ways in which their practice and policy can adapt to be more impactful. And while there are limitations to using institutional research data as proxies for academic self-efficacy and social belonging, this exploratory study offers a means of examining these variables as they relate to first-year retention. This study addresses this issue by combining an action-focused conceptual model with analyses that are then interpreted to influence practice and policy as it pertains to an institution improving the first-year student experience.

**Summary**

The history of retention theories largely started with a focus on how to identify students who would most likely not persist. The theories have since evolved around the concept of what makes a student want to persist, allowing for institutions to take responsibility in the student’s decision to persist. Though retention theories have emerged to include both psychological and social factors, they still come short from offering further understanding on how groups of students experience college differently than their counterparts, or how these theories can be translated into action.

Alienation from the college experience can be garnered from institutional indicators, which are available in various databases across campus. Furthermore, it is important that institutions consider policies that either can impact, or be a symptom of, a student’s lack of self-efficacy or sense of belonging, such as going on academic probation. Context at large institutions matters and needs to be considered when addressing how to take responsibility and turn it into action in supporting their students.
Models that control for certain demographics, like first-generation and low socioeconomic status, do not make room for interpreting the implications of shared experiences; thus, it is important to account for the potential impact of shared differences in the college experience. Allowing for further understanding of student’s engagement also provides a powerful means of identifying how an institution can take action in supporting their students and their experience.

Based on the theory and research shared above, this study leverages an action-focused exploratory model of student persistence that accounts for contextual differences that can further help explain differences in retention. This model furthers the current efforts on student retention theory, research, and practice by acknowledging and accounting for different student experiences due to sociocultural capital. The model also recognizes that while a student’s self-efficacy can impact their sense of belonging, sense of belonging can also impact self-efficacy. Operationally, the variables used in this study do not measure self-efficacy or sense of belonging per se but rather indicators of academic standing and engagement leading to self-efficacy and sense of belonging. And lastly, this study incorporates measures of engagement that allow for even more action-oriented interpretation. Figure 2 offers a visual representation of the exploratory conceptual model developed for this study.
Research Questions

The research questions are thus structured to firstly investigate the effects of students’ sociocultural capital in respect to their first-generation or low-SES status, secondly to examine contextual differences, and thirdly to measure the impact of institutionally-captured behavioral indicators that are tied to the latent constructs of self-efficacy and sense of belonging. This study uses the quantitative measure of retention in the research questions and analyses, however, from a theoretical perspective, retention is viewed from the students’ motivation to persist. Lastly, additional institutional data will be analyzed for determining differences in engagement that can help further inform the practice and policy for students on academic probation. To consider these critical aspects
of the student experience within existing context and how they theoretically relate to retention, this study includes the following research questions:

RQ1. How does first-generation status or low-SES status impact first-year retention?

RQ2. While accounting for the above variables, how does college-affiliation—based on different admission criteria and curriculum—contribute to explaining retention?

RQ3. What are the latent constructs of the four institutional behavioral variables?

RQ4. How do behavioral indicators collected in institutional data—representing both the academic and social aspects of campus life—help further explain and predict first-year retention?

RQ5. Compared with students in good academic standing, how does student engagement more specifically differ for students on academic probation?
Chapter 3

Methodology

This chapter begins with identifying the cohort of students that was included in the study. The boundaries of the identified cohort are explained both for understanding the decisions made to avoid confounding the analytical results, as well as for ease of replication. The variables used to address the research questions are explained in detail, including institution-specific facets. In addition, the various psychometric properties of the NSSE instrument are presented. Next, the procedures are summarized. Lastly, the chapter addresses the analytical methods used for addressing each of the research questions.

Participants

This study took place at a flagship public research university in the Northeast of the United States of America. The cohort includes students who attended this university full-time (enrolled in at least 12 credits or more) the year after completing their high-school diploma. This university consists of mostly residential first-year students, with approximately 30% of the students being first-generation. Approximately 25% of the students are awarded a Federal Pell Grant. Typically, the student groups consist of 60% female students; at least 25% of the students come from diverse backgrounds other than ‘non-Latino white’.

The data for research questions one to four consist of the 2017 cohort of first-time/full-time students. Over 90% of the first-year students live on campus, and since this study includes a variable from ‘residential life’, only students who lived on campus
are included. Also, the University has a robust access program that offers a summer bridge program as well as program-specific advisors to help with transitioning to college; the students in the access program are admitted under different admission criteria. Since including these students would introduce confounding issues with the data analyses, these students are not included in the cohort for this study. This leaves 2,766 out of 3,006 students who meet the criteria. Rather than using a sampling method, this analysis includes the entire cohort of students who meet the above criteria. First-generation students make up 27% of the students in this study’s cohort while 20% of the students were awarded a Pell Grant. The first-year retention for this group is 84.1% compared to 83.1% for the full cohort.

The data for research question five consists of the 969 first-year participants of the National Student Survey on Engagement (NSSE 2.0), representing a 30% response rate, which has been shown to be generalizable (NSSE). The survey is conducted every three years at this University and the most recent results were gathered in Spring 2019 for the Fall 2018 first-year cohort. It is important to note that the data for this question are derived from a different cohort as there are no NSSE data available for the 2017 cohort. However, the same operational definition for academic probation and good academic standing were used, thereby ensuring this analysis is appropriate and valid for addressing the research question. Of the respondents, 909 were in good academic standing and 60 were on academic probation at the time they completed this survey (i.e., during their second semester).
Variables

This study includes understanding and predicting first year retention or persistence, therefore, the dependent or outcome variable for research questions one, two and four is first year retention. First year retention is operationalized as whether a student is enrolled at this same university during year two of their studies. It is a dichotomous variable of yes or no. The retention data came from the student enrollment records, which are captured for this purpose on the October 15 census date. By using the October 15 census date, students who enroll for their second year but who end up dropping their courses prior to the October date will be counted as not retained—this is a more conservative way of capturing retention rather than just including students who are enrolled as of the start of their second year. Retention is a dichotomous variable yes/no whether a student returned to the same institution. Sometimes this is even more specifically referred to as institutional retention (as opposed to students who leave one institution to enroll at a different institution). Persistence, while quantitatively equal to retention, typically refers to the student’s desire and motivation to persist.

By acknowledging there are sociocultural differences, we must recognize that not all students experience college the same way. Understanding the various student sub-populations allows us to think critically about our assumptions of what first-year students know about transitioning to college, such as college nomenclature, culture, and expectations (Chatelain, 2018). The first research question encompasses the students who are first-generation or who are at a lower SES. First-generation status is operationalized as students who on their common application or FAFSA (federal application for student aid) self-reported that neither of their parents/caretakers graduated
with a four-year degree. This is a binary variable of yes/no where a student is considered first-generation only when neither of the parents/caretakers were indicated as having a four-year degree. Low SES is defined as students who were awarded a Federal Pell Grant.

For research question two, since all the students are located at the main campus, the biggest within-system differences occur at the college level. There are eight degree-granting colleges, some with higher admission criteria and more rigorous curriculums, as well as a University College for students who are undeclared or who have not decided on a major at the time of enrollment. These nine colleges are included for the second research question. For the purpose of this study, a student’s college is defined as their college at the beginning of their first semester. There are three colleges in particular that have higher admission criteria with more rigorous curriculums, while the other six colleges have the same admission criteria. College was included in the model to capture the contextual differences based on selection criteria, rigor of the curriculum, and goal setting (commitment to major compared to undecided). Using hierarchical linear modeling (HLM), it was found that there was significant variation (random variance) among colleges. However, since there are no available data to capture different context and experience among the colleges, the model was not able to examine the between college variation—a limitation of the study. Instead of using separate college as predictors, it was decided to group them based on admission criteria and rigor of curriculum as this would capture the context of academic rigor. For the cohort selected in this study, any differences for students who were undeclared as it related to their commitment as indicated by their persistence did not prove to be significant. Therefore,
the colleges will be grouped by the rigor of their curriculum, with three colleges in the
‘higher rigor criteria’ and the remaining six colleges in the ‘regular rigor criteria’. While
there are many contextual differences and sub-cultures that can contribute to the student
experience and therefore impact their motivation to persist, the college group served as a
proxy for this exploratory study. Table 1 includes the frequency of students by college-
affiliation as grouped in this study.

Table 1

*Frequency by College Affiliation*

| College Affiliation | Frequency | Percent |
|---------------------|-----------|---------|
| Valid               |           |         |
| Higher Rigor        | 624       | 22.6    |
| Regular Rigor       | 2142      | 77.4    |
| Total               | 2766      | 100.0   |

This study utilizes four institutional behavioral indicators of academic self-
efficacy and social engagement of students on campus. Course flag and academic
probation are used as indicators of academic standing that is closely linked to academic
self-efficacy and percent of weekends spent on campus and advising appointments are
used as indicators of social engagement that ties to sense of belonging. Moreover, among
all data collected routinely at this institution, these were identified as most appropriate for
assessing these constructs. Thus, the variables for research questions three and four
includes course flag, academic probation, percent of weekends spent on campus, and
advising appointment. The course flag data designates whether a student received an
instructor flag for any course indicating that the student was struggling in the class or at
risk of failing the class during their first semester. It is a dichotomous variable of yes or no, regardless of whether the student received one or more flags. The course flag data come from the Starfish data system. While this flagging system is not widely used for all four years, it has been largely accepted as a practice at this institution particularly for first-year courses. Please see Table 2 below for the frequency of the course flag data. The dichotomous variable of yes/no is used in this study as preliminary analyses do not show enough variance beyond more than one course being flagged.

**Table 2**

*Frequency of Course Flag*

| Course Flag | Frequency | Percent |
|-------------|-----------|---------|
| Valid       | 2375      | 85.9    |
| 1           | 286       | 10.3    |
| 2           | 83        | 3.0     |
| 3           | 13        | .5      |
| 4           | 9         | .3      |
| **Total**   | **2766**  | **100.0** |

The academic probation data come from the student records. At this institution, a student is considered on academic probation if their cumulative GPA is less than 2.0. Since this is looking at student GPA for the first semester, the term and cumulative GPA will be the same for these students. The academic probation variable is dichotomous indicating if a student went on academic probation due to their first semester GPA. Academic Probation status rather than GPA was included in this study as a means of better understanding this subset of students who are deemed at risk and are understudied.
Furthermore, there are specific practices and policies that are pertinent to students on Academic Probation and that can impact students’ academic self-efficacy as provided by the research available. See Table 3 for the frequency of students on academic probation.

**Table 3**

*Frequency of Academic Probation after First-Term*

| Academic Probation after First-Term | Frequency | Percent |
|------------------------------------|-----------|---------|
| Valid No                           | 2518      | 91.0    |
| Valid Yes                          | 248       | 9.0     |
| Total                             | 2766      | 100.0   |

The percent of weekends spent on campus is captured from the housing and residential life data set. It includes recording if a student used their card to open their residence hall or room at any point during the weekend between the times of 12:00 p.m. on Saturday and 6:00 p.m. on Sunday. Although it is possible that one student would use their card to open the door and let in other students, thereby not capturing all students’ cards, it is unlikely that a student would not at least use their card to open their room at some point during that thirty-hour period. At a minimum, students need to leave their rooms to use the lavatory and eat several times during that length of time period. The student’s card just needs to be swiped once during that time period in order for them to be recorded as having stayed the weekend. Although this method may not account for every student and for every weekend, self-report bias (Donaldson & Grant-Vallone, 2002) and the inability to get all students’ data if using a questionnaire to capture this information is prevented by utilizing the card-swipe data. Rather than use the actual percentage of
weekends spent on campus, this study includes a cutoff at 50% of weekends spent on campus. Figure 3 shows the data distribution of weekends spent on campus by whether a student retained or not, with a reference at 50%. Using a dichotomous variable in a study like this helps to interpret the results to impact action as opposed to getting caught up interpreting smaller percentage differences. Table 4 shows the frequency for this variable.

Figure 3
Percent of Weekends Spent on Campus by Retention
Table 4

Frequency of 50% or More of Weekends Spent on Campus

| 50% or more of Weekends Spent on Campus | Frequency | Percent |
|----------------------------------------|-----------|---------|
| Valid                                  | No        | 600     | 21.7    |
|                                        | Yes       | 2166    | 78.3    |
| Total                                  |           | 2766    | 100.0   |

The advising appointment variable indicates whether a student met with their advisor during the spring, or second semester. The reason the Spring semester is included as opposed to the Fall is that in the Fall, this institution has a policy of placing a ‘hold’ on a student’s registration until they meet with their advisor. By the Spring, students can enroll in courses for the following year even if they have not met with their advisor. And while students can and do meet with their advisor several times, it is much more the practice that a student meets once with their advisor, therefore this study includes the dichotomous variable of yes/no. These data also come from the Starfish system and are dichotomous for ‘yes the student met with their advisor’ or ‘no they did not’. All students and advisors are required to use this system for their advising appointments. The system is set up to differentiate when a student meets with their advisor as opposed to setting up an appointment for which they do not attend. Although there is always a chance that there is an inconsistency, it is the protocol that the professional advisors capture whether a student attended any meeting with them, whether it was scheduled or a walk-in. These data are being captured as students in their first two years are assigned a professional advisor before they matriculate to their degree-granting college (DGC). Table 5 below indicates the frequency of students meeting with their
advisor while Figure 4 shows the frequency of advisor meetings for those students who met with their advisor.

Table 5

*Frequency of Meeting with Advisor*

| Attended Spring Advising Appointment | Frequency | Percent |
|------------------------------------|-----------|---------|
| Valid                              | No        | 586     | 21.2    |
| Yes                                | 2180      | 78.8    |
| Total                              | 2766      | 100.0   |

Figure 4

*Histogram of Advisor Meetings*
Research question five analyzes for differences across the ten Engagement Indicators from the NSSE survey (NSSE Indicators). The fixed factor is whether a student was on academic probation or whether they were in good academic standing after their first term. The dependent variables, namely the NSSE indicators, fall under the following four themes: Academic Challenge, Learning with Peers, Experiences with Faculty, and Campus Environment. The ten Engagement Indicators are: Higher-order Learning, Reflective and Integrative Learning, Learning Strategies, Quantitative Reasoning, Collaborative Learning, Discussions with Diverse Others, Student-Faculty Interaction, Effective Teaching Practices, Quality of Interactions, and Supportive Environment. Figure 5 illustrates the NSSE themes and corresponding indicators.

**Figure 5**

*NSSE 2.0 Engagement Indicators*

| Theme                  | Engagement Indicators                                      |
|------------------------|------------------------------------------------------------|
| Academic Challenge     | Higher-Order Learning                                     |
|                        | Reflective & Integrative Learning                         |
|                        | Learning Strategies                                       |
|                        | Quantitative Reasoning                                    |
| Learning with Peers    | Collaborative Learning                                    |
|                        | Discussions with Diverse Others                           |
| Experiences with Faculty| Student-Faculty Interaction                               |
|                        | Effective Teaching Practices                              |
| Campus Environment     | Quality of Interactions                                   |
|                        | Supportive Environment                                    |

Each Engagement Indicator on the NSSE is valued on a 60-point scale, where scores of Never, Sometimes, Often, and Very Often are transformed to values of 0, 20, 40, 60; thus, a score of 0 is the lowest possible value and a score of 60 is the highest score.
possible. A calculation then averages the scores for each of the indicators, including the data from the corresponding survey questions. Although NSSE analyses typically include cross-institutional bench-marking reports, the data in this study are used to compare indicators within this University to better understand how students report on the engagement indicators. As per the fidelity of the instrument, the analyses include the computed weighted average score for each of the ten indicators for each respondent. The descriptive statistics for each engagement indicator are included in Table 6 below.

Table 6

Descriptive Statistics for Engagement Indicators by Academic Probation Standing

| Descriptive Statistics | AP | Mean   | Std. Deviation | N  |
|------------------------|----|--------|----------------|----|
| Academic Challenge_    | 0  | 37.57  | 12.224         | 909|
| Higher Order Learning  | 1  | 36.92  | 12.422         | 60 |
| Total                  |    | 37.53  | 12.231         | 969|
| Academic Challenge _   | 0  | 35.01  | 11.217         | 909|
| Reflective & Integrative Learning | 1 | 37.37  | 12.018         | 60 |
| Total                  |    | 35.16  | 11.276         | 969|
| Academic Challenge _   | 0  | 38.81  | 12.970         | 909|
| Learning Strategies    | 1  | 37.93  | 13.501         | 60 |
| Total                  |    | 38.76  | 12.998         | 969|
| Academic Challenge _   | 0  | 29.35  | 13.986         | 909|
| Quantitative Reasoning | 1  | 30.28  | 14.795         | 60 |
| Total                  |    | 29.41  | 14.031         | 969|
| Learning with Peers _  | 0  | 37.30  | 12.647         | 909|
| Collaborative Learning | 1  | 32.03  | 11.627         | 60 |
| Total                  |    | 36.97  | 12.644         | 969|
| Learning with Peers _  | 0  | 38.66  | 14.413         | 909|
| Discussions with Diverse Others | 1 | 39.10  | 15.489         | 60 |
| Total                  |    | 38.69  | 14.474         | 969|
| Experiences with Faculty _ | 0 | 22.46  | 14.084         | 909|
| Student Faculty Interaction | 1 | 28.50  | 13.726         | 60 |
| Total                  |    | 22.83  | 14.131         | 969|
Experiences with Faculty _ Effective Teaching Practices

|   |   |   |   |
|---|---|---|---|
|   | 0 | 36.63 | 11.671 | 909 |
|   | 1 | 35.62 | 13.092 | 60  |
|   | Total | 36.57 | 11.759 | 969 |

Campus Environment _ Quality of Interactions

|   |   |   |   |
|---|---|---|---|
|   | 0 | 41.15 | 10.337 | 909 |
|   | 1 | 41.85 | 9.882  | 60  |
|   | Total | 41.19 | 10.306 | 969 |

Campus Environment _ Supportive Environment

|   |   |   |   |
|---|---|---|---|
|   | 0 | 36.99 | 12.073 | 909 |
|   | 1 | 38.12 | 11.186 | 60  |
|   | Total | 37.06 | 12.018 | 969 |

The NSSE has been used at colleges and universities across the United States and Canada for twenty years. In 2013, the conceptual framework for the survey was updated to include Engagement Indicators rooted in the college experiences in both academic and social development. The instrument is a self-reported measure of students’ level of participation in activities that have been empirically linked to engagement as well as students’ perceptions of the institutional environment that helps support and scaffold their learning and development. The survey was informed or developed by several researchers and experts in the field of student engagement in higher education, including Ralph Tyler, C. Robert Pace, Alexander Astin, George D. Kuh, Vincent Tinto, Ernest Pascarella and Patrick Terenzini to name only a few (Miller et al., 2016). NSSE focuses on behavioral and perceptual manifestations of the conceptualized elements of student engagement, enabling the results to be more concrete and actionable, which is critical for informing practice. Therefore, the new Engagement Indicators in the 2.0 version that will be used for this study is consistent with this study’s premise of tying theory, research, and practice together. NSSE 2.0 was revised using cognitive interviews and focus groups. The internal consistency of the instrument for first-year students has a Cronbach’s alpha of .76-.88 for the ten Engagement Indicators, with all but one indicator resulting in a >.8
Cronbach’s alpha (NSSE, 2018), indicating a good to high internal consistency. Criterion-related validity studies with student retention data show an average .88 correlation (Sarraf, 2012), supporting a strong and positive relationship. Additional survey studies exist supporting its validity and reliability, as well as its widespread use by colleges and universities (NSSE, 2018).

**Procedures**

It is important to note that this analysis would not have been possible if relying on only one database from this institution. While the institution is data-rich, it does not currently have a data warehouse where all of the data reside in one specified area. An analysis of this kind, using variables from various databases across campus, is novel at this institution. Some institutions do offer data warehouses and others have acquired third-party options for integrating their siloed data. These can be very resource-intensive and expensive and may not be a viable option for all institutions. Additionally, the amount of maintenance needed is critical as institutions re-examine their data and software solutions and make changes periodically which would necessitate updates to the warehouse or data-integration system. Many institutions find themselves in the same predicament as this one in that there are various siloed systems rich with student data that collectively can offer impactful insights.

Various data systems found on campuses can offer ways of measuring engagement through card-swipe data, such as in residence and dining halls, as well as attendance data, such as for faculty and advising appointments (Gross & Meriwether, 2016). Another possible use of digital data is for course-flag data from instructors, indicating an early warning of course performance.
The data for this study were gathered from the housing and residential life database that captures card-swipe data, from academic and enrollment records in the main student information system, from the Starfish system that captures course flag and advising appointments, and from the institutional research data files for the NSSE results. Expedited IRB approval was granted based on securing professional access to the data sets and ensuring the anonymity and safeguarding of the data.

Data Analysis

Research questions one, two and four were analyzed by using hierarchical multiple logistic regression analyses. Logistic regression is an appropriate statistical analysis when the outcome variable is dichotomous (versus continuous) and when we want to predict the probability of the outcome variable, in this case, student retention. Assumptions for logistic regression include independence, multicollinearity, outliers and adequate sample size (Gelman & Hill, 2007). Preliminary analyses on multicollinearity and outliers show that the data do not violate this assumption. The sample size needed for using this statistical method was also met. The independence assumption was not met and therefore in the preliminary analyses, the data were analyzed using Hierarchical Linear Modeling (HLM) to take into consideration nested data. Findings from the HLM and logistic regression did not differ significantly. For the purpose of making the findings easier to communicate, logistic regression was the chosen statistical method. Chi-square analyses allow for testing the models when applying hierarchical multiple logistic regression analyses. There are a few measures to look at when assessing a logistic regression model; the -2loglikelihood measures for deviance and model fit, while the Wald statistic and the odds-ratio are included to determine the magnitude, precision,
robustness, and direction of the estimates (Gelman & Hill, 2007). Although the pseudo R-statistic on its own is not very informative, it can be used along with the above statistics.

Research question three was answered by running an exploratory factor analysis to empirically determine the latent constructs. Conceptually, these four institutional behavioral indicators were hypothesized to indicate both self-efficacy and sense of belonging. Exploratory Factor Analysis (EFA) using principal component extraction and varimax rotation was examined to see whether these variables empirically cluster to these two constructs. EFA contributes to the understanding of how the chosen variables relate to motivation to persist in the conceptual model.

A multivariate test was used to analyze the data for research question five, minimizing the possibility of a Type 1 error. The F statistic, along with Wilk’s Lambda and partial Eta Squared were used to determine whether there were any significant differences in engagement across the two sub-groups of students. The pairwise comparisons then provided more detail as to the direction of any statistically significant differences. Table 7 organizes the data and analytical approaches for each research question in this study.

Table 7

*Data and Analyses by Research Question*

| Research Question | Data                                      | Analytical Approaches                                                                 |
|-------------------|-------------------------------------------|---------------------------------------------------------------------------------------|
| RQ1. How does first-generation status or low-SES status impact first-year retention? | Student records from student information system | Entry 1 of hierarchical multiple logistic regression; -2loglikelihood, the Wald statistic, the odds-ratio, confidence-interval and pseudo R-statistic; chi-square analysis for model test |
| Research Question                                                                 | Data                                                                 | Analytical Approaches                                                                                                                                 |
|---------------------------------------------------------------------------------|----------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|
| RQ2. While accounting for the above variables, how does college-affiliation—based on different admission criteria and curriculum--contribute to explaining retention? | Student records for college-affiliation as of beginning of first semester | Entry 2 of hierarchical multiple logistic regression: -2loglikelihood, the Wald statistic, the odds-ratio, confidence-interval and pseudo R-statistic; chi-square analysis for model test |
| RQ3. What are the latent constructs of the four institutional behavioral variables? | Student records for Academic Probation status; card-swipe data from residential life; advising and course-flag data from Starfish system | Principal Component (Exploratory) Factor Analysis; eigenvalues, component plot, and rotated component matrix                                                |
| RQ4. How do behavioral indicators collected in institutional data--representing both the academic and social aspects of campus life--help further explain and predict first-year retention? | Student records for Academic Probation status; card-swipe data from residential halls; advising and course-flag data from Starfish system | Entry 3 of hierarchical multiple logistic regression: -2loglikelihood, the Wald statistic, the odds-ratio, confidence-interval and pseudo R-statistic; chi-square analysis for model test |
| Research Question | Data | Analytical Approaches |
|-------------------|------|-----------------------|
| RQ5. Compared with students in good academic standing, how does student engagement more specifically differ for students on academic probation? | Student records and NSSE data results | F statistic, Wilk’s Lambda and partial Eta Squared for testing the null hypothesis that there are no differences against the alternative hypothesis that suggests there is a difference in engagement for students on academic probation when compared with students in good academic standing; pairwise comparisons will then provide direction and magnitude of any significant differences found; post-hoc analyses will analyze for differences at the question-level for those engagement indicators that are found to be statistically significant |
Chapter 4

Results

This chapter reports the findings generated by this study. Since this study proposes an action-focused model and this dissertation purports to tie retention theory, research and practice, this researcher has chosen to organize the results in a layered fashion as introduced by the proposed model and through the research questions.

Based on the literature, this study first examines the impact of first-generation status and low SES on student persistence as measured by first-year retention. Next, the effect of college affiliation on retention is examined. Then, the findings of the factor analyses are presented, to explore whether the selected institutional variables represent latent constructs. The results of adding the four institutional behavioral variables to the model are subsequently evaluated.

Lastly, the engagement analyses for students on academic probation are examined. With minimal scholarly research and understanding about students on academic probation, and yet with such low levels of persistence, this researcher felt it was critical to gain a better understanding of this particular group of students so as to have greater impact in practice.

The data were analyzed using SPSS v.27. Appendix A includes additional descriptive statistics for the cohort of students included in this study for research questions 1-4. The results are organized by the research question.
**Effects of First-generation Status or Low SES Status on First-year Retention**

The classification table for the null model, with no variables included, is summarized in Table 8 below. Without any predictor variables, the base model predicts 84% of the retention—namely, it predicts students who retain, but does not offer any predictive capacity for students who do not retain. In other words, without any predictor variables in the model, the model predicts that all students will persist and therefore correctly predicts 100% of the students who retain and does not predict correctly for any (0%) of the students who will not retain. This model offers no opportunity for predicting nor understanding the students who do not persist, and therefore lacks specificity and sensitivity. The -2loglikelihood for the null model is 2423.75.

**Table 8**

*Classification Table of Logistic Regression Analysis for Null Model*

| Classification Table<sup>a,b</sup> | Predicted |
|-------------------------------------|-----------|
|                                     | Retain    | Percentage Correct |
| Observed                            |           | No | Yes |           |
| Step 0 Retain                       | Retain    | 0  | 440 | .0        |
|                                    | No        | 0  | 2326| 100.0     |
| Overall Percentage                  |           |    |     | 84.1      |

a. Constant is included in the model.
b. The cut value is .500

The first two predictor variables, first-generation status and low SES, were then added to the null model. This model with first-generation and low SES was statistically significant, chi-square (2) = 7.175, p < .05. The -2loglikelihood was reduced to 2416.57 from 2423.75. Though this model was significant, it only helped explain less than 1%
(Nagelkerke R Square) of the variance in retention. Adding the two variables had no effect on the sensitivity and specificity of the predictions as they remained the same as the null model; they both only predicted for students who retained. Furthermore, neither of the coefficients for these variables were statistically significant in the model, as shown in Table 9 below. Although the coefficients were negative, signaling the negative relationships between first generation status or lower SES and retention, they did not reach the significance level. Moreover, the confidence interval shows that equal probability of retention (1) is within the intervals. To note, holding low SES constant, the probability that a student with first-generation status persists is .82 compared to .85 for a multi-generation student. Likewise, holding first-generation status constant, a student with low SES has a .82 probability of persisting compared to .85 for students with higher SES.

Table 9

Model Summary for Adding First-generation and Low SES to Logistic Regression Model

| Variables in the Equation | B   | S.E. | Wald  | Exp(B) | 95% C.I. for EXP(B) |
|---------------------------|-----|------|-------|--------|---------------------|
| Step 1<sup>a</sup>        |     |      |       |        | Lower   | Upper   |
| First Gen                 | -.216| .119 | 3.298 | .805   | .638    | 1.017   |
| Low SES                   | -.177| .130 | 1.861 | .838   | .650    | 1.080   |
| Constant                  | 1.765| .065 | 734.648| 5.841  |         |         |

a. Variable(s) entered on step 1: First Gen, Low SES.

Despite that past research has shown first-generation status and low SES to be significant predictors of retention, these variables were not as significant for predicting first-year retention at this institution in this study. It is possible that perhaps institutions, like the one in this study, are making strides in better supporting first-generation and low
SES students and therefore providing an experience that is conducive to a positive motivation to persist. It is likely that first-generation or lower SES are not the determining factors for retention per se and that capturing factors that relate to these students’ experience on campus is a more important factor to explain the differential retention rates for these groups.

**Effects of College-affiliation**

Adding college-affiliation to the model also resulted in a statistically improved model, chi-square (1) = 50.742, p < .001. With this next level of the model, the -2loglikelihood was reduced to 2365.828. Once again, though this model was significant, it only helped explain less than 4% (Nagelkerke R Square) of the variance in retention. And like the previous model, adding college-affiliation had no effect on the sensitivity and specificity of the predictions as they remained the same as the null model, namely only predicting for students who retained. The coefficient for college-affiliation, however, was statistically significant in the model, as shown in Table 10 below.

**Table 10**

*Model Summary for Adding College-Affiliation to Logistic Regression Model*  

| Variables in the Equation | B    | S.E. | Wald  | Exp(B) | 95% C.I.for EXP(B) |
|---------------------------|------|------|-------|--------|-------------------|
|                           | 95% C.I.for EXP(B) | Lower | Upper |
| Step 2                    |      |      |       |        |                   |
| First Gen                 | -.187| .120 | 2.418 | .830   | .656              | 1.050  |
| Low SES                   | -.154| .131 | 1.390 | .857   | .663              | 1.107  |
| College-Affiliation       | 1.052| .165 | 40.837| 2.865* | 2.074            | 3.956  |
| Constant                  | 1.576| .069 | 525.167| 4.835  |                   |       |

* Significance < .0001
The coefficients in the logistic regression analysis are on a log scale, therefore they are difficult to interpret. When reviewing logistic regression results, we are then prompted to look at the Exp(B) and 95% Confidence Interval (CI). The Exp(B), or the exponents of the logs, help us make sense of the relationship for each variable as it relates to retention and provide us with the odds ratio. In this case, adding college-affiliation to the model suggests that students in a college with a higher admission and curriculum criterion increases a student’s likelihood of retaining almost three times (with a 95% CI of 2.1-4.0) that of a student admitted into a college with regular criteria, when other things are equal. This variable was included in order to capture contextual differences that can impact a student’s experience, and therefore their desire to persist. Though this variable does not capture these differential experiences, it still remains important to see how much college-affiliation can impact student persistence. Controlling for first-generation and SES status, students enrolled in a college with a higher rigor curriculum have a .93 probability of persisting as compared with a .81 probability of persisting for students enrolled in a college with regular curriculum.

**Latent Constructs of the Four Institutional Behavioral Variables**

It is important to first examine the latent constructs by determining how the variables are clustered. Exploratory Factor Analysis (EFA) using principal component extraction and varimax rotation were used to understand the latent constructs of the four institutional behavioral variables: Course Flag, Academic Probation, Weekends on Campus and Advisor Meeting. With the eigenvalue greater than 1 rule, two factors were
extracted. Factor structure after rotation is presented in Table 11 and the component plot is shown in Figure 6.

Table 11

Rotated Component Matrix

| Component | 1    | 2    |
|-----------|------|------|
| Course Flag | .832 | -.125 |
| Academic Probation | .768 | .236 |
| Weekends on Campus | .145 | .738 |
| Advising | -.061 | .787 |

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.
a. Rotation converged in 3 iterations.

Figure 6

Factor Analysis Component Plot
The factor loading on their respective factors are bolded. All items had high loadings on their respective factors with average factor loadings of .78 and weak loadings on all other factors (absolute average factor loadings = .14). This clear pattern of loadings supported the underlying two-factor model as theoretically valid and empirically distinct. The two-factor model explained 64% of the total variance. It seems the ‘Course Flag’ and ‘Academic Probation’ variables (academic standing) for this study are tied to self-efficacy (academic adaptation) and ‘Weekends on Campus’ and ‘Advisor Meeting’ (engagement) are tied to sense of belonging (social adaptation) to capture a student’s motivation to persist as proposed in this study’s model. The use of behavioral indicators for the constructs of self-efficacy and sense of belonging is unique in this study, quite different from prior studies, but at least factor structure from the EFA shows that these variables form two distinct factors, which provides empirical support for the theoretical constructs.

**Effects of Institutional Behavioral Indicators Representing Both the Academic and Social Aspects of Campus Life on Predicting First-year Retention**

The four institutional behavioral variables relating to students’ motivation to persist are then added to this study’s model. The omnibus test showed that a block of these four institutional variables significantly contributed to predicting retention (chi-square (4) = 575.699, p<.001). This time, the -2 loglikelihood was reduced to 1790.130 and the improved model helped explain 35% (Nagelkerke R Square) of the variance in retention. The specificity and sensitivity were also much improved. The correct prediction of students who did not persist went from 0% to 43.9% and the prediction of students who did persist only dropped to 97.5%. The overall percentage for correct
prediction was 89.0%, shown in Table 12. This model not only helps to predict students who persist, but it also does a much better job of predicting students who will not persist, which is critical. Each of the coefficients for these four variables is statistically significant in the model, as shown in Table 13.

Table 12

Classification Table for Adding Institutional Variables to Logistic Regression Model

| Observed | Predicted | Percentage Correct |
|----------|-----------|---------------------|
| Retain   | Retain    | No                  | Yes                  | 43.9 | 97.5 |
| Step 3   | Retain    | 193                 | 247                  |      |      |
|          | Retain    | 58                  | 2268                 |      |      |
| Overall Percentage |              |                     |                      | 89.0 |      |

a. The cut value is .500

Table 13

Model Summary for Adding Institutional Variables to Logistic Regression Model

| Variables in the Equation | B     | S.E.  | Wald  | Exp(B) | 95% C.I. for EXP(B) |
|---------------------------|-------|-------|-------|--------|---------------------|
| Step 3 First Gen         | .026  | .141  | .034  | 1.026  | .779 1.353          |
| Low SES                  | -.090 | .153  | .343  | .914   | .677 1.235          |
| College-Affiliation      | .985  | .184  | 28.772| 2.677* | 1.868 3.836         |
| Course Flag              | -.698 | .163  | 18.314| .498*  | .362  .685          |
| Academic Probation       | -1.431| .178  | 64.840| .239*  | .169  .339          |
| Weekends on Campus       | 1.603 | .127  | 159.471| 4.969* | 3.874 6.372         |
| Advising                 | 1.713 | .129  | 175.560| 5.548* | 4.306 7.148         |
| Constant                 | -.426 | .139  | 9.334 | .653   |        |

a. Variable(s) entered on step 3: Course Flag, Academic Probation, Weekends on Campus, Advising.

* Significance < .0001
Controlling for all other variables, a student receiving a course flag has a .83 probability of persisting compared to .91 for a student who does not receive a course flag. The probability for students on academic probation to persist is .70 as compared with .91 for students in good academic standing after their first semester. Students spending at least 50% of their weekends on campus have a .92 probability of persisting while their counterparts have a .71 probability of persisting. And, lastly, controlling for all other variables, students who meet with their advisor during the spring semester have a .92 probability of persisting compared with students who do not meet with their advisor in the Spring, who have a .69 probability of persisting.

These results suggest that students who receive a course flag in at least one of their courses retain at half the rate compared with the student who does not receive any flags. When a student finds themselves on Academic Probation after their first semester on campus, they are 76% less likely to persist than a student in good academic standing, with a 95% CI of 66% to 83% less likely to persist. While there are some students who are not ready for college at this time of their lives, there are many students who instead lose their self-efficacy, which can then impact their abilities or desire to persist. Also, at this point, if a student does not feel like they belong, they too will be less inclined to devote adequate time and energy for their studies, resulting in academic breakdown.

On the other hand, the likelihood for students who spend at least 50% of their weekends on campus to persist increases five-times, with a 95% CI of 3.9-6.4 times. It would seem that engaging students and offering a campus which they can and want to remain on greatly helps in their motivation to persist. While that is not a surprise, perhaps understanding the extent of the difference in retention helps to highlight the
importance. The same goes for students who meet with their advisors in the Spring prior to leaving campus for the Summer. A student who meets with their advisor in the Spring is 5.5 times more likely to persist than a student who does not meet with their advisor, with a 95% CI of 4.3-7.1 times. Institutions are aware that advising is critical for students, but again, this highlights just how critical it is, especially for a student who may need help in understanding how to stay on a successful pathway after a failed class, or from ending up on Academic Probation. As stated, institutions have complex policies around second-grade options and Federal Aid requirements, to name a few. Many students also need advising when it comes to choosing an appropriate major or deciding whether changing their major can offer them an alternate pathway to success in attaining their degree. Offering ways to support a student’s self-efficacy and sense of belonging goes a long way to enhancing their motivation to persist. Students who enter college want to earn their degree, and therefore reinforcing that desire seems to be left to their experiences on campus.

Adding these four predictor variables to the model also slightly decreased the impact of college-affiliation, indicating that the institutional behavioral variables are important despite being in a college with higher admission and curriculum criteria. These variables from both academic and student affairs were found to be significant predictors of retention. And though they are proxy variables and may not be the best indicators of self-efficacy and sense of belonging, by using routinely collected institutional data, this study was able to show the significant effects of these variables on first year retention. Table 14 shows the results for each of the hierarchical logistic regression analyses in one table.
Table 14

Hierarchical Regression Analyses Results by Step

| Variables in the Equation | B    | S.E. | Wald     | Exp(B) |
|---------------------------|------|------|----------|--------|
| Step 0                    | Constant | 1.665 | 0.052    | 1025.904 | 5.286   |
| Step 1                    | First Gen | -0.216 | 0.119    | 3.298   | 0.805   |
|                            | LowSES   | -0.177 | 0.130    | 1.861   | 0.838   |
|                            | Constant | 1.765 | 0.065    | 734.648 | 5.841   |
| Step 2                    | First Gen | -0.187 | 0.120    | 2.418   | 0.830   |
|                            | LowSES   | -0.154 | 0.131    | 1.390   | 0.857   |
|                            | College_Affiliation | 1.052 | 0.165    | 40.837  | 2.865*  |
|                            | Constant | 1.576 | 0.069    | 525.167 | 4.835   |
| Step 3                    | First Gen | 0.026 | 0.141    | 0.034   | 1.026   |
|                            | LowSES   | -0.090 | 0.153    | 0.343   | 0.914   |
|                            | College_Affiliation | 0.985 | 0.184    | 28.772  | 2.677*  |
|                            | Course Flag | -0.698 | 0.163    | 18.314  | 0.498*  |
|                            | Academic Probation | -1.431 | 0.178    | 64.840  | 0.239*  |
|                            | Weekends on Campus | 1.603 | 0.127    | 159.471 | 4.969*  |
|                            | Advising | 1.713 | 0.129    | 175.560 | 5.548*  |
|                            | Constant | -0.426 | 0.139    | 9.334   | 0.653   |

95% C.I. for EXP(B)

| Lower | Upper |
|-------|-------|
| 0.638 | 1.017 |
| 0.650 | 1.080 |
| 2.074 | 3.956 |
| 0.656 | 1.050 |
| 0.663 | 1.107 |
| 2.074 | 3.956 |
| 0.656 | 1.050 |
| 0.663 | 1.107 |
| 2.074 | 3.956 |
| 0.656 | 1.050 |

* Significance < .0001;
**Significance < .01

Engagement for Students on Academic Probation

The above results support that being on academic probation after the first semester has a significant and profound impact on retention. We now turn to analyzing the NSSE data for a better understanding of the differences in engagement for this student population. Of the 969 students who completed the survey from the 2018 first-year
cohort, 60 students were identified with a GPA of less than 2.0, thereby placing them on Academic Probation. The remaining 909 students were in good academic standing. The multivariate test resulted in a statistically significant difference in engagement based on a student’s academic standing, F(10, 958) = 3.99, p<.001; Wilk’s Lambda = .960, partial Eta Squared = .040, indicating a medium effect size. The results of the multivariate t-tests for the ten engagement indicators are displayed in Table 15.

Table 15

Results of the Pairwise Comparisons for the ten NSSE Engagement Indicators

| Pairwise Comparisons | 95% Confidence Interval for Difference |
|----------------------|--------------------------------------|
| **Dependent Variable** | **(I)** | **(J) | **Mean Difference (I-J) | **Std. Error | **Lower Bound | **Upper Bound** |
| Academic Challenge _Higher Order Learning | AP | AP | .652 | 1.631 | -2.549 | 3.853 |
| Academic Challenge _Reflective & Integrative Learning | 0 | 1 | -2.352 | 1.502 | -5.300 | .595 |
| Academic Challenge _Learning Strategies | 0 | 1 | .879 | 1.733 | -2.523 | 4.280 |
| Academic Challenge _Quantitative Reasoning | 0 | 1 | -.930 | 1.871 | -4.602 | 2.741 |
| Learning with Peers _Collaborative Learning | 0 | 1 | 5.265* | 1.678 | 1.972 | 8.557 |
| Learning with Peers Discussions With Diverse Others | 0 | 1 | -.441 | 1.930 | -4.229 | 3.347 |
| Experiences with Faculty _Student Faculty Interaction | 0 | 1 | -6.045* | 1.874 | -9.723 | -2.366 |
| Experiences with Faculty _Effective Teaching Practices | 0 | 1 | 1.018 | 1.568 | -2.059 | 4.095 |
The results indicate that for students on Academic Probation, their perception of their engagement in ‘Collaborative Learning’ is significantly lower than their counterparts in good academic standing. On the other hand, students on Academic Probation perceived their engagement for ‘Student-Faculty Interaction’ as higher than their counterparts. To note, though the ‘Student-Faculty Interaction’ is higher for students on Academic Probation, the averages for this indicator are the lowest of all the engagement indicators.

In order to understand better what these results mean, it is helpful to know the questions pertaining to each of these engagement indicators (see Appendix B for questions for each of the indicators). For the ‘Collaborative Learning’ indicator, students were asked to rate the extent to which they engaged in the following: (1) asked another student to help you understand course material; (2) explained course material to one or more students; (3) prepared for exams by discussing or working through course material with other students; (4) worked with other students on course projects or assignments. These are all critical to deep learning and it would indicate that students on academic probation are missing out on these opportunities to engage with their peers on projects and topics being learned in the classroom.
The ‘Student-Faculty Interaction’ questions were how often during the school year the student engaged in: (1) talking about career plans with a faculty member; (2) working with a faculty member on activities other than coursework (committees, student groups, etc.); (3) discussing course topics, ideas, or concepts with a faculty member outside of class; (4) discussing your academic performance with a faculty member.

While it is great that students on Academic Probation view their engagement with faculty as higher than their peers, the concern would be if they view this as a proxy for the professional advising that would help them when it comes to understanding a larger view with action steps of a successful pathway forward.

Post-hoc tests were examined for differences at the question level for both the Collaborative Learning and the Student-Faculty Interaction engagement indicators. The results of the post-hoc multivariate analyses are displayed in Table 16 while Table 17 shows the descriptive statistics. When examining the Collaborative Learning engagement indicator, explaining course material to other student(s) and studying for exams by working through the course material with other students contributed to this indicator being significant. Students on academic probation reported lower rates on these particular questions relating to collaborative learning when compared with students in good academic standing. Statistically significant differences were found for discussed aspects of the course with a faculty member outside of the class and discussed academic performance with a faculty member from the Student-Faculty Interaction engagement indicator. For these questions, however, students on academic probation reported significantly higher engagement when compared with students in good academic standing.
Table 16

Results of the Post-hoc Tests for Collaborative Learning and Student-Faculty Interaction Questions

Tests of Between-Subjects Effects

| Dependent Variable                 | Mean Square | F   | Partial Eta Squared |
|------------------------------------|-------------|-----|---------------------|
| Collaborative Learning-ask help    | 650.821     | 2.560 | .534                |
| Collaborative Learning-explain     | 2905.514    | 11.917** | .533                |
| Collaborative Learning-study       | 3334.553    | 10.565** | .447                |
| Collaborative Learning-project     | 432.235     | 1.801 | .553                |
| Student-Faculty Interaction-career plans | 820.205 | 2.326 | .358                |
| Student-Faculty Interaction-other work | 1190.759 | 3.651 | .200                |
| Student-Faculty Interaction-discuss topics | 1866.083 | 6.053* | .311                |
| Student-Faculty Interaction-discuss performance | 5718.000 | 18.016** | .392                |

*Significance = .01; **Significance = .001
### Table 17

*Descriptive Statistics for Collaborative Learning and Student-Faculty Interaction Questions*

|                        | AP | Mean | Std. Deviation | N  |
|------------------------|----|------|----------------|----|
| **Collaborative Learning**-ask help |    |      |                |    |
| 0                      | 0  | 37.07| 16.088         | 909|
| 1                      | 1  | 33.67| 13.525         | 60 |
| Total                  |    | 36.86| 15.956         | 969|
| **Collaborative Learning**-explain** |    |      |                |    |
| 0                      | 0  | 38.18| 15.574         | 909|
| 1                      | 1  | 31.00| 16.229         | 60 |
| Total                  |    | 37.74| 15.702         | 969|
| **Collaborative Learning**-study** |    |      |                |    |
| 0                      | 0  | 36.96| 17.837         | 909|
| 1                      | 1  | 29.27| 16.623         | 60 |
| Total                  |    | 36.49| 17.853         | 969|
| **Collaborative Learning**-project |    |      |                |    |
| 0                      | 0  | 37.10| 15.395         | 909|
| 1                      | 1  | 34.33| 16.911         | 60 |
| Total                  |    | 36.93| 15.499         | 969|
| **Student-Faculty Interaction**-career plans |    |      |                |    |
| 0                      | 0  | 27.18| 18.674         | 909|
| 1                      | 1  | 31.00| 20.311         | 60 |
| Total                  |    | 27.42| 18.791         | 969|
| **Student-Faculty Interaction**-other work |    |      |                |    |
| 0                      | 0  | 16.40| 17.855         | 909|
| 1                      | 1  | 21.00| 20.968         | 60 |
| Total                  |    | 16.69| 18.085         | 969|
| **Student-Faculty Interaction**-discuss topics* |    |      |                |    |
| 0                      | 0  | 21.58| 17.453         | 909|
| 1                      | 1  | 27.33| 19.122         | 60 |
| Total                  |    | 21.93| 17.605         | 969|
| **Student-Faculty Interaction**-discuss performance** |    |      |                |    |
| 0                      | 0  | 24.59| 17.927         | 909|
| 1                      | 1  | 34.67| 15.994         | 60 |
| Total                  |    | 25.21| 17.971         | 969|

*Significance = .01; **Significance = .001

The sample of students who completed the NSSE represented approximately 24% of the students identified on Academic Probation, compared with a response rate of 30% for their counterparts. This, in itself, may be viewed as an indication of generally lower engagement with their campus community.
Chapter 5

Discussion

In this chapter you will find a summary of the findings and policy implications, as well as limitations of this study and recommendations for future research. Lastly, conclusions from this study are shared.

Summary

The findings show that students who receive at least one course flag during their first semester are half as likely (CI = .36-.69) to persist compared with a student who is not struggling in their class while holding other variables constant. If a student is struggling so much that they find themselves on academic probation after their first semester, they are 76% (CI = 66%-83%) less likely to persist. This clearly shows that academic integration to institutions plays an important role in students’ persistence. However, students who spend at least 50% of their weekends on campus are five times as likely to persist (CI = 3.9-6.4), as are students who meet with their advisor in the Spring (CI 4.3-7.2). It appears that social belonging plays an even more important role in students’ decision to persist. Students enrolled in a college that has higher admission and curriculum criteria are almost three times more likely to persist (CI = 2-4) than students enrolled in a college with regular criteria. The model proposed in this study accounts for the differences in retention for first-generation students or students with low SES, as well as for students admitted to colleges based on different entrance criteria. However, literature-supported disadvantages of first-generation or low SES in retention were not observed at this institution. And the negative effects of these variables got smaller when
other variables were entered into the model (see Table 14). That is, first-generation or low SES status per se are not the significant factors for first-year retention, at least at this institution, and their disadvantages get smaller when behavioral variables such as academic self-efficacy and social belonging are accounted for. Creating a campus culture, complete with practices and policies, in which students want and can stay on campus on the weekends and meet with their advisor would make a bigger difference in their motivation to persist than their demographic characteristics as first-generation status or low SES.

The NSSE results suggest the engagement indicator that is perceived as lower for students on academic probation compared with their counterparts in good standing is ‘collaborative learning’. Post-hoc tests suggest that, in particular, students on academic probation reported lower rates of engagement in explaining course materials to other students and preparing for exams by discussing or working through course materials with other students. And while students on academic probation perceive higher engagement with faculty, perhaps there is room to improve this as this was the lowest rated engagement indicator of all ten. It is somewhat reassuring that students on academic probation are reporting greater time spent interacting with faculty discussing their course learnings outside of class and discussing their academic performance; however, one could argue that they would benefit also from talking about their career plans with faculty as well as connecting with faculty on activities other than coursework, significantly more than students in good academic standing. If we combine these two indicators, we could look to faculty to take a more active role in ensuring that group work is occurring for all students. Sometimes assigning students to a group and assigning a group project doesn’t
necessarily mean that all students are actually working in a group as students easily form new groups on their own, leaving other students out. If the students who are left out of a group do not find a new group to take part in, they may end up doing more work on their own and missing out on the benefit of learning from and with their peers. Even when students are assigned to a group, an active collaboration among peers is not guaranteed unless there are structures and procedures in place to make sure all students are working towards a common goal and dependent on each other (interdependence).

**Implications for Practice and Policy**

For the cohort and institution included in this study, first-generation status and lower SES variables did not show to be meaningful ways of capturing differences in persistence. Although this study did not examine whether this institution was successful in proving a supportive environment for these students, it is good news in the right direction for higher education policy makers. Students’ affiliation with colleges known to have admission and curriculums that are more rigorous showed to significantly, but very slightly, help predict persistence. The institutional behavioral variables, however, did help to significantly predict persistence, increasing the sensitivity and specificity of the predictions. This means that using widely available variables that span across academic and student affairs helps to both predict student persistence and students at risk of not persisting. By using available data, students can be recognized as early as their first semester who are at risk of not persisting, such as by identifying students who received course flags, or more significantly, identifying students who go on academic probation as a result of their first semester GPA. Additionally, this study shows that ensuring students are engaged enough to want to spend at least half of their weekends on
campus makes a big difference in their motivation to persist. Just as, if not more important, is ensuring that students meet with their advisors at least once during their Spring semester. The results from this study also indicate that students on academic probation need to be better supported to collaborate with their peers when it comes to discussing their coursework as well as when preparing for exams.

Students on Academic Probation who completed an academic success course that positively impacted their levels of hope ended their semester with an average GPA of 2.03, up from an average GPA of 1.71 (Seirup & Rose, 2011). To create a feeling of hope, a motivational and empowerment model that focuses on the following four key areas showed significant retention and GPA improvements when utilized with students on Academic Probation: personal responsibility, positive affirmations, goal setting/life planning, and self-management (Kamphoff et al., 2007). Another model, offering the opportunity for insight--operationalized as reflecting on financial, family, and social situations, in addition to providing an intrusive advising model that required at least three meetings, a contractual agreement, and meeting jointly with course instructors as well as campus academic resources, showed an average increase in end-of-semester GPA of 0.61 points (Schee, 2007). While Kirk-Kuway and Nishida (2001) found that high-advisor involvement was more helpful than low-advisor involvement, ultimately it was with additional cross-institutional interventions and intrusiveness that students showed the highest positive impact on academic performance and retention, with semester GPA’s averaging 2.96 for the high-involvement group compared to 1.15 with the low-involvement group. Students in the high-involvement group admitted to appreciating the intrusiveness and expressed feeling a higher accountability as well as feeling that the
institution cared about them. One study was able to demonstrate higher academic achievement and higher retention rates by implementing a mandatory credit-bearing success course for students—49% of students who took the success course, compared to only 9% of students who did not take the course, were off probation by the end of their first year, with similar results for subsequent years. The four-to-five-year graduation rate for students who took the course was 25% as compared with only 2% who did not take the course. The researchers credit their success to incorporating applied retention theories in the curriculum of their course (McGrath & Burd, 2012). An individualized student support program, informed by positive psychology that used a strengths-based advising model, focused on helping students clarify study goals, identify their strengths and determine how they might apply those strengths towards successful study strategies. The results of the study demonstrated that 70% of the students in the intervention group successfully completed their courses as compared with only 56% of the students in the non-intervention group; additionally, the students in the intervention group indicated high levels of student satisfaction with the program (Ross, 2012).

The research shows that there is a need to inform students of their jeopardized academic standing in a transparent way as early as possible. The communication needs to be strengths-based and in a manner that acknowledges that the student’s academic standing does not define them but can inform them that something needs to change. The institution needs to provide a program that offers defined steps that need to be taken tailored to the student, with the support to achieve the steps and a means of tracking accountability. The institution also needs to work toward a culture that understands and supports these students at the classroom level, with pedagogy and grading practices that
support student success for all students. The culture of support goes beyond the classroom and can be augmented through activities, collaborations and co-advising with staff from Student Affairs to support the work done in Academic Affairs. And institutions need to be mindful of policies, such as second-grade options, that although are meant to be helpful, can create barriers for students who are already struggling and taxed with the additional responsibility of improving their academic performance.

Through a concerted effort and desire to understand the students at an institution and a commitment to providing all students with the opportunity to be academically successful, a culturally responsive culture can be created and strengthened so that all students feel like they belong there and that they can succeed, inherently increasing students’ motivation to persist and graduate.

On a policy level, these findings call for the early identification of these students, with a plan that supports collaborative and cohesive efforts across campus, with relationship building efforts that ensures students connect with their peers on what they are learning. Evaluating early alert efforts and practices is a good start to understanding the extent that these students are being supported and how early alert efforts can be further supported. Clearly prioritizing early alert efforts can make a significant impact. Understanding what resources it would take to ensure early alert is able to coordinate efforts across both academic and student affairs to better support these students is key. In this manner, policy can be made that enables early alert to collaborate with and ensure supports are in place for students such as in academic success courses, tutoring that is embedded within student courses, engagement on campus through their residential experience, social connectedness, and collaborative learning with peers. Faculty and
advisors are critical to supporting these students and helping them feel a sense of belonging. While there is support for academic success, the more critical part is ensuring that these students feel that they belong. Residential life can intentionally support the development of social connections and relationships through living and learning communities. Having a robust living and learning community and first-year experience that supports peer-to-peer relationships as well as introduces and connects students to their major and college can be an effective means of supporting a sense of belonging for students. While many students are not able to enroll in a course for their major during their first year on account of fulfilling prerequisites, the living and learning community and first-year seminar would offer other opportunities of developing a connection with the faculty and with students’ academic goals during that critical first year.

Proactive and intrusive advising that calls for reaching out to these students is also imperative. Discussing how students can develop a pathway to success and what that looks like is important and needs to happen as soon as possible in the spring semester. Not only does advising need to focus on helping students create a pathway to success, but it also needs to incorporate discussions about career paths and social connectedness. Universities are becoming more attuned to the need for helping students develop and maintain healthy relationships with their peers, especially ones in which they learn together. Faculty can also help in these efforts within their classrooms by engaging students through peer connections.

In regard to practice and policy as it relates to data collection or analysis perspective, there are other variables that could be interesting and instrumental to include in future studies that would inform practice and policy. Other engagement variables,
such as student participation in student organizations, clubs and sports, as well as attendance at student affairs sponsored activities might give additional insight. Dining hall data indicating whether students are eating in the dining halls and possibly interacting with other students as opposed to grabbing meals on the go could also be informative. Student attendance in their courses as well as usage of the library facilities would be good indicators to include to further understand academic standing. Other data to further analyze for on-campus engagement could include whether students have jobs off-campus and whether they are enrolled in courses that offer experiential learning opportunities during their first year.

Limitations and Future Considerations

This study includes a first-year cohort of students who reside on campus and who were not admitted through an access program. Therefore, this study does not include students who were admitted through an access program, students who commute to campus, or non-traditional adult students. In addition, this study examined first-year retention, therefore it does not examine the retention of transfer students, as well as students in their second or more year of attending college. Future studies on capturing sense of belonging after the first year may also shed light on how to better support students in their development on campus.

This study used institutional behavioral data and these variables are somewhat different from traditional variables used to capture self-efficacy and sense of belonging. The variables used in this study are proxies that are routinely collected and currently available at the intuition. Perhaps there are other institutional variables that offer additional insight regarding a student’s experience and their engagement.
we consider how important collaborations with peers is and how we might want to capture that information. This study does not address these, and this is one of the limitations of the study.

Another limitation in this study is how contextual differences in colleges was captured. With the data available, it made sense to group the colleges by their shared level of rigor. However, a different and perhaps more constructive way would be by understanding the sub-cultures of each college and how they contribute to the student experience. There were no variables collected to explore the different climate and experience students share at the college level. Campuses are now collecting data through climate surveys which may offer a deeper understanding of how the climates in each college can further impact a student’s motivation to persist. Other means of capturing differences in within-college experiences could be measured through the extent that the various colleges include a connection to their college within their curriculum in that first year, whether through a first-year seminar, through an active living and learning community, or even whether first-year students are able to enroll in a course that it is directly tied to their major. Hierarchical linear modeling using college-level variables, such as from a climate survey or the first-year experience tying in with their major, may provide additional information that is more conducive to impacting practice and policy at the college level. Perhaps differences such as being undecided with their major would indicate a greater impact for students not included in this study’s cohort. As such, the results in this study were not as informative in regard to practice and policy at the college level.
Analyses that examine possible interaction effects among first-generation and low SES with the institutional behavioral variables would be informative. The fitted model suggests a change in direction, at least for first-generation status, and merits further analysis to better understand the relationship, whether a possible moderating or mediating effect, as they relate to the behavioral variables. This could have further implications for practice, especially as it pertains to supporting equity.

Another limitation of this study is that it is purely quantitative. Experiences and campus climate are difficult to fully capture in numbers. For example, interviewing students about their college experience would be beneficial to understand their experience more deeply. In the future, interviewing students, especially first-generation and low SES students, and students with course flag and on academic probation, about their college experience and the supports their university did or did not provide would be highly recommended.

**Conclusion**

Attending college means different things to different students, but for many it offers a chance to follow a passion, to grow as an individual and/or improve their job prospects. For students who are first-generation or come from lower socioeconomic backgrounds, it can mean much more, such as an opportunity for upward mobility. The first year in college can include additional unanticipated challenges for these students that may impact their self-efficacy and their sense of belonging. And while institutions of higher education are becoming more aware of differences in the student experience while attending college, and retention theories ask that institutions do more to support their students’ success, it is still a challenge to know how to support students in an impactful
way. One way, as presented in this study, is to better understand how institutional variables, captured throughout the first year, can point to ways an institution can identify students who may wain in their desire to persist so that the proper support can be provided in a timely and meaningful way for these students before they leave campus for the summer. These institutional predictor variables can indicate whether a student’s motivation to persist might be compromised. The question then becomes, is identifying students in need of help after their first semester and supporting their self-efficacy and sense of belonging enough to overcome the additional challenges inherent in some students’ experience during their first year?

Students who receive a flag in one or more of their courses during the first Fall semester have half the rate of persisting, and students who are on academic probation after their first semester are 76% less likely to persist to their second year. While these are not surprising findings, they provide empirical evidence from large-scale data of academic risk factors for retention. In this way, this study offers needed data to help fill the gap in the literature on examining the relationship between academic probation and retention.

However, there is much more that can be gleaned from this study and therefore inform a supportive college experience. While a course flag and academic probation can be indicative of a student’s lack of readiness for college, it is also indicative of a lack of academic adaptation or low academic self-efficacy. Paired with a lack of engagement on weekends and a lack of advising, it is no surprise that a student’s internal motivation to persist would be negligible at best. Meanwhile, institutions nowadays tend to offer a robust student affairs division, centers for academic enhancement, courses to increase
academic persistence and resilience, early alert offices, centers for student success, and more. And while these areas of campus are open to all students, it may be that the already engaged student who feels that they belong are the ones who will take advantage of these services and support. In this case, ensuring collaboration across campus and across services to intrusively and intentionally provide timely and impactful support is critical for students who need it most.

One way is for early alert offices to work with students to develop a comprehensive plan and ensure that efforts are coordinated across campus. Additionally, centers for academic enhancement and courses devised to support student’s academic growth can synchronize efforts so they are more embedded within students’ courses; this would take the place of offering services that mandate a student take extra time to attend and who then has to make the connection of what they are learning in regarding to academic growth with what and how they are learning in their courses. Coordinating advising is also important, so that students are made fully aware in a timely manner of what their options are for credit and GPA recovery for their future success. Residential academic mentors or residence hall staff can also be instrumental in connecting with these students and encouraging and supporting their overall engagement on campus. Additionally, whether through living and learning communities or in connection with students’ courses, the residential staff can intentionally help in ensuring all students are meeting in groups to facilitate their learning.

The NSSE data indicate that students need to engage more with their peers, especially within their courses. While even large lecture courses will oftentimes require group work, it is critical that instructors ensure their students are actually engaging with
their peers on assignments, especially if this is expected to occur outside of the classroom. This is a mandate for an institution as a whole and for faculty to find ways to support students intentionally and effectively in their academic engagement with their peers in connection with their courses. This would be good for all students, however, this study provides empirical evidence that this kind of support is really important for students who struggle academically.

The results from this study have the potential of informing various collaborations on campus to coordinate support for these students. Much of the work is already established, it is more of a matter of coordinating efforts between residential counselors, coordinators for living and learning communities, tutors and instructors from academic enhancement centers, and faculty. Early alert staff and advisors can provide a critical role in working with students to ensure that they create a clear path to success.

Using institutional data that are commonly captured but often siloed offers a powerful means for predicting and understanding first-year retention that can mobilize change across academic and student affairs. Uncovering specific insights in students’ perception of engagement provides even further information on how an institution can adapt their practice and policies.

Four aspects of this study in particular add to the current research. One, this study offers a conceptual model for first-year retention that is focused on action. Two, institutional data are integrated from siloed data systems representing behavioral variables as proxies for self-efficacy and sense of belonging that span across academic and student affairs. Three, the results offer a better understanding of the impact of academic probation as it relates to retention as academic probation is a frequently used
policy across institutions, but its effect is rarely empirically examined. And lastly, it offers a novel means of utilizing NSSE data to examine differences in engagement for sub-groups of students within an institution.
Appendix A

The following tables of data offer additional demographic information for the cohort included in this study.

Table A1

*Other Demographics for Study Cohort*

| Race/Ethnicity                  | Frequency | Percent |
|---------------------------------|-----------|---------|
| Gender                          |           |         |
| Female                          | 1581      | 57.2    |
| Male                            | 1185      | 42.8    |
| Total                           | 2766      | 100.0   |
| 2+ Races                        | 79        | 2.9     |
| Asian                           | 93        | 3.4     |
| Black/African American          | 95        | 3.4     |
| Hispanic/Latino                 | 200       | 7.2     |
| Native Hawaiian/Oth Pac Island  | 3         | .1      |
| Not Specified                   | 96        | 3.5     |
| White                           | 2200      | 79.5    |
| Total                           | 2766      | 100.0   |
Appendix B

Figure B1

Questions on NSSE Survey for each Engagement Indicator (from https://nsse.indiana.edu/nsse/survey-instruments/engagement-indicators.html)

## Engagement Indicators and Items

### Academic Challenge

**Higher-Order Learning**

*During the current school year, how much has your coursework engaged you in the following:*  
- Applying facts, theories, or methods to practical problems or new situations  
- Analyzing an idea, experience, or line of reasoning in depth by examining its parts  
- Evaluating a point of view, decision, or information source  
- Forming a new idea or understanding from various pieces of information  

**Reflective & Integrative Learning**

*During the current school year, how often have you:*  
- Combined ideas from different courses when completing assignments  
- Connected your learning to societal problems or issues  
- Included diverse perspectives (political, religious, racial, ethnic, gender, etc.) in course discussions or assignments  
- Examined the strengths and weaknesses of your own views on a topic or issue  
- Tried to better understand someone else’s views by imagining how an issue looks from his or her perspective  
- Learned something that changed the way you understand an issue or concept  
- Connected ideas from your courses to your prior experiences and knowledge  

### Learning Strategies

*During the current school year, how often have you:*  
- Identified key information from reading assignments  
- Reviewed your notes after class  
- Summarized what you learned in class or from course materials  

**Quantitative Reasoning**

*During the current school year, how often have you:*  
- Reached conclusions based on your own analysis of numerical information (numbers, graphs, statistics, etc.)  
- Used numerical information to explain a real-world problem or issue (unemployment, climate change, public health, etc.)  
- Evaluated what others have concluded from numerical information  

### Learning with Peers

**Collaborative Learning**

*During the current school year, how often have you:*  
- Asked another student to help you understand course material  
- Explained course material to one or more students  
- Prepared for exams by discussing or working through course material with other students  
- Worked with other students on course projects or assignments  

### Discussions with Diverse Others

*During the current school year, how often have you had discussions with people from the following groups:*  
- People from a race or ethnicity other than your own  
- People from an economic background other than your own  
- People with religious beliefs other than your own  
- People with political views other than your own  

### Experiences with Faculty

**Student-Faculty Interaction**

*During the current school year, how often have you:*  
- Talked about career plans with a faculty mentor  
- Worked with a faculty member on activities other than coursework (committees, student groups, etc.)  
- Discussed course topics, ideas, or concepts with a faculty member outside of class  
- Discussed your academic performance with a faculty member  

### Effective Teaching Practices

*During the current school year, to what extent have your instructors done the following:*  
- Clearly explained course goals and requirements  
- Taught course sessions in an organized way  
- Used examples or illustrations to explain difficult points  
- Provided feedback on a draft or work in progress  
- Provided prompt and detailed feedback on tests or completed assignments  

### Campus Environment

**Quality of Interactions**

*Indicate the quality of your interactions with the following people at your institution:*  
- Students  
- Academic advisors  
- Faculty  
- Student services staff (career services, student activities, housing, etc.)  
- Other administrative staff and offices (Registrar, financial aid, etc.)  

### Supportive Environment

*How much does your institution emphasize the following:*  
- Providing support to help students succeed academically  
- Using learning support services (tutoring services, writing center, etc.)  
- Encouraging contact among students from different backgrounds (social, racial/ethnic, religious, etc.)  
- Providing opportunities to be involved socially  
- Providing support for your overall well-being (recreation, health care, counseling, etc.)  
- Helping you manage your nonacademic responsibilities (work, family, etc.)  
- Attending campus activities and events (performing arts, athletic events, etc.)  
- Attending events that address important social, economic, or political issues
Bibliography

Aljohani, O. (2016). A comprehensive review of the major studies and theoretical models of student retention in higher education. *Higher Education Studies, 6* (2), 1-18. 10.5539/hes.v6n2p1

Allen, K. & Boyle, C. (Eds.). (2018). *Pathways to belonging: Contemporary research in school belonging*. Brill Sense. 10.1163/9789004386969

Bandura, A. (1977). Self-efficacy: Toward a unifying theory of behavioral change. *Psychological Review, 84* (2), 191-215. 10.1037/0033-295X.84.2.191

Barouch-Gilbert, A. (2015). Academic deficiency: Student experiences of institutional labeling. *Journal of the First-Year Experience & Students in Transition, 27* (2), 101-111.

Bean, J. P. (2005). Nine themes of college student retention. In A. Seigman (Ed.), *Student College Retention: Formula for Student Success* (pp. 215-244). New York, NY: Romwan & Littlefield.

Bourdieu, P. (1986). The forms of capital. In Richardson, J. (Ed.), *Handbook of theory and research for the sociology of education* (241-258). NY: Greenwood Press.

Brawner, C. E., Frillman, S., & Ohland, M. W. (2010). A comparison of nine universities’ academic policies from 1988 to 2005.

http://files.eric.ed.gov/fulltext/ED508293.pdf
Caison, A. L. (2007). Analysis of institutionally specific retention research: A comparison between survey and institutional database methods. *Research in Higher Education, 48* (4), 435-451. 10.1007/s11162-006-9032-5

Cataldi, E. F., Bennett, C. T., & Chen, X. (2018). First-generation students: College access, persistence, and postbachelor’s outcomes. *National Center for Education Statistics*, February 2018.

Chatelain, M. (2018). We must help first-generation students master academe’s ‘hidden curriculum’. *The Chronicle of Higher Education, retrieved from* https://www.chronicle.com/article/We-Must-Help-First-Generation/244830/#.W853BPvD9P0.email

Cherney, A., Boreham, P. R., Head, B., & Povey, J. (2013). Research utilization in the social sciences: a comparison of five academic disciplines in Australia. *Science Communication*. 10.1177/1075547013491398

Cochran, M. F. (2016). Student affairs, persistence, and the growing need for inquiry. *The Journal of Student Affairs Inquiry, 2* (1). 10.2307/1981537

Crotty, M. (2015). *The Foundations of Social Research*. Los Angeles, CA: Sage.

Deason, R. D. (2003). Student variables that predict retention: Recent research and new developments. *NASPA Journal, 40* (4), 172-191. 10.2202/1949-6605.1286

Demetriou, C. & Schmitz-Sciborski, A. (2011). Integration, motivation, strengths and
optimism: Retention theories past, present and future. In R. Hayes (Ed.),

*Proceedings of the 7th National Symposium on Student Retention*, 2011, (300-312). Norman, OK: The University of Oklahoma.

Dinther, M., Dochy, F., & Segers, M. (2011). Factors affecting students’ self-efficacy in higher education. *Educational Research Review, 6* (2), 95-108. 10.1016/j.edurev.2010.10.003

Gelman, A., & Hill, J. (2007). *Data analysis using regression and multilevel/hierarchical models*. Cambridge, UK: Cambridge University Press. 780521867061

Gillen-O’Neel, C. (2021). Sense of belonging and student engagement: A daily study of first- and continuing generation college students. *Research in Higher Education, 62*, 45-71. 10.1007/s11162-019-09570-y

Gopalan, M. & Grady, S. (2019). College students’ sense of belonging: A national perspective. *Educational Researcher, 49* (2), 134-137. 10.3102/0013189762

Gross, L. & Meriwether, J. L. (2016). Student engagement through digital data. *New Directions for Student Services, 155*, 75-89. 10.1002/ss.20184

Gutierrez, K. & Rogoff, B. (2003). Cultural ways of learning: individual traits or repertoires of practice. *Educational Researcher, 32* (5), 19-25.
Habley, W. R., Bloom, J. L., & Robbins, S. (2012). *Increasing Persistence: Research-based Strategies for College Student Success*. San Francisco: Wiley.

Ion, G, Iftimescu, S., Proteasa, C., & Marin, E. (2019). Understanding the role, expectations, and challenges that policy-makers face in using educational research. *Education Sciences, 9* (81). 10.3390/educsci9020081

Ishitani, T. T. (2003). A longitudinal approach to assessing attrition behavior among first-generation students: Time-varying effects of pre-college characteristics. *Research in Higher Education, 44* (4), 433-449.

Jury, M., Smeding, A., Stephens, N., Nelson, J., Aelenei, C. & Darnon, C. (2017). The experience of low-ses students in higher education: Psychological barriers to success and interventions to reduce social-class inequality. *Journal of Social Issues, 73* (1), 23-41.10.1111/josi.12202

Kamphoff, C., Hutson, B., Amundsen, S., & Atwood, J. (2007). A motivational/empowerment model applied to students on academic probation. *Journal of College Student Retention, 8* (4), 397-412.

Kerby, M. (2015). Toward a new predictive model of student retention in higher education: an application of classical sociological theory. *Journal of College Student Retention: Research, Theory & Practice, 17*(2), 138-161.
Kirk-Kuway, M., & Nishida, D. (2001). Effect of low and high advisor involvement on
the academic performances of probation students. *NACADA Journal, 21*(1&2),
40-45.

Kuh, G. (2001). *The national survey of student engagement: conceptual framework and
overview of psychometric properties*. Bloomington, IN: Indiana Center for
Postsecondary Research.

Lindo, J., Sanders, N., & Oreopoulos, P. (2010). Ability, gender, and performance
standards: evidence from academic probation. *American Economic Journal:
Applied Economics, 2*(2), 95-117.

Longwell-Grice, R., Zervas Adsitt, N., Mullins, K, & Serrata, W. (2016). The first ones:
Three studies on first generation college students. *NACADA Journal, 36*(2), 34-
46.

McGrath, S., & Burd, G. (2012). A success course for freshmen on academic probation:
persistence and graduation outcomes. *NACADA Journal, 32*(1), 43-52.

Miller, A., Sarraf, S., Dumford, A., & Rocconi, L. (2016). Construct validity of NSSE
engagement indicators. http://nsse.indiana.edu/html/psychometric_portfolio.cfm

Mood, C. (2009). Logistic regression: Why we cannot do what we think we can do, and
what we can do about it. *European Sociological Review*, 26 (1), 67-82.

10.1093/estr/jcp006

Moss, B. & Yeaton, W. (2015). Failed warnings: evaluating the impact of academic probation warning letters on student achievement. *Evaluation Review*, 39 (5), 501-524.

Museus, S., Yi, V. & Saelua, N. (2017). The impact of culturally engaging campus environments on sense of belonging. *The Review of Higher Education*, 40 (2), 187-215.

NSSE Engagement Indicators. (n.d.).

https://nsse.indiana.edu/html/engagement_indicators.cfm

NSSE 2018 engagement indicator internal consistency statistics. (2018).

http://nsse.indiana.edu/2018_institutional_report/pdf/EI%20Intercorrelations%202018.pdf

Pascarella, E. T., Pierson, C. T., Wolniak G. C., & Terenzini, P. T. (2004). First-generation college students: Additional evidence on college experiences and outcomes. *The Journal of Higher Education*, 75 (3), 249-284.

10.1353/jhe.2004.0016

Peng, C. Y. J., So, T. S. H., Stage, F. K, and St. John, E. P. (2002). The use and interpretation of logistic regression in higher education journals: 1988-1999.
Research in Higher Education 43 (3), 259-284.

Perna, L. W. & Thomas, S. L. (2006). Commissioned Report for the National Symposium on Postsecondary Student Success: Spearheading a Dialog on Student Success. National Postsecondary Education Cooperative.

Pike, G. R., Kuh, G. D. (2005). First- and second-generation college students: A comparison of their engagement and intellectual development. The Journal of Higher Education, 76 (3), 276-300.

Pleitz, J. D., MacDougall, A. E., Terry, R. A. Buckely, M. R., Campbell, N. J. (2015). Great expectations: Examining the discrepancy between expectations and experiences on college student retention. Journal of College Student Retention: Research, Theory & Practice, 17 (1), 88-104. 10.1177/1521025115571252

Raju, D. & Schumacker, R. (2015). Exploring student characteristics of retention that lead to graduation in higher education using data mining models. Journal of College Student Retention, 16 (4), 563-591. 10.2190/CS.16.4.e

Reynolds, P. J., Gross, J. P. K., Millard, B., & Pattengale, J. (2010). Using longitudinal mixed-methods research to look at undeclared students. New Directions for Institutional Research, Assessment Supplement, 53-66. 10.1002/ir.372

Ross, C. (2012). Navigating towards success: supporting students on academic
probation. In M. Protheroe (Ed.) *Navigating the River: Proceedings of the 2011 Annual International Conference of the Association of Tertiary Learning Advisors of Aotearoa/New Zealand*, 107-123.

Sarraf, S. A. (2012). *NSSE: predictive validity first-year retention.*
http://nsse.indiana.edu/pdf/NSSE_Predictive_Viability_Study_(2012_Pilot_Data).pdf

Seirup, H., & Sage, R. (2011). Exploring the effects of hope on gpa and retention among college undergraduate students on academic probation. *Education Research International, ID 381429*, 1-7. doi:10.1155/2011/381429

Schee, B. (2007). Adding insight to intrusive advising and its effectiveness with students on probation. *NACADA Journal, 27* (2), 50-59.

Sneyers, E. & De Witte, K. (2018). Interventions in higher education and their effect on student success: a meta-analysis. *Educational Review, 70* (2), 208-228. 10.1080/00131911.2017.1300874

Stephens, N. M., Brannon, T. N. (2015). Feeling at home in college: Fortifying school-relevant selves to reduce class disparities in higher education. *Social Issues and Policy Review, 9* (1), 1-24.

Terenzini, P. T., Springer, L., Yaeger, P. M., Pascarella E. T., & Nora, A. (1996). First-generation college students: Characteristics, experiences, and cognitive
development. *Research in Higher Education, 37* (1), 1-22.

Tinto, V. (2017). Through the eyes of students. *Journal of College Student Retention: Research, Theory & Practice, 19* (3), 254-269. 10.1177/1521025115621917

Umbricht, M. R., Fernandez, F., & Ortagus, C. (2017). An examination of the (un)intended consequences of performance funding in higher education. *Educational Policy, 31* (5). 10.1177/0895904815614398

Zembrodt, I. (2019). Commitment: Predicting persistence for low-ses students. *Journal of College Student Retention: Research, Theory & Practice, 1*-27. 10.1177/1521025119858340