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THE EFFECT OF ACADEMIC ADVISOR TYPE ON
UNDERGRADUATE STUDENT RETENTION

By

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Dissertation

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DEDICATION

This dissertation is dedicated to my friend, colleague, and mentor Dr. Melanie Hoell, who served on my committee and left this world before my defense. Melanie gave me my first shot as a professional academic advisor and helped me find my path in helping students succeed. She taught me that leadership is largely about treating people with respect and always doing the right thing.

Melanie, thank you for everything. I will carry you in my heart forever.

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ABSTRACT

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The Effect of Academic Advisor Type on Undergraduate Student Retention

Chairperson: Dr. Daniel Lee

This study was designed to examine the effect of academic advisor type on retention of first-year, full-time, four-year degree-seeking students at a mid-size research university in the western U.S., while controlling for several predictor variables identified in contemporary and seminal literature as having a potential impact on student retention. Predictor variables are: socioeconomic status, first generation in family to attend college, high school grade point average, first semester grade point average, and enrollment in developmental coursework.

In the study, a binary logistic regression model was employed to determine whether academic advisor type had a statistically significant effect on the probability of students being retained for their second year of study, controlling for the aforementioned predictor variables. The alternative hypothesis of the study stated that there is a statistically significant effect of advisor type on the retention of first-year, full-time, four-year degree-seeking students at the study's institution ($n = 1,117$) when controlling for the additional predictor variables, with professional advisors having a more positive effect on student retention than faculty advisors.

Results from the logistic regression analysis indicated that academic advisor type was not a statistically significant predictor of the probability of students being retained at the study's institution from the fall 2015 semester to the fall 2016 semester ($p = 0.88$). Thus, the null hypothesis of the study stating that there is no statistically significant effect of advisor type on student retention was not rejected. The odds ratio value in the model for advisor type ($OR = 1.03$) indicated that students with a professional advisor assigned had 1.03 higher odds or 3% higher likelihood of being retained at the institution for their second year than students with a faculty advisor assigned.

Chapter 1

INTRODUCTION TO THE RESEARCH

Scope of the Study

Student retention has been a prominent topic in postsecondary educational research for decades. As Tinto (2012) conveyed, "despite our nation's success in increasing access to college, we have not yet been successful in translating the opportunity access provides into college completion" (p. 4). One reason for this dilemma is the myriad of factors that potentially influence students' decisions on whether to remain enrolled in college or to leave. College and university administrators today utilize research on student retention to identify and address these factors through institutional programming aimed at student success.

Habley (2004) found academic advising to be among the campus interventions that have the greatest impact on student persistence. Academic advisors connect students to beneficial campus resources and services, serve as curricular guides, provide educational guidance to students and assist with identification and fulfillment of long-term academic and professional goals; they are uniquely situated to foster lasting relationships with students, often subsequently establishing a sense of connection between students and the institution that can positively influence student persistence (Frost, 1991; King, 1993). Several additional researchers in higher education have investigated the relationship between academic advising and student retention. Various studies have established a link between effective academic advising and increased retention rates of colleges and universities. Many of these studies are reviewed in Chapter Two.

However, the important contribution of academic advising is often underestimated in studies of student success and retention (Light, 2001). As a result, additional research is needed to identify aspects of academic advising that relate to student retention and foster student

success. One such aspect could potentially be the *type* of academic advisor. Faculty advisors are those individuals whose primary responsibility at the institution is to teach or conduct research. Providing academic advising to a caseload of students may be one of many additional responsibilities assigned to faculty members. Professional academic advisors, on the other hand, are individuals who have been hired to focus primarily on academic advising activities that promote the academic success of students, with particular attention to general student development at the institution (Gordon, Habley, Grites, & Associates, 2008).

Statement of the Problem

Approximately 28 percent of first-year students enrolled in four-year higher education institutions leave at the end of their first year (American College Testing Program, 2012). Just over one-half of all four-year college students in the U.S. earn their bachelor's degrees within six years from their initial institution (Tinto, 2012). Higher education institutions are constantly examining causes of student departure and are attempting to retain more students and ultimately facilitate students' persistence towards completion of the bachelors degree. The problem of student departure from college prior to degree completion is complex and negatively affects individual students, higher education institutions, U.S. society, and our ability as a nation to remain competitive and successful in today's global economy. Professional advising positions have become an area of considerable attention and investment at a substantial number of U.S. postsecondary institutions today (Gordon et al., 2008). Despite seminal and contemporary research findings that empirically link effective advising to increased student retention rates, little research has been conducted to thoroughly examine the effect of advisor type, and specifically of professional advisors, on student retention.

Purpose of the Study

The purpose of this study was to determine whether academic advisor type has an effect on student retention, while controlling for the following factors at the point of students' matriculation to the institution: socioeconomic status, whether students are first-generation in family to attend college, and high school grade point average. The study also controlled for the following student characteristics after matriculation to the institution: first semester grade point average and enrollment in developmental coursework.

Research Question

This quantitative study was designed to answer the following research question: what is the effect of academic advisor type on retention of first-year, full-time, four-year degree-seeking students at a mid-size research university in the western U.S.? The null hypothesis of the study posits that there is not a statistically significant effect of advisor type on the retention of first-year, full-time, four-year degree-seeking students at the study's institution when controlling for the predictor variables previously mentioned. The alternative hypothesis of the study asserts that there is a statistically significant effect of advisor type on student retention when controlling for the predictor variables, with professional advisors having a more positive effect on student retention than faculty advisors.

There are multiple reasons for the selection of the study's particular institution by the researcher:

- 1) The institution's strategic vision document lists potential investment in professional advising positions as a strategic initiative. The study's findings directly inform this potential investment.
- 2) The researcher has secured access to institutional data relevant to the study.

3) The study's institution is representative of public postsecondary institutions without highly selective admissions policies; 92% of undergraduate applicants to the institution are admitted (National Center for Education Statistics, 2017). These sorts of postsecondary institutions are increasingly investing in professional advising positions in an effort to improve student retention (Braxton, Doyle, Hartley, Hirschy, Jones, & McLendon, 2014).

Definition of Terms

For the purposes of this study, the following definitions will be used:

Academic advising. "Academic advising refers to situations in which an institutional representative gives insight or direction to a college student about an academic, social, or personal matter" (Gordon et al., 2008, p. 3). Academic advising is a "decision-making process during which students realize their maximum educational potential through communication and information exchanges with an advisor" (Grites, 1979, p. 1). Academic advising fosters the academic and intellectual development of students given its emphasis on the realization of the academic potential of students (Braxton et al., 2014). As stated by Habley, Bloom, and Robbins (2012), "advising offers every student the opportunity for interaction with an institutional representative with whom they can build a relationship and develop an individual plan for academic and co-curricular engagement at the institution" (p. xxv). Smith and Allen (2014) conceived quality academic advising as a multidimensional process encompassing five domains:

...provision of accurate information about degree requirements and how the institution works within timelines, policies, and procedures; referral to campus resources for academic and nonacademic problems; integration of the student's academic, career, and life goals with each other and with aspects of the curriculum and co curriculum; individuation, or consideration of students' individual characteristics, interests, and skills;

and shared responsibility or encouragement of students to assume responsibility for their education by giving them opportunities to develop and practice planning, problem-solving, and decision making skills. (p. 51)

Advisor type. Various types of college or university employees provide academic advising for students depending on the administrative structure of advising programs at each individual institution. Advisor type simply refers to the type of employee providing academic advising for students. The two definitions below articulate the differences between faculty and professional advisors, the two advisor types examined in this study (Gordon et al., 2008).

Faculty advisor. Faculty advisors are those individuals whose primary responsibility at the institution is to teach and/or conduct research. Advising individual students or a caseload of advisees may be just one of many additional responsibilities assigned to faculty members. Typically, faculty advising focuses on the curriculum or career prospects in an individual program of study. Faculty members provide excellent mentoring opportunities for students majoring in their respective fields and often upper-division undergraduate students and graduate students gain the most from faculty mentorship (Gordon et al., 2008).

Professional Advisor. Professional advisors, sometimes referred to as staff or professional staff advisors, are individuals whose responsibilities at the institution focus primarily on academic advising and activities that promote academic success, with additional focus on student development at the institution. While some teaching responsibilities may be included in a professional advisor's role description, professional academic advising staff spend the bulk of their time advising individual students and groups of students on curricular requirements of one or many academic majors or areas of study, co-curricular opportunities on and off campus, beneficial resources for students, and general academic and personal success

strategies, addressing overall developmental issues with students in their pursuit of a college education (Gordon et al., 2008).

Student Persistence. According to Seidman (2012), a student's decision to maintain active student status in higher education is persistence, or, from the institutional perspective, retention.

Student Retention. Typically expressed as a rate or percentage of students who return from one enrollment period to another. The Integrated Postsecondary Education Data System (IPEDS) is a "system of interrelated surveys conducted annually by the U.S. Department of Education's National Center for Education Statistics (NCES). IPEDS gathers information from every college, university, and technical and vocational institution that participates in the federal student financial aid programs" (NCES, 2017). IPEDS has standardized the definition of retention as the percentage of first-time, full-time, degree-seeking students from the previous fall semester or term who either reenrolled or successfully completed their program by the current fall semester or term (Habley, Bloom, & Robbins, 2012). For this study, this definition includes first-time in college, full-time enrolled, four-year degree-seeking students who entered the institution for the fall 2015 semester and returned for the fall 2016 semester.

Significance of the Study

Barely more than one-half of all four-year college students in the United States earn their bachelor's degrees within six years from their initial institution (Tinto, 2012). Institutional rates of four-year degree completion have not substantially improved since the 1990s (Braxton, Hirschy, & McClendon, 2004). As stated by Tinto (2012), "despite our country's success in increasing access to college...we have not yet been successful in translating the opportunity access provides into college completion" (p. 4). Student departure from college prior to

completion of degree is problematic in many ways. This study investigates whether academic advisor type has an effect on students remaining enrolled in college.

For the individual, completion of a college degree results in substantially higher salary and lifetime earnings than completion of a high school diploma alone. The gap in lifetime earnings between those who complete at least a college degree and those who start college but do not graduate is more than \$750,000 (Tinto, 2012). Approximately two-thirds of students borrow loans to pay for college (Avery & Turner, 2012). When students accumulate large levels of debt, they have a greater likelihood of defaulting (Choy & Li, 2006). Student loan default can be crippling to a student's financial wellbeing. According to McMillon (2004), college success plays a bigger role in predicting who will default than either the background of the borrower or the type of institution attended. All else being equal, students who are successful in their studies tend to have lower default rates than those who are not. Benefits such as better access to quality healthcare, improved working conditions, improved personal and professional mobility, and being a more engaged citizen of one's community and country all increase with the completion of a college degree (New Millennium Project on Higher Education Costs, Pricing and Productivity, 1998).

For higher education institutions, student departure not only has negative impacts on students who withdraw, but also negatively affects the stability of institutional enrollments, institutional budgets, and public perceptions of institutional quality (Braxton, Hirschy, & McClendon, 2004). If institutions do not graduate their students, perceptions of poor quality can drive student enrollments down. This is especially problematic as state support for higher education declines and institutional budgets become increasingly dependent on revenue generated from student tuition and fees. Performance-based funding models for higher education

are also being adopted by many states and retention and completion rates are emerging as key measures of success.

For U.S. society, issues ranging from voting, health, unemployment, poverty, rates of incarceration, school readiness of children, and rates of volunteerism all convey the considerable costs of not providing higher education to our citizens (Tinto, 2012). An educated society also contributes significantly to a tax base and is integral to potential economic growth, overall workforce productivity, and decreasing reliance on public assistance (New Millenium Project on Higher Education Costs, Pricing & Productivity, 1998). As stated by Tinto (2012), “the same can be said of the benefits of college education to our standing in the increasingly competitive global marketplace. A college-educated workforce is critical to our nation’s ability to remain competitive” (p. 2).

Higher education institutions have struggled to develop effective strategies to improve retention and graduation rates. Despite the extensive body of literature that exists surrounding the problem of student attrition, much of this research has not benefitted higher education practitioners as it erroneously assumes that knowing why students leave is equivalent to knowing why students stay and succeed (Tinto, 2012). This study's findings could potentially benefit institutional decision making and resource allocation by investigating whether academic advisor type affects student retention.

Chapter 2

REVIEW OF LITERATURE

Overview

The review of literature will present a synthesis of seminal and contemporary research addressing the relationship between academic advising and student retention. This chapter will:

- 1) provide an overview of student retention and persistence-related concepts and definitions of terms;
- 2) provide a historical overview of student retention;
- 3) review theoretical foundations of retention, persistence, and withdrawal;
- 4) examine academic advising;
- 5) provide a historical overview of academic advising;
- 6) review theoretical foundations of academic advising;
- 7) review administrative structures for advising and advising approaches;
- 8) describe advisor type;
- and 9) examine contemporary research in academic advising and student retention.

Student Retention and Persistence

Hagedorn (2005) implied that defining and measuring student retention is one of the most vexing measurement issues in higher education. According to Habley, Bloom, and Robbins (2012), "defining *retention*, *attrition*, and *persistence* and the constructs related to those terms is fraught with pitfalls and complexity" (p. 3). The authors posited that a student who persists is one who continues to enroll at the institution after matriculation. Lenning (1978) defined a *persister* as a student who enrolls continuously without interruption. Astin (1975) conveyed full-time status and degree seeking as qualifiers. Guthrie (2002) added a student's expectation to graduate in about four years as a component of persistence. Habley, Bloom, and Robbins (2012) combined the above definitions by asserting that "...a *persister* is a student who enrolls full-time, continuously pursues a degree with the expectation of graduation in about four years" (p. 4). Astin (1975) conveyed the term *dropout* is a student who "is not enrolled, has not earned a

degree, and is no longer pursuing a degree" (p. 9). Summerskill (1962) offered the following definition for a dropout: "a student who leaves college before advancing their education to the point of earning a degree" (p. 627). Hagedorn (2005) clearly distinguished between persistence and retention by stating that "institutions retain students and students persist" (p. 92).

According to Habley, Bloom, and Robbins (2012):

A review of early literature leads to the conclusion that the term *retention* as applied to college student enrollment patterns was not widely used until the 1970s...and early publications that focused on student departure almost universally refer to dropouts, stopouts, and other terms that characterized individual student behavior. By 1980, the literature on departure began to feature the term retention as an approach to describing departure behavior at the institutional level. Retention is typically expressed as a rate or percentage of students who return from one enrollment period to another. (p. 7)

According to Seidman (2012), a students' conscientious decision to maintain active student status in higher education is persistence, or, from the institutional perspective, retention. Measurements of retention include "a series of status-to-status ratios, which may be called transition ratios, persistence rates, retention rates, completion rates, cohort survival rates, or graduation rates" (p. 35). These data are collected and used to evaluate educational performance, although, and as conveyed by Seidman (2012), "measurement of student persistence in education is complicated by the many ways students move through the educational pipeline...among the major persistence/retention measurement problems are student transfers between institutions, student progression at different rates, and stopouts" (pp. 35-36).

Seidman (2012) posited that there are three foundational definitions for measuring student persistence: cohorts, denominators, and numerators. As stated by Seidman (2012), the

measurement of student persistence begins with the identification of defined groups or "cohorts of students at one point in time, place, and with specific demographic and enrollment characteristics" (p. 37). Seidman (2012) went on to state that "the identification of a cohort of a certain number of students in time, place, and with specific demographic and enrollment characteristics fixes the denominator of whatever rate is being studied" (p. 37). As cohorts of students are tracked over time, some students in the cohort will inevitably depart the institution. According to Seidman (2012), "the measurement of the survivors at subsequent points in time provides the numerator for the persistence, retention, or graduation rate" (p. 37).

Habley, Bloom, and Robbins (2012) described the establishment of the Integrated Postsecondary Education Data System (IPEDS) in 1993 as an effort to standardize the collection and reporting of data on all colleges receiving federal student assistance. IPEDS collects information on enrollment, completion, and graduation rates. The IPEDS system has standardized the definition of retention as the percentage of first-time, full-time, degree-seeking students from the previous fall semester or term who either reenrolled or successfully completed their program by the current fall semester or term.

According to Braxton, et al. (2014), although student retention and degree completion serve as measures of student success, the attainment of other forms of success remain elusive without student retention. The authors conveyed the following additional markers of college student success:

Academic attainment through student learning, acquisition of general education, development of academic competence (e.g., writing and speaking in a clear manner), development of cognitive skills and intellectual dispositions, occupational attainment,

preparation for adulthood and citizenship, personal accomplishments (e.g. work on the college newspaper, election to student office), and personal development. (pp. 1-2)

Historical Overview of Student Retention

A review of student retention literature reveals distinct historical stages that provide a framework for understanding how retention has evolved in American higher education. The historical eras listed below represent common themes that have evolved over time (Seidman, 2012):

1. Retention Pre-History (1600s-Mid 1800s)
2. Evolving Toward Retention (Mid 1800s-1900)
3. Early Developments (1900-1950)
4. Dealing with Expansion (1950s)
5. Preventing Dropouts (1960s)
6. Building Theory (1970s)
7. Managing Enrollments (1980s)
8. Broadening Horizons (1990s)
9. Current and Future Trends (Early Twenty-First Century) (p. 13)

According to Seidman (2012), the first four eras include the precedents that caused student retention to emerge as a distinct issue of higher education. In general, and as stated by Seidman (2012), the first four eras are regarded as "'Retention Pre-History,' as there was little concern with retention in any systemic way until the beginning of the twentieth century" (p. 14). The last five eras represent the period in which student retention became a common concern across the American higher education system, resulting in the advancement of the practical,

theoretical, and knowledge bases surrounding student retention (Seidman, 2012). The sections that follow will briefly review these historical eras.

Retention Pre-History (1600s-1900)

Student retention was not an issue of concern in colonial American colleges as very few students actually attended college and even fewer were interested in persisting toward graduation. The earliest American colleges, such as Harvard, William and Mary, and Yale, catered to specific populations of students and college degrees had little importance in early American society. According to Geiger (1999), the majority of graduates during the seventeenth century became ministers after their enrollment in college. As the demand for ministers diminished and professional training became more important, colonial American colleges expanded their curriculum to prepare students for careers in law and public life.

According to Rudolph (1990), after the American Revolution and throughout the early 1800s, American colleges expanded rapidly. Rudolph (1990) argued that the American Revolution instilled a spirit of democracy and began eroding the aristocratic and elitist traditions on which the earliest American colleges were built. Geiger (1999) posited that private denominational colleges saw enrollments grow by over 80 percent during this time period. As stated by Seidman (2012), "the Yale Report of 1828 restored to universities the notion of classical instruction, which focused on providing students with a foundation for learning" (p. 15).

Evolving Toward Retention (Mid 1800s-1900)

According to Seidman (2012), "while retention was still not a concern in the late nineteenth century, this period of time was marked by increases in degree attainment and by expansion of curricular and co-curricular options that provided a more complete collegiate experience" (p. 15). Shifting from historical foundations of preparing students for the ministry,

American colleges in the mid-nineteenth century provided students with a liberal education focused on areas such as classical languages, ethics, metaphysics, philosophy and science. By 1850, "collegiate education continued to expand from an elite institution serving only privileged white males to a more diverse student body, which included women" (Seidman, 2012, p. 16).

Rudolph (1990) posited that the signing of the Morrill Land Grant Act in 1862 was a pivotal turning point in American higher education as this Act encouraged at least one college in every state to house programs in agriculture and engineering, resulting in a major increase in the number of American colleges. However, the Morrill Act was "not predicated upon student demand...and the shrinking demand for college reflected the fact that earning a college degree was not yet a widespread priority for students or postsecondary institutions" (Seidman, 2012, p. 17).

Early Developments (1900-1950)

In the early 1900s, enrollments in American colleges increased and selective admissions policies began to emerge. According to Seidman (2012), societal issues at the time drove the growth and stability of colleges: "the nation had become firmly industrialized and increasingly urban, both of which contributed to increased need for college education as a means of producing managers and professionals to help run the increasingly organized and complex work of the nation" (p. 17). Even though the majority of colleges at this time were much more concerned with attracting new students than with keeping students enrolled, the antecedents of student retention began to emerge out of the increase in the number of colleges and the enrolled student population. As stated by Seidman (2012), "the increasing importance of the college degree along with the increased awareness of different attrition rates led to the first documented studies that clearly focused on what would come to be called retention" (p. 18).

Rudolph (1990) asserted that the societal realities of the Great Depression and World War II diverted the United States' focus and investment away from higher education, although student enrollments stayed relatively constant. According to Seidman (2012), "the post-World War II boom began higher education's golden age of expansion and provided the genesis for renewed interest in student access and degree attainment" (p. 19).

Dealing with Expansion (1950s)

The conclusion of World War II and the creation of the G.I. Bill had an enormous impact on student enrollments in postsecondary education institutions. The G.I. Bill was designed to aid returning soldiers in acquiring the necessary skills to reengage in civilian life. This legislation created a surge in enrollment. As stated by Seidman (2012), "over 1.1 million ex-G.I.'s took the opportunity to further their education" (p. 19). The expansion in enrollment after World War II created the need for students to persist to college graduation as a high school diploma became decreasingly valuable for career and social advancement. As enrollments increased, higher education institutions became more interested in student retention, with the focus centering on understanding student academic failure.

Preventing Dropouts (1960s)

Another milestone event in American higher education history was the passage of the Higher Education Act of 1965 (HEA), which was part of U.S. President Lyndon Johnson's Great Society agenda, and was designed "to strengthen the educational resources of our colleges and universities to provide financial assistance for students in postsecondary and higher education" (Higher Education Act, 89th U.S. Congressional Proceedings, 1965, p. 1). As stated by Seidman (2012), the HEA "defined the role the federal government would play in financially supporting higher education," most notably through creation of the federal Pell Grant program (p. 19). Prior

to the creation of the federal Pell Grant program, there was no federally funded aid program guaranteed to students who could demonstrate financial need. Federal Pell Grants essentially cleared the path for a countless number of students to attend institutions of higher education who otherwise would not have been able to afford tuition and fees.

"The rapid growth of student enrollment - not only in terms of larger enrollments, but also in terms of increasingly diverse student bodies - created many challenges for...college and university campuses across the country" (Seidman, 2012, p. 20). The Civil Rights movement created postsecondary opportunities for several racial and ethnic minority groups, contributing to the diverse student bodies Seidman mentions, and many colleges were not prepared to deal with a diverse student body. This reality fueled increasing focus on student retention and retention-related literature began to emerge as a body of work.

Building Theory (1970s)

By 1970, student retention had become a common topic within American colleges and universities. As conveyed by Seidman (2012), "there were enough studies and published reports at this time to begin to construct a knowledge base that could inform retention concerns and issues throughout most of higher education" (p. 22). Contributors such as Spady, Astin, Tinto, Pascarella, Terenzini, Chickering, Bean, Braxton and Kuh, among many others, established theoretical foundations of student retention, persistence, and withdrawal that will be examined in detail in an upcoming section.

Managing Enrollments (1980s)

The 1980s witnessed American colleges and universities increasingly prioritize enrollment management, essentially attempting to maintain optimal enrollments to maximize institutional efficiency and effectiveness. Along with the burgeoning concept of enrollment

management, studies of student retention saw explosive growth during the 1980s. According to Seidman (2012), "this was fueled in part by the conceptual and empirical contributions to knowledge made in the 1970s, but the practical realities of demographic shifts were the main drivers of sustained and expanding interest in retention" (p. 24). Seidman (2012) described the evolution of empirical studies on retention during this time period as follows:

By the end of the 1980s a number of models and theories had become well established in the literature and a substantial body of empirical studies had been conducted across a wide range of institutional settings. This continually developing body of work provided a foundation for a new generation of models and studies in the 1980s and 1990s that used existing theories and concepts as the basis for theory elaboration and integration that synthesized concepts from various existing frameworks and studies. (p. 25)

Broadening Horizons (1990s)

Retention-related research and the resulting body of work continued to expand throughout the 1990s, with retention firmly established as a priority throughout the American higher education system. Many studies, such as Braxton's (2000), assert that the social integration of students in institutional life, rather than academic preparation or integration, is key to understanding and addressing student departure. As stated by Seidman (2012), these sorts of studies "emphasized the overlap between [student] involvement in the academic and social spheres of campus rather than focusing on them as separate sources of influence on retention" (p. 27). Seidman (2012) also conveyed that "the 1990s might also be called the era of the emergence of 'persistence.' Recognition that persistence and retention are distinct concepts began to fully emerge in the late 1990s" (p. 28).

Current and Future Trends (Early Twenty-First Century)

According to Seidman (2012), "the early twenty-first century has dawned with retention fully entrenched as a major policy issue in higher education as well as an established professional realm that has brought researchers and practitioners together to better serve and retain college students" (p. 28). Retention efforts are permanently established on the vast majority of college and university campuses throughout the country and retention is used as a key indicator of success for institutions of higher education. As accountability continues to be an area of primary focus in higher education, student retention will likely become even more important. Seidman (2012) posited that "retention rates have been mandated as a core indicator by accrediting agencies for some time, but most states now review the retention rates of public institutions, and some states even tie resource allocations to such indicators" (p. 30).

Retention rates of colleges and universities are also a factor in the decision making of prospective students and their families with regard to college selection. Unfortunately, and as conveyed by Seidman (2012), retention rates are lower than college and university officials would like on the majority of campuses across the nation. Seidman (2012) stated that "a report by American College Testing states that, nationwide, 25.9 percent of freshmen at four-year institutions do not return to school the following year" (p. 28).

Seidman (2012) stressed the importance of colleges and universities sustaining focus on keeping students enrolled and addressed the need for future empirical research in student retention and persistence as follows:

As higher education becomes increasingly important for success in a society that has become knowledge- and technology-oriented, retention and persistence are more

important than ever. The large number of studies and initiatives that have developed over the past few decades are a strong foundation for furthering this important work. (p. 29)

Student Retention, Persistence and Withdrawal: Theoretical Foundations

Despite American higher education beginning in the 1600s, the majority of studies on student retention have been conducted in the past 60 years (Berger & Lyon, 2005). According to Berger and Lyon (2005), "one of the first widespread studies to examine multiple issues related to the departure of students at multiple institutions was conducted by John McNeely and published in 1938" (p. 14). McNeely (1937) sought to determine the factors responsible for student withdrawal, the extent to which students departed from college, and ultimately establish an empirical relationship between institutional and non-institutional factors and student retention. The importance of McNeely's study and related studies was not acknowledged by educators, researchers, and higher education institutions until the 1970s, when enrollment management began to appear as a critical issue (Berger & Lyon, 2005).

Summerskill (1962) recognized that the causes of student withdrawal from college were complex and attributable to psychological, family, social, and financial issues and recommended that future research focus on factors within institutions of higher education that may contribute to academic failure. Summerskill (1962) further suggested that future studies be grounded in the social sciences, in particular psychology and sociology.

According to Woodring (1968), "many of the students now in college have no sound reason for being there, and would not have entered if they had been given valid information" (p. 13). There are a myriad of reasons why students leave postsecondary institutions. Dalrymple (1966) examined educational preparedness as a primary cause of student attrition. Issues such as financial hardship, lack of student motivation, lack of student engagement, boredom, mental and

physical health, personal and social maladjustment to institutional life, and many others were stressed by Cope and Hannah (1975) as drivers of students' decisions to leave. Regardless of the multiple reasons for why students withdraw, just under one-third of all students who enter postsecondary institutions each year will not return for a second year; this figure has been relatively constant for over fifty years (American College Testing Program, 2010).

As stated by Habley, Bloom, and Robbins (2012), sociological perspectives have been the dominant retention construct for the last forty years. According to these authors (2012), Spady (1970) was the first to propose a model for student departure. Spady's (1970) model focused, at least in large part, on social integration of students as a determining factor in their persistence, or prevention of their withdrawal. Spady (1970) suggested that the interaction between the student and college academic and social systems - what has come to be referred to as student engagement - best explains the dropout process. The results of a subsequent empirical study by Spady (1971) showed that "formal academic performance is clearly the dominant factor in accounting for attrition among both sexes" (p. 38).

According to Habley, Bloom, and Robbins (2012), since the 1970's, several theoretical perspectives on student retention have been proposed and tested. According to the authors (2012), "Astin (1975) first articulated the construct of involvement and, in so doing, hinted at an institutional role in student success. Involvement focuses on the amount of energy a student invests in the academic experience" (p. 10). The authors (2012) also conveyed that Tinto (1987) introduced the concepts of social and academic integration: although Astin's theory of involvement began the dialogue on the relationship between the student and the institution, Tinto believed that various institutional factors were central to understanding student departure. Tinto's theory of integration posited that student departure is a result of the extent to which

students share the attitudes and beliefs of their peers and faculty and the extent to which students adhere to the policies and requirements of the institution.

Astin (1975) examined factors that influence students' decisions to withdraw from college and how these factors can be influenced by institutions of higher education. Instead of focusing research on characteristics of students who withdraw, Astin suggested focusing primarily on identifying ways to help students complete degree programs. Are those colleges and universities with higher attrition rates doing a poor job, or are these rates simply a result of the types of students who attend? Astin's study provided policy makers with an objective means to assess attrition rates based on characteristics of admitted students.

Astin's (1975) research included a representative sample of students and institutions and multivariate controls over student characteristics and environmental factors such as financial aid, work, and living on campus versus off campus during enrollment. Astin conveyed that, in order to increase the likelihood that admitted students will complete their degree, policy makers must select those actions associated with student persistence and avoid those associated with dropping out.

Astin (1975) discussed how tuition and fee income was the primary revenue input for private institutions, and how public institutions had traditionally relied on state appropriations. Over the past several decades since Astin's published study, most public institutions' primary revenue shifted from state appropriations to tuition and fees. Because of this trend, enrollment management must constantly adjust to tapering enrollments. Recruitment has traditionally been viewed as the principal means to maintaining healthy enrollments, but Astin claimed that retaining students was an equally promising approach. According to Astin, investing resources in retention efforts can be more cost-effective than investing in recruitment efforts.

One problem with assessing the effects of any single variable on student persistence is that most factors that influence students' decisions to remain enrolled or to withdraw from college do not occur in isolation; other environmental factors always exist. Astin's (1975) research combined characteristics of college- and university-matriculating students by means of linear multiple regression techniques to produce measures of 'dropout-proneness,' which were used to assess the impact of financial aid, work, residence, college characteristics, and student/institutional fit on student persistence.

Astin (1975) conveyed that the most dropout-prone freshmen are those with poor academic records in high school, low aspirations, poor study habits, relatively uneducated parents, and small town backgrounds. The type of higher education institution can also have a significant impact on students' chances of degree completion. According to Astin, if ways can be found to involve students more in the life and environment of the institution, their chances of staying in college are greatly improved. In addition, Astin claimed that anything that can be done to enhance students' academic performance will also reduce attrition rates. Astin posited that a number of mechanisms were available to most institutions to bring about greater student participation: academic programs, admissions, freshman orientation activities, counseling and advisement, financial aid, work opportunities, extracurricular activities, tutoring, programmed instruction, and housing and student services.

Astin's (1975) research supported the theory that student involvement is a key factor in student persistence. His theory of college persistence held that a student's tendency to drop out of college is inversely related to the degree of direct involvement in the academic and social life of the institution.

According to Tinto (1975), social integration [of students] occurs at the level of the college or university and at the level of a subculture of an institution. Tinto conveyed that students' individual characteristics - family background, individual attributes, pre-university schooling experiences, etc. - as they enter college directly influenced their persistence decisions as well as their commitments to the institution and to the goal of graduation. Further, these commitments influenced the integration of the student into the academic and social systems of the institution. The greater the student's level of academic and social integration and the greater the levels of students' commitments to the institution and to the goal of graduation, the greater the likelihood the individual will persist in college.

Bean (1980) proposed that student attrition was analogous to turnover in work organizations, suggesting that the reasons students depart from higher education institutions are similar to those that cause employees to leave their places of employment. According to Morrison and Silverman (2005), Bean's model contained four categories of environmental variables: student dropout as the dependent variable; with student satisfaction and institutional commitment as intervening variables; while five background variables reflected pre-matriculation characteristics; and twenty-one variables reflected organizational determinants. According to the authors (2005), Bean suggested that organizational determinants influence student satisfaction, which in turn influences dropout behavior. In a revised model, Bean (1985) posited that:

1. A student's peers are more important agents of socialization than is informal faculty contact;
 2. Students may play a more active role in their socialization than previously thought;
- and

3. College grades seem more the product of selection than socialization. (p. 35)

Pascarella (1985) proposed that causal modeling can be incorporated to "understand the pattern of influences involved in the impact of postsecondary education on learning and cognitive development" (p. 49). In his model, Pascarella stated that the quality of student effort, students' background and precollege traits, and student interaction and engagement with various aspects of institutional socialization directly influence learning and cognitive development. Findings from his study indicated that residential facilities and students' peer groups have strong influences on academic achievement.

Building on his prior assertions that student involvement in the academic and social life of the institution is a key component of student persistence, Astin (1985) claimed that student involvement is comprised of five basic postulates. The first was physical and psychological energy of students. The second was that student involvement occurs along a continuum, with degrees of involvement varying considerably among students. Astin's third postulate stated that there are quantitative and qualitative attributes to student involvement. The fourth asserted that "the amount of student learning and personal development associated with any educational program [is] directly proportional to the quality and quantity of student involvement in the program" (Astin, 1985, p. 136). Astin's fifth postulate stated that "the effectiveness of any educational policy or practice was directly related to the capacity of that policy or practice to increase student involvement" (p. 136).

Bandura's (1986) Social Cognitive Theory presented a way of understanding the influence of early classroom successes on future success in college. Bandura's theory posited that individuals' interpretation of their own performance impacts their sense of self-efficacy and, subsequently, impacts their future performance. These self interpretations are based on "beliefs

in one's capabilities to organize and execute the courses of action required to manage prospective situations" (Bandura, 1986, p. 2).

Tinto (1987) asserted that more students leave their college or university prior to degree completion than stay. The consequences of this massive and continuing exodus from higher education are not trivial, either for individuals or their respective institutions. For individuals, the occupational, monetary, and other rewards of attending college are largely contingent on completing a degree. Institutions have come to regard student retention as the primary course of action necessary to ensure their survival. In what has become the consumer-driven marketplace of higher education today, students and their families are acting as consumers with choices more than ever before; colleges and universities have recognized that increased marketing campaigns and continually increasing freshmen classes can't ensure institutional survival (Tinto, 1987, p. 1).

According to Tinto (1987), despite the extensive body of literature on student retention and departure, there is much we do not know about the longitudinal process of students leaving higher education institutions and the complex interplay of forces which give rise to students' decisions to depart. Tinto posited that our understanding of effective ways of combating student departure is no less limited and, despite having acquired information from a variety of successful student retention programs over time, we have yet to identify clear attributes of successful programs that are institution-specific from those which are essential to the success of all types of retention efforts. As stated by Tinto, what we need to do is to develop a viable synthesis of what we know about the character and causes of student departure and the inherent nature of successful student retention programs.

Tinto (1987) attempted to bring order and clarity to the extensive body of research on student departure and retention by proposing a theory of student departure from higher education

institutions which focuses on the role these institutions play in influencing the social and intellectual growth of students. The intent of Tinto's theory is to show what can be done to increase student retention in higher education. According to Tinto, although it may be a desirable outcome of institutional action, student retention alone should not be the long-term goal of institutional efforts. "Instead, students would be better served if their education and their social and intellectual growth were the guiding principles of institutional action. When that goal is achieved, increased student retention will naturally follow" (Tinto, 1987, p. 5).

Tinto (1987) conveyed that students' decisions to withdraw are more a function of what occurs after matriculation to college or university than what precedes entry. These decisions are reflections of the complex nature of the social and intellectual life of college and university communities. As stated by Tinto, student departure "may then serve as a barometer of the social and intellectual health of institutional life as much as the experiences of students in the institution" (p. 6).

Building on Astin's prior claims, Tinto (1987) asserted that there is much confusion concerning the varied nature of different forms of student departure and the complex causes which lead different individuals to depart higher education institutions. Because of this confusion, it is important to identify and focus on studies which deliver useful information on individual rather than aggregate student departure from institutions of higher education (Tinto, 1987).

Chickering and Gamson (1987) emphasized the importance of improving teaching and student learning in college and assert that quality teaching and student learning lead to student success and improved persistence. The authors articulated seven principles for good practice, stating that effective instruction: "encourages contact between students and faculty; develops

reciprocity and cooperation among students; encourages active learning; gives prompt feedback; emphasizes time on task; communicates high expectations; and respects diverse talents and ways of learning" (pp. 3-5).

Later work by Tinto (1993) portrayed a longitudinal model to explain student departure. Tinto's expanded model added "adjustment, difficulty, incongruence, isolation, finances, learning, and external obligations or commitments" to his original theory from 1987 (p. 112). Pascarella, Terenzini, and Wolfe (1986) summarized Tinto's revised model as follows: "the stronger the individual's level of social and academic integration, the greater his or her subsequent commitment to the institution and to the goal of college graduation" (pp. 155-156). In his later work, Tinto (1993) recognized that different groups of students, such as at-risk, non-traditional, transfer, etc., have different situations requiring specific institutional retention policies and programs tailored to each individual group. Additionally, Tinto posited that different types of higher education institutions, such as two-year, urban, or public, also require different sorts of retention policies and programs.

Kuh (2001) advanced Astin's earlier work and incorporated Chickering and Gamson's (1987) definition of best practices in undergraduate education into the concept of student engagement. Student engagement includes two tenets. First, student success is more likely to occur as students increase the time and effort they put into their studies and other activities. Second, student success is more likely to occur when the institution focuses resources on organizing learning opportunities and services and encourages students to participate in and benefit from such activities (Habley, Bloom, & Robbins).

Braxton, Hirschy, and McClendon (2004) posited a revised theory of college student persistence, using Tinto's initial theory as a foundation. The primary thrust of this revised theory

concentrated on the delineation of six factors that influence social integration: commitment of the institution to student welfare; communal potential; institutional integrity; proactive social adjustment; psychosocial engagement; and ability to pay (Braxton et al., 2014, p. 84). Similarly to Tinto (1975), Braxton et al. (2014) "view the process of student persistence at residential colleges and universities as a longitudinal process" (p. 92).

Keeping in mind that a large proportion of student departure occurs during the first year of college enrollment, Mortenson (2010) pointed to the vulnerability of students during the first year of college as a rationale for centering attention on the first-to-second year persistence of students. According to Tinto (1986), the actions of administrators, faculty, and staff represent forms of organizational behavior that may influence student persistence decisions.

Kuh, Kinzie, Schuh, and Whitt (2005), through their Documenting Effective Educational Practice (DEEP) project, studied 20 postsecondary institutions with high graduation rates to examine how those institutions promote student success. The authors conveyed that there are six general features held in common by the DEEP schools: a living mission and a lived educational philosophy; a solid focus on student learning; environments adapted for educational enrichment; clear pathways to student success; improvement-oriented ethos; and shared responsibility for educational quality and student success.

Kuh, Kinzie, Schuh, and Whitt (2005) further asserted that "what students *do* during college counts more for what they learn and whether they will persist in college than who they are or even where they go to college" (p. 8). The authors conveyed that "educationally effective colleges and universities...channel students' energies toward appropriate activities and engage them at a high level in these activities" (p. 8). According to the authors, there are two key components of student engagement that contribute to student success:

The first is the amount of time and effort students put into their studies and other activities that lead to the experiences and outcomes that constitute student success. The second is the way the institution allocates resources and organizes learning opportunities and services to induce students to participate in and benefit from such activities. (p. 8)

Tinto (2012) conveyed that much of the research on student withdrawal hasn't been "particularly useful to those in the field who seek to develop and implement programs to improve retention and completion because it assumes, incorrectly, that knowing why students leave is equivalent to knowing why students stay and succeed" (p. 5). Tinto claimed the same can be said of institutional action: "despite years of effort, institutions have yet to develop a coherent framework to guide their thinking...too often, institutions invest in a laundry list of actions, one disconnected from another" (p. 5). According to Tinto, if institutions are to significantly increase the retention and graduation of their students, they "must begin by focusing on [their] own behavior and establishing conditions within [their] walls that promote those outcomes" (p. 6).

Braxton et al. (2014) posited that organizational culture plays an indirect role and faculty play a critical role in student persistence. According to the authors, the phenomenon of student persistence presents itself as difficult to predict and directly control. Thus, accounting for student persistence as well as the development of policies and practices to improve student retention requires a complexity of factors to influence this tricky phenomenon.

An examination of the theoretical foundations of student retention, persistence, and withdrawal, and the various research that has been conducted on student retention, illustrates the shift in focus over several decades from the reasons students depart higher education institutions to the myriad of efforts on campuses that are designed to facilitate student success. One of these efforts is academic advising.

Academic Advising

"Academic advising refers to situations in which an institutional representative gives insight or direction to a college student about an academic, social, or personal matter" (Gordon et al., 2008, p. 3). Academic advising is a "decision-making process during which students realize their maximum educational potential through communication and information exchanges with an advisor" (Grites, 1979, p. 1). Academic advising fosters the academic and intellectual development of students given its emphasis on the realization of the academic potential of students (Braxton et al., 2014). As stated by Habley, Bloom, and Robbins (2012), "advising offers every student the opportunity for interaction with an institutional representative with whom they can build a relationship and develop an individual plan for academic and co-curricular engagement at the institution" (p. xxv). O'Banion (1972) asserted that the "purpose of academic advising is to help the student choose a program of study which will serve him in the development of his total potential. As such, advising is a central and important activity in the process of education" (p. 62).

According to Klepfer and Hull, 2012, academic advising is an essential element in the success and persistence of postsecondary students. Kuh (2001) posited that "academic advisors can play an integral role in promoting student success by assisting students in ways that encourage them to engage in the right kinds of activities, inside and outside the classroom" (p. 69). Low (2000) conveyed that advisors are especially important because they are among the first people new students encounter and are the people with whom students often have frequent interaction throughout the first year. Effective academic advisors are available to students and are responsive to their educational goals, career interests, and exploring the nexus of the two. Advisors ultimately aid students in their navigation of institutional curriculum and culture.

According to Hossler and Bean (1990), academic advisors serve as lights in the labyrinth to students.

Smith and Allen (2014) conceived quality academic advising as a multidimensional process encompassing five domains:

...provision of accurate information about degree requirements and how the institution works within timelines, policies, and procedures; referral to campus resources for academic and nonacademic problems; integration of the student's academic, career, and life goals with each other and with aspects of the curriculum and co curriculum; individuation, or consideration of students' individual characteristics, interests, and skills; and shared responsibility or encouragement of students to assume responsibility for their education by giving them opportunities to develop and practice planning, problem-solving, and decision making skills. (p. 51)

Tinto (2012) posited that, in order to be successful, students need a roadmap that guides them through their postsecondary institution and their major field of study, the institutional resources available to them in pursuit of their degree, and requirements that have to be completed to earn a credential in their major field of study. According to Tinto (2012), in response to these needs, institutions have established a range of advising programs, many of which are focused on first-year students. As stated by Tinto (2012), "virtually all institutions, whether two- or four-year, have some form of advising for new students, some more structured than others" (p. 17).

Historical Overview of Academic Advising

The history of academic advising in American higher education spans nearly the length of the history of American higher education itself, but the advent of formal and structured advising programs is a more recent development (Habley, Bloom, & Robbins, 2012, p.xxv). The

following paragraphs provide a basic overview of different eras of academic advising in American higher education history.

The First Advising Era

At the inception of American higher education with the founding of Harvard College, academic advising did not exist as a separate function of the institution. That is, advisors in a separate role were not an aspect of institutional life. The classical Puritan curriculum at the time was designed to produce well-educated ministers, lawyers, and doctors for a burgeoning society (Gordon, Habley, Grites, & Associates, 2008). Frost (2000) identified the period from 1636 to 1870 as higher education before academic advising was defined. According to Rudolph (1962), during this period, the ideal collegiate community was comprised of "a large family, sleeping, eating, studying, and worshipping together under one roof" (p. 88). During this era, "a president, two professors, and one or two tutors perform the whole duty of instruction and government" (Brown, 1862, p. 10).

As stated by Gordon et al. (2008), "by the 1870s, the general social climate had become very formal and rigid, and students were kept in line by an inflexible system of rules, regulations, and punishments" (p. 4). According to Bush (1969), "no longer was it considered appropriate for faculty to speak with students on a personal basis; neither was it considered proper for students to approach faculty members" (p. 599). Some authors go so far as to say that students considered faculty a "necessary evil" and faculty saw students as an "unavoidable nuisance" (Veysey, 1965, p. 295). This divide between students and the faculty and the associated system of rules and regulations designed to keep students in line existed until the development of curricular electives in the 1870s. As stated by Gordon et al. (2008), this introduction of curricular electives in the 1870s "initiated the need for advisors to guide students in the successful pursuit of their chosen

paths. Also, the broader curriculum required faculty specialization, which brought the pansophic approach of faculty to an end" (p. 5). As institutions and curricula expanded, more was demanded of faculty members in terms of research and institutional service and new roles and positions on campuses began to emerge, including those of dedicated academic advisors.

The Second Advising Era

According to Frost (2000), the era from 1870 through about 1970 viewed academic advising as a defined and unexamined activity. The American higher education elective system was born in the 1870s, where more courses were offered outside of the classical and traditional curriculum, giving students more academic choices. As stated by Gordon et al. (2008), developing an academic advising process was part of this evolution of American higher education into the elective system we are accustomed to today. The elective system that Harvard President Eliot instituted in 1872 was "defended on the basis of Harvard's having a Board of Freshman Advisers, who helped students make appropriate choices among elective subjects" (Gordon et al., 2008, p. 5). In 1877, Johns Hopkins University had faculty advisors "in recognition that size and the elective curriculum required some closer attention to undergraduate guidance than was possible with an increasingly professionally oriented faculty" (Rudolph, 1962, p. 460). As stated by Gordon et al. (2008):

While these systems were designed partially to help students choose among electives, they were also intended to diminish a growing gulf between students and faculty (Veysey, 1965). Thus, institutions like Harvard and Johns Hopkins identified 'advisors' with specified expectations, but they paid little attention to the relative success of their advising processes. Although the concept of advising was beginning to be defined, it remained an unexamined activity. (p. 6)

According to Rudolph (1962), by the 1920s, most American institutions of higher education had established freshman counseling, freshman-specific programming, faculty advisers, and campus psychologists to collectively organize the advising function that had once been done solely by dedicated faculty. As student support programs on campuses began to proliferate during the 1930s and 1940s, a more student-centered philosophy within higher education emerged. This philosophy was described in the American Council on Education's *Student Personnel Point of View* (1949):

The student personnel point of view encompasses the student as a whole. The concept of education is broadened to include attention to the student's well-rounded development – physically, socially, emotionally, and spiritually – as well as intellectually. The student is thought of as a responsible participant in his own development and not as a passive recipient of an imprinted economic, political, or religious doctrine, or vocation skill (pp. 17-18).

According to Gordon et al. (2008), the *Student Personnel Point of View* established legitimacy for academic counseling in American higher education, along with personal, vocational, and job placement counseling. This heritage held true in the early 1970s and extends to current day.

Prior to the 1960s, American colleges and universities acted *in loco parentis* in relation to their students (Lee, 2011). *In loco parentis* refers to a legal relationship in which a temporary guardian or caretaker of a child assumes some or all responsibilities of the child's parent (Garner, 2009). As stated by Bickel and Lake (1999), "*In loco parentis* located power in the university - not in the course of law, or in the students. *In loco parentis* promoted the image of the parental university and insured that most problems were handled within the university, by the university, and often quietly" (p. 17).

The Third Advising Era

As conveyed by Frost (2000), the third advising era, which spans from the 1970s to present, views academic advising as a defined and examined activity. Academic advising first became an examined activity during the 1970s when advisors began comparing how they conducted advising to how it was being done at other institutions. In 1979, the National Academic Advising Association (NACADA) - the professional organization of academic advising - was born, with its adjudicated journal, a professional staff, and annual national and regional conferences. According to Gordon et al. (2008), other influences on the development of 'advising as an examined activity' were the publication of research articles by seminal authors such as Crookston (1972), O'Banion (1972), and others who conceptualized notions of what it meant to 'advise' a student with terms such as *prescriptive advising* and *developmental advising*. This emergence of academic advising as a profession and an academic discipline set the stage for examining various aspects of advising, including administrative structures of advising programs and services at American colleges and universities and advising approaches employed when working with students.

Theoretical Foundations of Academic Advising

Developmental Theories

Winston, Jr., Miller, Ender, Grites, and Associates (1984) conveyed several key, common elements of diverse developmental theories previously identified by Beilin (1955), including those that focus on intellectual and moral development:

1. Development is a continuous process.
2. The developmental process is irreversible.

3. Developmental processes can be differentiated into patterns, thus making process and products more predictable and, hence, more manipulable.
4. Where development is proceeding normally, maturity is a natural outcome.
5. Normal, healthy development is characterized by increasing differentiation and then integration of new elements.
6. The pace of development is rapid at the outset and slower as time passes.
7. Normal, healthy development proceeds from dependence to increasing independence.
8. Normal, healthy development proceeds from the egocentric to social behavior.
9. Normal, healthy development results from the interaction of several variables operating simultaneously or in succession. (pp. 102-103)

Crookston (1972) conveyed that "developmental advising is concerned not only with a specific personal or vocational decision but also with facilitating the student's rational processes, environmental and interpersonal interactions, behavioral awareness, and problem-solving, decision-making, and evaluating skills" (p. 5). O'Banion (1972) detailed five aspects of academic advising: "(1) exploration of life goals, (2) exploration of vocational goals, (3) program choice, (4) course choice, and (5) scheduling courses" (p. 10). Gordon et al. (2008) posited that developmental advising focuses on the needs of individual students in determining how each advising conversation takes shape. As stated by Gordon et al. (2008), "seen from Crookston's perspective, there can be no schism between the personal and the academic development of students because education is seen as transforming individuals not only intellectually, but personally" (pp. 19-20).

Shipton and Steltenpohl (1981) stressed that "if colleges are to truly enhance individual development and prepare students to cope with succeeding stages of development, faculty and

staff advisers...need to be prepared to assist students...in clarifying their life, career, and academic purposes" (p. 691). According to Winston, Jr. et al. (1984), there is an underlying assumption that colleges and universities sincerely intend to facilitate the total development of each student if a case is to be made for helping faculty and staff members prepare for such an undertaking. Winston, Jr. et al. (1984) asserted that developmental theory "becomes extremely useful in that it provides advisor and student a solid conceptual base for their joint work" (p. 90). Winston, Jr. et al. (1984) also posited that "academic advising based on developmental theory legitimately recognizes this [student] wholeness and serves to encourage effectively wholesome development of each student's life in and out of the classroom" (pp. 90-91). These authors further conveyed that advising based on developmental theory "fully and realistically recognizes each student as a complete individual...and readily acknowledges that 'what you see' is not all there is and may not even begin to convey the real person the student is" (pp. 91-92).

Life Cycle Theory and the advising relationship. As stated by Winston, Jr. et al. (1984), the work of Erikson (1950), Gould (1972), Levinson (1978), Neugarten (1963, 1970), and Sheehy (1976) "generally points out normative features, tasks, concerns or issues, and processes of the adult life cycle" (p. 95). Chickering's (1981) work asserts that "the various ages from late adolescence through late adulthood are characterized by age-related personal concerns, general orientations, problems, dilemmas, developmental tasks, roles, and responsibilities" (Winston, Jr. et al., 1984, p. 95).

Advising and Moral Reasoning Development. Kohlberg's (1971) assertions regarding values and moral development are important for advising, since most advising involves some aspect of discussing careers and associated lifestyles with students. Kohlberg (1971) depicted moral development as the shifting of an individual's orientations toward justice and role taking.

“Kohlberg (1971) defined justice as ‘the primary regard for the value and equality of all human beings, and for reciprocity in human relations’ (p. 14)” (Winston, Jr. et al., 1984, p. 106). The concept of role taking involves envisioning oneself in the situation of another person or, in other words, empathetically relating to another’s situation in order to anticipate what they will do (Theodorson & Theodorson, 1969).

As stated by Winston, Jr. et al. (1984), “the advisor who desires to foster the moral development of students will display genuine respect for the student and create an open, trusting relationship...the advisor actively engages in encouraging the student to consider values underlying various choices made” (pp. 107-108). The responsive advisor should consider the student’s stance on issues such as major choice, course selection, extracurricular activities, politics, religion, and social matters. Advisors who take such considerations into account, according to Winston, Jr. et al. (1984), “can urge a student to explore through various concrete experiences the reordering of priorities associated with various roles and related responsibilities” (p. 108). Within the context of moral development, the advisor’s level of development determines the advisor’s efforts to cultivate the student’s development (Winston et al., 1984).

Perry's Scheme and the advising process and relationship. Perry (1970, 1981) articulated a scheme of intellectual and ethical development pertinent to advisors because of its insights on the thought processes of students. Perry’s scheme consists of four categories that incorporate nine positions. He referred to the first category as dualism; in position 1 students view their surrounding environment in polar terms (e.g. we versus they, good versus bad, etc.). Right answers exist for all questions and it is the role of authoritative figures to teach these right answers (Perry, 1970). In position 2, students view diversity as unnecessary confusion. Position 3 is in the second category, multiplicity. According to Perry (1970), students accept diversity

and uncertainty but still view these concepts as temporary in areas where the teacher or advisor has not yet determined an absolute answer. In position 4, still in the multiplicity category, students see diversity of opinion as extensive and believe each person is entitled to his or her own opinion, regardless of whether that opinion counters the opinion of the authority figure. In position 5, which is in the third category of relativism, students believe all knowledge and values, including those of authority figures, as “relativistic and subordinate dualistic right-wrong functions to the status of a special case in context” (Perry, 1970, pp. 9-10). In position 6 within the relativism category, students begin to consider the importance of situating themselves in a relativistic world through some personal commitment. Perry’s (1970) last category, commitment in relativism, contains the final three positions. In position 7, “students make an initial commitment in some area, perhaps a major” (Winston, Jr. et al., 1984, p. 104). In position 8, students start to understand the full implications of their commitment and explore various aspects of responsibility. Lastly, in position 9, “students experience the affirmation of identity among multiple responsibilities and realize commitment as an unfolding, ongoing activity through which they express their lifestyles” (Winston, Jr. et al., 1984, p. 104). Perry’s (1970) study focused on males, thus it is important to examine other insights gained from related studies that included non-male subjects such as Baxter-Magolda’s (1992) work.

Baxter-Magolda’s Model of Epistemological Reflection. Baxter-Magolda’s (1992) model consisted of four stages: absolute knowing, transitional knowing, independent knowing, and contextual knowing. Within the absolute knowing stage, knowledge is certain and learners believe teachers are experts. The focus is on absorbing knowledge. The transitional knowing stage claims that some knowledge can be questioned; some uncertainty is accepted by learners and critical reasoning begins to emerge. The independent knowing stage shifts focus and implies

that most knowledge is uncertain. Learners begin to accept that all individuals have their own beliefs and opinions. Teachers provide a context for exploring and support the development of independent views. Baxter-Magolda's (1992) final stage of contextual knowing asserts that judgments and opinions must be evidence based. Teachers are seen as partners to learners in the development of knowledge.

Developmental Change. “The student culture of a developmentally oriented institution should be one characterized by positive, intimate, meaningful relationships versus negative, superficial, aimless interactions” (Chickering, 1969; Miller & McCaffrey, 1982, as cited in Winston, Jr. et al., 1984, p. 110). According to Winston et al. (1984), the climate of a change-promoting college or university promotes freedom of choice in most areas of faculty and student life. “Thus, the developmentally oriented institution will provide ample opportunities for students and other members of the academic community to make meaningful decisions in all areas of their lives and to control their destiny” (Winston et al., 1984, p. 110). Heath (1981) conveyed that such an institution should be empathetically responsive, that is, “its faculty genuinely care about the growth of its students and seek to educate in ways that enhance the historic liberally educating goal of deepening a youth’s humaneness and identification with others” (as cited in Winston, Jr. et al., 1984, p. 110).

These theories all share a common theme of student development during the collegiate experience. Because academic advising fosters the academic and intellectual development of students, theories focused on student development have come to be the guiding conceptual framework for advising as a discipline and profession (Braxton et al., 2014).

Categorizing Student Development Theories

As stated by Evans, Forney, Guido, and Renn (2010), "student development theory provides a lens through which to view students and to help educators put student behavior in context...and suggests action for working with students, guiding practice in advising, teaching, programming, and facilitating student learning" (p. 26). According to Strange (2004) and King (2000), "theories of student development can be placed into one of three categories: psychosocial-identity formation, cognitive-developmental structures, and personal preference or types" (Gordon et al., 2008, p. 20).

Psychosocial-identity formation theories. As stated by Gordon et al. (2008), "psychosocial-identity formation theories look at different periods or stages in people's lives and the issues faced during these stages. The focus is on developmental tasks, transitions, and identity formation" (p. 20). Erikson (1963) conveyed eight developmental stages or crises over the course of a person's life with possible positive or negative resolutions at each individual stage or crisis. As stated by Gordon et al. (2008), positive resolutions "allow for consequences of the crisis to be incorporated into the person's future development. Negative resolutions lead to breaks or discontinuities in development, which are carried over into subsequent stages" (p. 20). Negative resolutions developed during childhood can remain with an individual into adulthood; however, there are opportunities to mend these negative resolutions through more positive resolutions of later developmental stages (Gordon et al., 2008, p. 20).

Chickering and Reisser (1993) used Erikson's theory of identity formation as the basis for their model, which showed how college students change psychosocially through various periods of time they refer to as "vectors." According to Chickering and Reisser (1993), "student growth

along these vectors can occur at different rates and can interact with movement of other vectors" (Gordon et al., 2008, p. 20).

Cognitive-development theories. As conveyed by Gordon et al. (2008), "cognitive-development theories refer to how individuals perceive and interpret their life experiences" (p. 23). Kohlberg's (1969) theory of moral development depicted "the way a person reasons about moral dilemmas rather than the content of a person's verbal response to such dilemmas" (Gordon et al., 2008, pp. 23-24). According to Berk (2007), the first two stages of Kohlberg's theory are typical of children through elementary school. By adolescence, stage 3 develops and by mid to late adolescence, stage 4 is established. Berk (2007) asserted that few people progress higher than stage 4 (Gordon et al., 2008). Perry's (1970) scheme and its proposed positions of development discussed in a previous section provides another example of a cognitive-development theory.

Gilligan (1982) examined empathy and female moral reasoning and posited that females consider alternative issues when judging whether something is right or wrong. Through her care orientation model of moral development, Gilligan conveyed that female decision making is often driven by a concern for the welfare of others and the maintenance of relationships as opposed to the traditional emphasis on logic and principles. Gilligan's (1982) investigation of female moral development provided insights that went beyond Kohlberg's theory in that Kohlberg's theory was based on an all-male sample.

Personal preference or type theories. As stated by Gordon et al. (2008), "personal preference or type theories focus on differences that are more preferential, on personality differences, and on how students approach their learning environment as well as the world at large" (p. 26). According to the authors, these factors are relatively stable over the course of an

individual's development and influence other developmental areas. Personal types offer explanations on how an individual responds to various environmental stimuli and what sources of support they rely on. Gordon et al. posited that the Myers-Briggs theory of personality type (Myers & McCauley, 1985) and Kolb's theory of learning styles (1984) are noted contributors to personal type theories.

The Myers-Briggs Type Indicator, based on Carl Jung's (1960) theory of personality types, emphasizes how people gather and process information in order to make decisions. Preferences are organized into four dyads: Extroversion-Introversion, Sensing-Intuition, Thinking-Feeling, and Judging-Perceiving (Evans, Forney, & Guido-DiBrito, 1998). Extroverts prefer working in group settings whereas introverts prefer to work independently. Sensing individuals prefer objective data and predictable routines whereas intuitives perceive information based on imagination, connections, and impressions. Intuitives often see routine as stifling. Thinkers prefer to use logical analyses when making decisions whereas those on the Feeling dyad make their decisions based on what is liked or disliked, and subjective values. Those on the Judging dyad gather information quickly and make decisions in order to live an orderly life. Perceivers take more time to deliberately observe and gather information and prefer a more spontaneous life (King, 2000). The Myers-Briggs Type Indicator, also known as the Myers-Briggs Personality Test, is frequently used in career advising and career counseling appointments with students in American higher education today.

Kolb (1984) identified four distinct learning styles which people use to perceive information and process experiences. These learning styles are convergers, divergers, assimilators, and accommodators. Convergers tend to be effective problem solvers and decision makers. Divergers use their imagination while being aware of meaning and values. They tend to

be good at coming up with alternatives to solving a specific problem. Assimilators are good at inductive reasoning and are able to create theories through integration of seemingly disparate ideas. Accommodators implement plans and take action. "They complete tasks, are open to new experiences, willing to take risks, adaptive to changing conditions, and prefer trial-and-error methods of problem solving rather than analytical ability. Accommodators are also comfortable with people" (Gordon et al., 2008, p. 27). As stated by Gordon et al., "the implications of learning styles for advisors include the academic disciplines with which people with certain learning styles are comfortable...learning may be more difficult for students with differing learning styles" (p. 27). According to the authors (2008), Kolb (1984) found a tendency for academic disciplines to have students with certain learning styles within their programs of study.

Administrative Structures of Advising

Habley (1983) examined various administrative structures of academic advising at American colleges and universities and provides a framework to describe and analyze advising programs. In subsequent work, Habley (2004) further described administrative structures of contemporary advising programs in the U.S. as follows:

Faculty-Only Model: All students are assigned to an instructional faculty member for advising. There is no advising office.

Supplementary Model. All students are assigned to an instructional faculty member for advising. There is an advising office that provides general academic information and referrals for students, but all advising transactions must be approved by the student's faculty advisor.

Split Model. A specific group(s) of students (e.g. undecided, underprepared, etc.) are advised in an advising office. All other students are assigned to academic units or faculty advisors.

Dual Model. Each student has two advisors. A member of the instructional faculty advises the student on matters related to the major. An advisor in an advising office advises the student on general requirements, procedures, and policies.

Total Intake Model. Staff members of an administrative unit are responsible for advising all students for a specified period of time or until some specific requirements have been met. After meeting these requirements, students are assigned to an academic subunit or member of the instructional faculty for advising.

Satellite Model. Each school, college, or division within the institution has established its own approach to advising.

Self Contained Model. Advising for all students from the point of enrollment to the point of departure is done by staff in a centralized unit. (pp. 7-8)

Habley (2004) conveyed that the Faculty-Only Model of advising is declining, but is still the most commonly used model in two- and four-year private colleges. Habley (2004) also posited that the Split Model - in which certain groups of students, such as undeclared or pre-majors, are advised in a centralized advising office and all other students are assigned to academic units and/or faculty advisors - has become the most prominent organizational model across all campuses.

Advising Approaches

While the administrative structures of academic advising programs described in the last section cover institutions' structural or macro-level approaches to advising services, this section

reviews individual or micro-level approaches to academic advising performed by advisors themselves.

Developmental Advising

Developmental advising focuses on the "whole student." Crookston (1972), the first to use the term developmental advising, posited that this advising approach incorporates a relationship in which there is an agreement between advisor and advisee that responsibilities are shared. He defined developmental advising as a systematic process through which students identify and achieve their academic, personal, and career goals with the support of advisors and institutional resources. Ender, Winston, and Miller (1982) defined developmental advising as a process that is concerned with human growth, is goal related, and requires the establishment of a caring relationship. According to Winston, Jr. et al. (1984), "advisors serve as role models and mentors in this relationship. Developmental advising incorporates all resources on campus, particularly in integrating academic and student affairs" (p. 442). A primary objective of developmental advising is for the advisor to facilitate student growth, skill mastery, and, ultimately, independent decision-making. Developmental advising depends on interactive dialogue, with the advisor's questions stimulating self-reflection and discovery on the part of the student. In a nutshell, developmental advising entails getting to know students as individuals so that advisors can base their guidance on students' individual situations, capabilities, and goals.

Prescriptive Advising

Prescriptive advising is most commonly used in majors or academic programs which follow a linear, clearly defined academic plan with limited flexibility. However, prescriptive advising goes well beyond proving a student with a list of courses. It considers the unique experience of the student in generating an academic plan that the student can reasonably

complete in a time-effective manner. The student's interest or motivation in the program are also discussed.

Proactive Advising

Proactive (also referred to as intrusive) advising identifies a student at risk or in difficulty, and targets specific resources to the student in a meaningful way. Instead of waiting for the student to contact the advisor, the advisor reaches out and tells the student the date and time of the appointment.

Career Advising

Career advising, as stated by Gordon (2006):

... may be thought of as a less psychologically intensive approach than career counseling.

The emphasis is on information and helping students understand the relationships between their educational choices and general career fields rather than how to cope with intense career-related personal concerns. Career advising helps students understand how their personal interests, abilities, and values might predict success in the academic and career fields they are considering and how to form their academic and career goals accordingly. (pp. 11-12)

Career counselors, on the other hand, "provide the more traditional career counseling functions, such as helping students with career self-assessment, job search and job placement activities, or counseling students who are experiencing more stressful situations such as coping with academic and career transitions and indecisiveness" (Gordon, 2006, p. 14). Ideally, academic advising and career counseling complement each other so that students are equipped to make the most informed decisions possible about their long-term academic and career goals.

Appreciative Advising

Appreciative advising seeks to incorporate Appreciative Inquiry into academic advising practices. According to Bloom and Martin (2002), "Appreciative Inquiry is an organizational development tool that focuses on bringing out the best in people and organizations, instead of viewing them as problems that need to be solved." Bloom and Martin (2002) posited that the link between Appreciative Inquiry and academic advising seems clear:

As advisors, we are constantly trying to help our students reach their full potential, and one of the primary tools that we have for empowering students is asking questions.

Appreciative Inquiry challenges us to make sure that we ask positive questions aimed at helping students discover their strengths, abilities, and skills. (para. 2)

Group Advising

Group advising is increasingly being utilized as a viable option for delivering curricular and academic policy and procedural information to students. While individual or one-on-one advising is typically regarded as the preferred method of delivering academic advising services, there are compelling reasons to incorporate group advising into a comprehensive advising system (Gordon et al., 2008). As Woolston and Ryan (2007) conveyed, group advising is more closely related to classroom teaching and less aligned with counseling than individual advising.

Advisor Type

Various types of college or university employees provide academic advising for students depending on the administrative structure of advising programs at each individual institution. This section examines types of college or university employees that most commonly provide advising services for students. As stated by Gordon et al. (2008), "institutions seeking to provide

quality academic advising systems should consider deploying more than one type of advisor to meet the variety of student backgrounds and needs on campuses today” (p. 268).

Faculty Advisors

Historically, faculty members at American institutions of higher education have provided the primary function of helping students with their academic and personal success in college. Faculty advisors are those individuals whose primary responsibility at the institution is to teach and/or conduct research. Advising individual students or a caseload of advisees may be one of many additional responsibilities assigned to faculty members. Typically, faculty advising focuses on the curriculum or career prospects in an individual program of study. Faculty members provide excellent mentoring opportunities for students majoring in faculty members’ fields and often upper-division undergraduate students and graduate students gain the most from faculty mentorship (Gordon et al., 2008).

Professional Advisors

Professional advisors, sometimes referred to as staff or professional staff advisors, are individuals whose responsibilities at the institution focus primarily on academic advising services and activities that promote the academic success of students, with additional focus on student development at the institution. While some teaching responsibilities may be included in a professional advisor’s role description, professional academic advising staff spend the bulk of their time advising individual students and groups of students on curricular requirements of one or many academic majors or areas of study, co-curricular opportunities on and off campus, beneficial resources for students, and general academic and personal success strategies, addressing overall developmental issues with students in their pursuit of a college education

(Gordon et al., 2008). Habley (2004) conveyed that ACT Survey results indicate a steady increase in the use of professional advisors on college and university campuses.

According to Gordon et al. (2008), having professional advisors on campuses has many benefits associated with student success. As stated by Gordon et al. (2008), “unlike faculty advisors, whose primary focus is on teaching or research, professional academic advisors are able to spend the majority of their time and availability meeting with students or participating in advising-related activities” (p. 269). Other benefits associated with professional advisors include these individuals’ ability and willingness to obtain and share knowledge across multiple academic disciplines and knowledge of institutional policies and procedures. Professional advisors are usually able to keep themselves apprised of contemporary technologies that enhance the advising experience such as student information systems and degree audit programs. “Faculty advisors are certainly capable of these types of advising activities and strategies, but may find them challenging because of their focus on the classroom or research” (Gordon et al., 2008, p. 270).

Graduate Student Advisors

Graduate student advisors are students seeking opportunities to help fund their individual education through assistantships, internships, or practicum experiences. Academic departments on college and university campuses may opt to employ graduate students to provide academic advising for undergraduate students or to supplement faculty or professional advising services (Gordon et al., 2008).

Undergraduate Peer Advisors

Habley (2004) posited that, according to ACT surveys, the use of peer undergraduate students in various roles to support academic advising efforts is increasing. Peer undergraduate

advising is one of the various types of paraprofessional positions for which students are selected and trained to offer services for their peers. Using undergraduate peer advisors can facilitate faculty or professional advisors having more time available to spend with students requiring in-depth assistance. Undergraduate peer advisors can also benefit institutions with tighter budgets for advising services who may not be able to afford employing professional advisors (Gordon et al., 2008).

Contemporary Research in Academic Advising and Student Retention

Swecker, Fifolt, and Searby (2013) investigated the relationship between the number of meetings with an academic advisor and the retention of first-generation college students at a large, public research institution in the Southeast. The authors conveyed that the number of advisor meetings is a significant predictor of student retention. As stated by the authors, "findings from this study suggest that for every meeting with an academic advisor, the odds that a student will be retained increase by 13%" (p. 46). The study employed a multiple logistic regression technique to investigate the relationship between the number of meetings with an academic advisor and the retention rates of first-generation students. According to these authors, "additional variables (gender, race, major) were included in the original investigation but did not prove to be significant predictors of retention" (p. 48).

Data collection procedures in Swecker, Fifolt, and Searby's (2013) study consisted of "historical data retrieved from reports generated by student academic fact sheets stored in the student registration system" (p. 48). The authors gathered additional data from an institutionally developed advisor electronic tracking system designed to manage advisor/advisee interactions. Out of a total population of 437 first-generation college students at the institution, the sample for the study was 363. In the investigation, first generation status and number of individual, face-to-

face meetings with academic advisors served as the independent variables and student retention rates of students who matriculated to the institution in fall 2009 and were enrolled and in good standing at the institution in fall 2010 served as the dependent variable (Swecker, Fifolt, & Searby, 2013). The authors indicated that, "with the exception of two faculty advisors in math and engineering, research was limited to student interactions with professional academic advisors" (p. 48).

Swecker, Fifolt, and Searby (2013) illustrated the significance of advising in the retention of first-generation college students. They also posed academic advising as a mechanism for student engagement with the institution and engagement as a key variable used in predicting student retention. However, other variables the literature highlights as influential on student retention, such as students' financial and family situations, socioeconomic status, academic preparedness as indicated by high school GPA and ACT/SAT test scores, etc., beyond those mentioned in the study as insignificant to retention - race, major, gender - were not investigated or controlled for. Thus, the extent to which the authors claimed that student retention is increased by the number of meetings with an advisor should be further investigated with additional variables known to affect retention considered.

Swecker (2011) examined the retention of at-risk, first-generation college students. Swecker used a multiple logistic regression to investigate the relationship between first-generation college student retention and the number of academic advising appointments, along with gender, race and major. According to Swecker, the study's theoretical framework was comprised of three student retention models: Tinto's Interactionist Theory of College Student Departure, Astin's Theory of Involvement, and Bean and Eaton's Psychological Model of Student Retention (pp. iii-iv). Swecker (2011) posited that the study's results indicate "goodness

of fit was not as strong of an indicator for first-generation college student retention, and the variables of gender, race and major were not significant. However, the variable of number of advisor meetings was significant in the equation” (p. iv) ($OR = 1.20, p = .01$).

Young-Jones, Burt, Dixon, and Hawthorne (2013) evaluated academic advising in terms of student needs, expectations, and success as opposed to the traditional lens of student satisfaction with the advising process. The authors used principal axis factor analysis, multiple regression analyses, and analyses of variance to examine a survey instrument intended to gauge students’ expectations of and experiences with academic advising. The goal of the study was to link multiple aspects of advising to the academic performance of students. The authors investigated how advising predicts student grade point average (GPA). The authors also examined group differences to highlight factors which contribute to GPA prediction and evaluate student population differences to determine which groups may need special advising strategies (p. 10).

Young-Jones et al. (2013) also used principal axis factor analysis to analyze student assessment items and subsequently identified factors relating to academic advising that predict student success across the undergraduate experience. Six factors were identified in the study: advisor accountability, advisor empowerment, student responsibility, student self-efficacy, student study skills, and perceived support. According to the authors, the only factors that significantly contributed to the model of predicting student GPA were student study skills and student self-efficacy. They also found that “meeting with an advisor at least once during the semester is an important contributor to multiple factors impacting student success” (p. 12). Finally, the authors claimed that “student expectations of their advisors and how well advisors

meet those expectations contribute to two of the primary factors associated with student success (i.e. student study skills and student self-efficacy)” (p. 12).

Smith and Allen (2014) analyzed “five cognitive and three affective outcome measures related to student judgments and attitudes that might result from quality advising encounters” (p. 50). The authors conveyed the outcomes as linked to, or possibly predictive of, student retention. The authors examined these outcomes from a survey of 22,305 students from two community colleges and seven universities as a function of “(a) whether or how often students contacted faculty/professional advisors...and (b) whether students consulted advisors, self-advised or relied upon advice from informal sources to choose required classes” (p. 50). The authors conveyed that students who contacted advisors scored higher on all outcomes and, subsequently, “reported more knowledge and attitudes consistent with continuing at their institution and completing their educational program” (p. 50).

Smith and Allen (2014) asserted that student learning outcomes of advising vary from institution to institution, but that some of these outcomes are common at many institutions because “they represent cognitive and affective outcomes associated with student success; that is, they are student judgments and attitudes that are either already known to be, or can be conceptualized as being, tied to persistence” (p. 50). According to the authors, “our research in single and multi-institutional studies has consistently shown that students place high value on the advisor's ability to provide accurate information about degree requirements” (p. 51). Students' lack of knowledge about degree requirements can lengthen the time to degree or prevent them from earning their degree. With these findings in mind, Smith and Allen “predicted that students who contacted an advisor would be more likely to agree that they know the requirements for

earning their degree or meeting their educational goals than would those who did not contact an advisor" (p. 51).

Smith and Allen (2014) used the frequency of students' contact with an advisor and the source of students' information about courses required for their program of study to "examine advising outcomes in over 22,000 students at nine institutions while controlling for other variables likely to be associated with student learning" (p. 53). Independent variables for the study included frequency of contact with advisor and the source of degree-related information. The authors attempted to demonstrate that scores on the eight advising outcomes used in the study varied as a function of these two independent variables and not based on personal or institutional characteristics using ANCOVAs to control for other variables that could affect advising learning outcomes. They predicted scores on all eight learning outcomes were higher for students who met with an advisor in the formal advising system and for students who had more contacts with an advisor than for those with fewer encounters. Similarly, students who received information about required courses from an advisor scored higher on all eight learning outcomes than those who used official advising tools or relied on advice from non-advisors. The authors posited that "students reported more knowledge and attitudes predictive of success when they saw advisors, interacted with them more often, and consulted with them rather than using official advising tools or other students to choose required courses" (p. 60).

Bitz (2010) measured advisor relationship perceptions among first-year students, finding three key components of the advising relationship: advisor concern, advisor contact, and advising relationship quality (p. 53). Hester (2008) identified a positive relationship between frequency of advising sessions and high ratings for professional manner. According to Bitz (2010), high levels of advisor and advisee interaction have been associated with good advising. Nadler and

Simerly (2006) developed a model that "suggests that advisor listening is a key element in the advising process" (p. 215).

Jordan (2012) examined advising style perceptions and preferences of students and advisors. According to Jordan, "significant findings for advisors included differences by advisor type relative to preference for advising style delivered and for advising style preferred. Professional advisors had a stronger developmental orientation than faculty advisors" (p. v). Jordan conveyed that "significant findings related to the advising students received included college, gender, classification, and being non-white. Females and white students indicated a preference for more developmental advising" (pp. v-vi).

Smith (2004) examined student perceptions of academic advising and the relationship between academic advising and student persistence. The first focus of the study assessed students' views of advising based on their primary advising delivery system: faculty advisor, professional advisor, or peer advisor. The second focus of the study, guided by Tinto's (1975) Theory of Individual Student Departure, examined predictive factors associated with student enrollment. According to Smith (2004), "perceptions of academic advising were isolated and to the model and their unique contribution to student enrollment behavior examined" (p. xi). Student satisfaction data from an instrument designed to evaluate students' experiences within the campus setting at Florida State University was combined with academic and enrollment information and groups of returning and departing students were compared.

According to Smith (2004), "quantitative findings revealed areas where students were most and least satisfied with academic advising. Significant differences were observed among advisor types" (p. xi). Smith conveyed that students were most satisfied with advising received from professional advisors as opposed to advising received from faculty or peer advisors.

According to Smith (2004), “no significant differences or multivariate effects were observed between returning and departing students in regard to academic advising or the other constructs of Tinto’s model including social integration, academic integration or commitment levels” (p. xi). Results of the study revealed three significant and positive correlations between advising and academic integration scales. According to Smith (2004), these results suggest that students’ perceptions of advising function as a valid place within the academic integration construct.

Chando (1997) investigated the relationship between student preferences for academic advising style – prescriptive or developmental – and student characteristics including age, gender, race, academic major, ACT composite score, high school grade point average (GPA), developmental studies course enrollment, and first-generation status. The study employed a multiple regression analysis. According to Chando (1997), “the results of the study clearly supported the contention that most students prefer developmental advising. Student characteristics found to be significant predictors of advising style were high school GPA and gender” (p. 58).

Dunning (2013) examined whether academic and social integration help explain the relationship between advising and retention and investigates which advising model holds more promise for students’ positive perceptions of their advising. According to Dunning (2013), students advised under a centralized model responded more favorably when compared to students advised under a decentralized model. Dunning (2013) asserted that the “centralized model [had] greater impact in students’ social integration, advising support, and retention. A larger number of students reported that they met with their advisor more frequently (4 to 5 times during their freshmen year) under the centralized model” (p. 73). In addition, according to

Dunning (2013), the decentralized model also presented greater significance under the construct of a student's likelihood to return for the next year of study.

Sickler (2013) examined the perceptions of service quality among undergraduate students that predict student retention in the first two years of study. Sickler looked at various campus services and attempted to determine student satisfaction levels with the broader campus environment. According to Sickler, "analysis of service quality subscale factors revealed a one factor model with the factor of Academic – items relating to faculty, course offerings, and advising – best predicting student retention" (p. iii). Sickler conveyed that overall student satisfaction with the institution served as a significant predictor of student retention, campus services and the broader campus environment predicted overall student satisfaction, and understanding which factors played significant roles in predicting overall student satisfaction was critical to successful campus improvement activities.

Conclusion

Academic advising has evolved throughout the history of American higher education and has developed into a burgeoning profession with a rapidly-expanding research base. Professional advising positions have become an area of considerable attention and investment at a substantial number of U.S. postsecondary institutions today (Gordon et al., 2008). Despite seminal and contemporary research findings that empirically link effective advising to increased student retention rates, little research has been conducted to thoroughly examine the effect of advisor type, and specifically of professional advisors, on student retention. This study conducts such an investigation in order to contribute to the knowledge base that college and university decision makers rely on to inform student retention, persistence, and completion strategies and investments at their institutions.

Chapter 3

METHODOLOGY

Research Design

Using logistic regression, this study investigated the effect of academic advisor type on student retention while controlling for the predictor variables mentioned below. The research design compared professional and faculty advisor type to determine whether one has a greater impact on student retention. The dependent variable of the study is student retention. Academic advisor type is the study's independent variable. The following factors at the point of students' matriculation to the institution served as additional independent or predictor variables: socioeconomic status, whether students are first-generation in family to attend college, and high school grade point average. The following student characteristics after matriculation to the institution also served as predictor variables: enrollment in developmental coursework and first semester grade point average.

Research Context

The study took place at a mid-size, four-year, research-intensive, traditional public institution in the western U.S. Total enrollment at the institution for the fall 2015 semester was 13,358. Total enrollment of first-time, full-time, four-year degree-seeking freshmen for the same semester, which represents the cohort of students reported in the official retention rate for the institution, was 1,302. The institutional retention rate from fall 2014 semester to fall 2015 semester was 72.6%. The institutional, six-year graduation rate during the 2014/2015 academic year was 46.3%. Approximately 53% of students at the institution are male and 47% are female; 76% of students at the institution are white¹ (College Portrait, 2016). See Appendix A for

¹ This relatively high percentage of white students supports not including race as a predictor variable of the study.

additional demographic information on the institution's student population.

Population and Sample

The target population for the study consists of all first-year, full-time, four-year degree-seeking students at the institution who matriculated during fall 2015 semester (N=1,302). The sample for the study includes all aforementioned students for whom data can be accessed on: whether or not students were retained for the second year of study; advisor type; socioeconomic status; first generation status; high school grade point average; first semester grade point average; and developmental course enrollment.

Rates of student attrition from college vary over time and, on average, are generally highest in the first year and decline thereafter. For four-year colleges and universities, whether public or private, 38% of those who students who depart the institution will do so in their first year and 29% in their second year (Tinto, 2012). “Since much of the attrition in the second year reflects what happened or did not happen in the first year, it is understandable that many institutions allocate a sizable portion of their resources to [students’] first year of college” (Tinto, 2012, p. 3). The selection of the study's target population was based on rates of student attrition typically being highest during students' first year.

Research Question and Hypotheses

This study was designed to answer the following research question: what is the effect of academic advisor type on retention of first-year, full-time, four-year degree-seeking students at a mid-size research university in the western U.S.?

The null hypothesis of the study posits there is no statistically significant effect of advisor type on the retention of first-year, full-time, four-year degree-seeking students at the study's institution when controlling for student socioeconomic status, whether or not a student is first

generation in their family to attend college, high school grade point average, number of advising sessions during the first semester, first semester grade point average, and whether or not a student is enrolled in one or more developmental (i.e. below college-level) courses. The following formula represents the null hypothesis of the study using simple logistic regression (Osborne, 2015, p. 315):

$$H_o: \log\left(\frac{P(Y=1)}{1-P(Y=1)}\right) = 1.0 \quad (1)$$

Equation 1 states that the log of the probability of the dependent variable occurring (i.e. students in the study's sample being retained at the study's institution for the third semester) divided by 1 minus the probability of the dependent variable occurring is equal to 1.

The alternative hypothesis of the study posits that there is a statistically significant effect of advisor type on the retention of first-year, full-time, four-year degree-seeking students at the study's institution when controlling for the predictor variables previously mentioned, with professional advisors having a more positive effect on student retention than faculty advisors. In other words, when students meet with professional advisors during the first year of study, the probability of them being retained for the third semester is greater than when they meet with faculty advisors. The following formula represents the alternative hypothesis of the study using simple logistic regression (Osborne, 2015, p. 316):

$$H_a: \log\left(\frac{P(Y=1)}{1-P(Y=1)}\right) \neq 1.0 \quad (2)$$

Equation 2 states that the log of the probability of the dependent variable occurring divided by 1 minus the probability of the dependent variable occurring is not equal to 1.

Data Collection

Student demographic and academic performance data were collected from the institution's student information system (SIS). This is a database of student records and

information maintained by the institution. All student grades and other transcript information are maintained in the system. All data pertinent to the study was extracted directly from the SIS database. Information on the type of academic advisor assigned to each student was also extracted from the student information system. In order to protect the anonymity of the study's sample, a third party - the Institutional Research unit (IR) of the study's institution - extracted and validated all data used in the study. In anticipation of a requirement for Institutional Review Board (IRB) approval, only IR can report sensitive student-specific data; hence, it was necessary to develop the data management plan described in the following section.

Sample Selection/Data Management

The IR unit selected relevant records of all first-time (i.e. new freshmen), full-time (i.e. 12 or more registered credits), degree-seeking students that matriculated to the institution for the fall 2015 semester. This represents the study's target population. IR then determined which students from the initial data pull described above returned for the fall 2016 semester. Next, IR added a data point for the type of advisor assigned to each student in the institution's SIS. IR then added additional data points for the following predictor variables of the study: socioeconomic status (as evidenced by whether or not students receive a Pell Grant as a component of their financial aid package); first generation status (as reported on students' admissions applications); high school grade point average (as reported on students' official high school transcripts); first semester grade point average (as reported on students' official institutional transcripts); and whether or not students enrolled in one or more developmental courses (as indicated on their institutional transcripts). All data representing the dependent, independent, and predictor variables of the study were included as columns in the full data set provided to the researcher (see Appendix B for variable coding and measurement scheme). All

student identifying information was stripped by IR *prior* to the researcher receiving the data set. A coding scheme was developed by IR to link the variables of the study to individual students in the study's sample. Once the researcher received the final data set from IR, the researcher used listwise deletion to omit cases with missing values for any of the study's variables. The resulting data set comprised the study's sample. The researcher then proceeded with data analysis, utilizing logistic regression as described in the following sections.

Variables

1. Student Retention (SR): SR is the dependent variable of the study. SR is a categorical, binary variable. For the purposes of this study, the definition of SR includes first-time in college, full-time enrolled, four-year degree-seeking students who entered the institution for the fall 2015 semester and returned for the fall 2016 semester.

SR is expressed as a rate or percentage of students who return from one enrollment period to another. The Integrated Postsecondary Education Data System (IPEDS) system has standardized the definition of retention as the percentage of first-time, full-time, degree-seeking students from the previous fall semester or term who either reenrolled or successfully completed their program by the current fall semester or term (Habley, Bloom, and Robbins, 2012).

2. Advisor Type (ADV_TYP): ADV_TYP is the independent variable of the study. ADV_TYP is a categorical, binary variable. This study will examine two types of academic advisors - faculty advisors and professional advisors - in order to determine whether one has a greater effect on student retention.

Faculty advisors are those individuals whose primary responsibility at the institution is to teach and/or conduct research. Advising individual students or a caseload

of advisees may be one of many additional responsibilities assigned to faculty members. Typically, faculty advising focuses on the curriculum or career prospects in an individual program of study. Faculty members provide excellent mentoring opportunities for students majoring in faculty members' fields and often upper-division undergraduate students and graduate students gain the most from faculty mentorship (Gordon et al., 2008).

Professional advisors, on the other hand, are individuals whose primary responsibilities at the institution focus on academic advising services and activities that promote the academic success of students, with additional focus on student development at the institution. While some teaching responsibilities may be included in a professional advisor's role description, professional academic advising staff spend the bulk of their time advising individual students and groups of students on curricular requirements of one or many academic majors or areas of study, co-curricular opportunities on and off campus, beneficial resources for students, and general academic and personal success strategies, addressing overall developmental issues with students in their pursuit of a college education (Gordon et al., 2008).

3. Socioeconomic Status (SES): SES is a predictor variable of the study. SES is a categorical, binary variable. Financial needs analyses are conducted by the U.S. Department of Education for students who file the Free Application for Federal Student Aid (FAFSA) and financial aid funds are awarded to offset the charges mentioned above accordingly. Federal Pell Grants are awarded to students with the greatest financial need or, conversely, the lowest ability to pay. For the purposes of this study, SES refers to whether or not a student is eligible for a Pell Grant.

As conveyed by Braxton et al. (2014), ability to pay can stand as a precursor to social integration and functions as a student entry characteristic. Ability to pay can also influence students' psychosocial engagement in the institution. Cabrera, Stampen, and Hansen (1990) posited that ability to pay typically reduces barriers to student participation in the social communities of their college or university because they are less concerned about paying for college.

Tinto (2012) asserted that differing amounts of aid, loans, and grants influence a student's choice of the type of college to attend - public versus private; four-year versus two year - whether a student attends full-time or part-time, and whether and to what extent a student is employed while enrolled in college. Attending college part-time and working while enrolled have the net consequence of decreasing levels of academic engagement and increasing the time to degree completion (St. John, 2004). These factors can have a profound influence on a student's decision of whether to persist in his or her program of study. Tinto (2012) posited that greater amounts of financial aid appear to be associated with higher student retention rates, especially for those students from low-income backgrounds. This is particularly true of grants as opposed to loans (Bettinger, 2004).

4. First Generation (FG): FG is a predictor variable of the study. FG is a categorical, binary variable. For the purposes of this study, FG students are defined as those individuals whose parents had little or no experience in college and subsequently did not complete a collegiate degree program (Pike & Kuh, 2005). Students who are the FG in their families to attend college tend to persist and complete college degrees at lower rates than students from college-educated families (Tinto, 2012).

Students from college-educated families [earn bachelor's degrees] more frequently than first-generation college students (37% versus 12.2%). Furthermore, only 7.5% of students who are eligible for Pell Grants - that is, students who come from low-income backgrounds and are also the first generation in their family to attend college - obtain a bachelor's degree within six years from their initial institution, as against 41.1% of those students who are in neither of those categories. (Tinto, 2012, p. 3)

FG students are typically considered at-risk of departing a higher education institution for various reasons mentioned in the literature: lack of academic preparedness, little or no parental involvement in their educational endeavors or goals, racial/ethnic demographics, and socioeconomic status (Ishitani, 2006; Lohfink & Paulsen, 2005; McCarron & Inkelas, 2006; Vuong, Brown-Welty, & Tracz, 2010).

5. High School Grade Point Average (HS GPA): HS_GPA is a predictor variable of the study. HS_GPA is a ratio variable. For the purposes of this study, HS_GPA represents students' official, unweighted HS_GPA reported to the institution's Admissions Office and reflected on students' academic records.

According to Astin and Oseguera (2002), "the pre-college characteristic that carries the most weight in estimating a student's chances of completing college is the high school grade average" (p. 130). Tinto (2012) stated that students whose HS_GPA is greater than 3.25 earn bachelor's degrees more frequently than those whose HS_GPA is less than 2.25 (29.6% versus 7.5%). Habley, Bloom, and Robbins (2012) conveyed that pre-college academic performance is a critical determinant of first-year academic success in college.

6. First Semester GPA (FS GPA): FS_GPA is a predictor variable of the study. Habley, Bloom, and Robbins (2012) posited that first-year academic performance is critical for long-term college success. FS_GPA is a ratio variable. For the purposes of this study, FS_GPA represents students' end-of-semester GPA at the institution after their first semester of study, fall 2015.

Students' academic performance during the first year of study, and specifically during the first semester, often influences whether students remain enrolled or depart the institution. As Tinto (1987) conveyed, "some students are unable to keep up with the academic demands of the college and are either dismissed or withdraw under the threat of eventual failure" (pp. 154-155).

7. Developmental Enrollment (DEV ENR): DEV_ENR is a predictor variable of the study. DEV_ENR is a categorical, binary variable. For the purposes of the study, DEV_ENR represents whether or not students enrolled in one or more developmental (i.e. below college-level) courses during their first year of study. According to Porchea, Allen, Robbins, and Phelps (2010), it has been a long standing problem that students entering postsecondary education are not academically prepared for college-level coursework. Without the necessary prerequisite knowledge and skills, students who lack adequate collegiate preparation are less likely to succeed in college-level courses or to return for a second year (ACT, 2012). The primary method for assisting academically underprepared students with degree attainment is developmental instruction.

Arendale (2007) defined developmental education as "a field of practices and research within higher education with a theoretical foundation in developmental

psychology and learning theory. It promotes the cognitive and affective growth of all postsecondary learners, at all levels of the learning continuum" (p. 18).

See Appendix B for variable coding and measurement scheme.

Multiple Linear Regression vs. Logistic Regression

Multiple linear regression is a method for measuring the effects of several factors concurrently (Schroeder, Sjoquist, & Stephan, 1986). More specifically, multiple regression analysis allows the use of independent variables to predict the values of a dependent variable (Grimm & Wozniak, 1990). Linear modeling techniques are appropriate when the dependent or criterion variable is continuous and the independent or predictor variables are continuous in nature (King, 2008). However, for studies containing dependent variables that are categorical, linear modeling techniques such as multiple linear regression are not appropriate because many of the theoretical assumptions of these techniques cannot be met (Tranmer & Elliot, 2008). In these sorts of cases, a logistic regression analysis is recommended.

According to King (2008), "logistic regression allows categorically and continuously scaled variables to predict any categorically-scaled criterion" (p. 358). When the dependent or criterion variable is binary in nature, logistic regression is the generally preferred statistical model (Harrell, Jr., 2015). Binary dependent variables seem appropriate for linear regression on the surface, but underlying conceptual and statistical problems warrant using alternatives to linear regression (Pampel, 2000). Ordinary Least Squares (OLS) regression and other commonly used statistical tests do not work with binary dependent variables because there is not a linear relationship between the dependent variable and the independent variable(s). Further, and according to Osborne (2015), OLS regression "underestimate[s] (and mischaracterize[s]) the true nature of the relationship" (pp. 10-11). It is necessary to use the logit transformation, as

described in the following section, in order to "convert a dichotomous or categorical variable to a dependent variable that can be predicted from other binary, categorical, or continuous variables" (Osborne, 2015, p. 12). According to Pampel (2000), "the logit transforms a dependent variable having inherent nonlinear relationships with a set of independent variables into a dependent variable having linear relationships with a set of independent variables" (p. 18). Figure 1 represents the outputs of a binary dependent variable and depicts the curve resulting from the logit transformation.

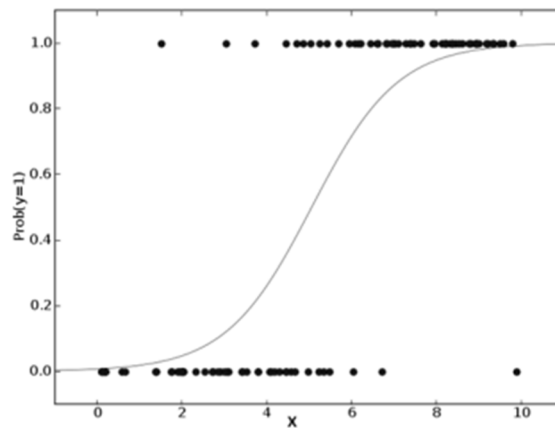


Figure 1. Example of outputs of a binary variable and depiction of logit transformation curve. Adapted from "Simple Guide to Logistic Regression in R," by Analytics Vidhya Content Team, 2015.

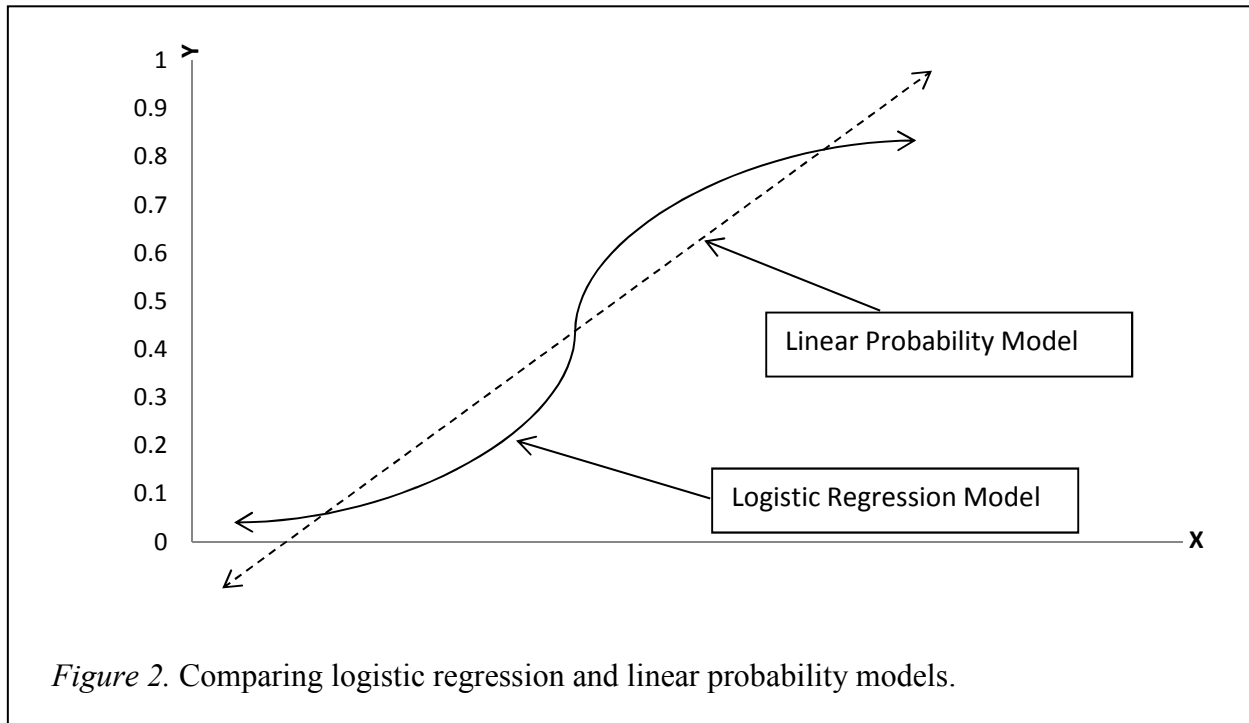
According to Pampel (2000), linear regression assumes that the conditional proportions or probabilities define a straight line for values of X . In logistic regression models, logistic or logit transformations are used to link the dependent variable to a set of predictor variables (Tranmer & Elliot, 2008). According to Pampel (2000), "the conceptual problem with linear regression with a dichotomous dependent variable stems from the fact that probabilities have maximum and minimum values of 1 and 0. By definition, probabilities cannot exceed 1 or fall below 0" (p. 3). However, with binary dependent variables, the linear regression line can exceed

the ceiling value of 1 as independent variables increase indefinitely and exceed the floor value of 0 as independent variables decrease indefinitely. In other words and according to Tranmer and Elliot (2008), in statistical procedures, proportions or probabilities are bound by 0 and 1, whereas continuous variables can theoretically take any value between plus or minus infinity. Normality simply cannot be assumed.

According to Pampel (2000), with a floor of 0 and ceiling of 1, it seems likely that the effect of a unit change in the independent variable on the predicted probability of the dependent variable would be smaller close to the floor or ceiling and larger close to the middle. This concept is visible on Figure 1: the S-shaped logistic regression curve depicts a larger effect of a unit change in the independent variable (x axis) on the probability of the dependent variable occurring (y axis) close to the middle of the curve and a smaller effect close to the tails of the curve. As stated by Pampel (2000), "toward the middle...the nonlinear curve may approximate linearity, but rather than continuing upward or downward indefinitely, the nonlinear curve bends slowly and smoothly so as to approach 0 and 1" (p. 5). As values get closer to 0 or 1, the relationship between variables requires a larger change in the independent variable to have the same effect as a smaller change in the independent variable at the middle of the curve. In order to approximate the curve, a succession of straight lines with different slopes would be required. The lines nearer the ceiling and floor would have smaller slopes than those in the middle. As stated by Osborne (2012), the slopes flatten out and give less change in probability despite rather large changes in X. The constantly changing curve resulting from the approximation of a succession of straight lines with different slopes will change more smoothly and will thus more adequately represent the relationship between variables. Conceptually, the S-shaped curve representing the curvilinear relationship makes better sense than the straight line representing a

linear relationship (Pampel, 2000). Figure 2 compares the S-shaped curve representing the logistic regression model with the straight line representing the linear probability model.

According to Pampel (2000), "the gap between the two illustrates the nature of the error and the potential inaccuracy of linear regression" (p. 7).



Logistic Regression

Logistic Regression is a statistical procedure used when one wishes to study how a set of predictor or independent variables relate to a dichotomous or binary dependent variable (Harrell, Jr., 2015). Phenomena that are discrete or binary in nature, such as whether or not a student returns for a second year of study, usually take the form of dichotomous or binary indicators. Representing these sorts of phenomena with values of 0 and 1 is advantageous because the mean of a binary variable equals the proportion of cases with a value of 1 and can be interpreted as a probability (Pampel, 2000). As stated by Pampel (2000), "the dependent variable itself only

takes values of 0 and 1, but the predicted values for regression take the form of mean proportions or probabilities conditional on the values of the independent variables" (p. 2).

As stated by Osborne (2012), conditional probabilities are probabilities of an event occurring within a particular group of subjects. In the context of this study, for example, it is possible to calculate the conditional probability of students returning for a second year of study by examining the effect of the independent and predictor variables on the dependent variable, student retention. In other words, by knowing additional pieces of information about a student's background, such as: socioeconomic status; whether students are first-generation in family to attend college; high school grade point average; first semester grade point average; and enrollment in developmental coursework, we can develop a more accurate view of the probability of that student returning (Osborne, 2012).

The Logit Transformation

Due to the previously discussed problems associated with using linear regression with a binary dependent variable, including getting impossibly predicted probability values of the dependent variable above 1 and below 0, it is necessary to eliminate the ceiling and floor associated with probabilities or proportions. The logit transformation provides a method for doing this. According to Pampel (2000), the logit transformation "describes the relationship between independent variables and a distribution of probabilities defined by a dichotomous dependent variable" (p. 10).

The logit transformation begins by calculating conditional odds by dividing the probability of an event occurring by the probability of the event not occurring for a particular group. As stated by Osborne (2012), conditional odds are "the odds that an outcome [i.e. student retention] will happen given a particular value of another variable" (p. 4). Once conditional odds

are calculated, the odds ratio is used to "represent the ratio of the conditional odds of the outcome at one level of the independent variable relative to the conditional odds of the outcome at another level of the independent variable" (p. 4). By examining the ratio of the odds of an outcome for two groups, the effect of the independent variable(s) can be measured (Osborne, 2012). According to Osborne (2012), odds ratios are generally calculated as the change in odds [of the dependent variable occurring] for every 1.0 unit increase in the independent variable.

Conditional odds still have problems associated with predicting outcomes in that they go below 0.0, so it is necessary to calculate "the natural logarithm of the odds, which has the benefit of having no restriction on minimum or maximum values" (Osborne, 2012, p. 4). The logit is the natural logarithm of the odds and is used to solve the initial problem of having predicted probabilities or conditional odds that are outside the range of possibility (Osborne, 2012).

A logarithm is the power or exponent a base number must be raised to in order to get the original number. According to Osborne (2012), any given number can be expressed as y to the x power in an infinite number of ways. One option is the natural logarithm - where the constant e (2.7182818; often referred to as Euler's number) is the base. The natural logarithm of the odds, or the logit, can conceivably range from negative infinity to infinity and, thus, using the logit as the dependent variable negates the issues arising from using probabilities or conditional odds (Osborne, 2012). According to Osborne (2012), "the dependent variable then becomes $\text{logit}(y)$, and the simple regression equation becomes: $\text{Logit}(y) = a + b_1x_1$ " (p. 5).

According to Pampel (2000), "the logit transforms a dependent variable having inherent nonlinear relationships with a set of independent variables into a dependent variable having linear relationships with a set of independent variables" (p. 18). Without a floor or ceiling, "the logit can linearly relate to changes in the dependent variable X . One can now compute a linear

relationship between X and the logit transformation. The logit transformation straightens out the nonlinear relationship between X and the original probabilities"(Pampel, 2000, p. 15). This concept is depicted in Figure 2 with the smooth, S-shaped logistic regression curve.

Despite the advantages the logit transformation provides, presenting results in the form of logged numbers is difficult to understand. According to Osborne (2012), "in reversing the process [of the logit transformation], we can bring significant clarity (and accuracy) to reporting logistic regression findings" (p. 6). The end result is to transform the logit back into a conditional probability, which is a metric that is easier to understand than the natural log of the odds of an outcome.

Data Analysis

For the purposes of this study, utilizing logistic regression will facilitate investigating how the independent and predictor variables relate to the dependent variable, student retention, which is a dichotomous outcome with values of 0 and 1. Support for using the proposed variables exists in the literature (Astin, 1975; Bettinger, 2004; Bloom & Robbins, 2012; Braxton, Hirschy, & McClendon, 2004; Brown-Welty, & Tracz, 2010; Cabrera, Stampen, & Hansen, 1990; Frost, 1991; Habley, Ishitani, 2006; Lohfink & Paulsen, 2005; McCarron & Indelas, 2006; Seidman, 2012; Smith & Allen, 2014; St. John, 2004; Swecker, Fifolt, & Searby, 2013; Tinto, 1975; Tinto, 2012; Vuong, Pike & Kuh, 2005). As previously explained, the logit transformation within logistic regression converts a conditional probability to an odds ratio to a natural logarithm or logit, which solves the problem of having predicted probabilities or odds that are outside the range of possibility. Once the logit is calculated, the logit transformation process can be reversed by converting the logit to an odds ratio and then converting from odds ratio to conditional probability (Osborne, 2015). SPSS produces outputs for both logits and odds ratios,

so the conversion of logits to odds ratios is not necessary, although it is an important part of logistic regression to understand conceptually. In practice and according to Osborne (2015), "the odds ratio is the odds of the outcome at one level of X relative to the odds of the outcome at another level of X " (p. 27). In general, odds ratios are calculated as the change in odds for every 1.0 unit increase in the independent variable(s).

Osborne (2015) maintained that, in order to reverse the logit transformation process, one must "multiply the odds ratio by the conditional odds for the intercept (in the SPSS output this is the EXP(B) constant). To get from conditional odds to conditional probabilities, divide the conditional odds by 1+ conditional odds" (p. 6). Conditional odds are the odds that an outcome will happen given a particular value of another variable (Osborne, 2015). Equation 3 represents the conversion of predicted logits to conditional probabilities. (Osborne, 2012, p. 7):

$$\text{Conditional probability of } (Y=1) = \frac{\text{Exp}(b)}{(1+\text{Exp}(b))} \quad (3)$$

Following the logit transformation process described previously, the logistic regression equation to calculate the logit for the study is as follows:

$$\text{Logit } (\hat{Y}) = b_0 + b_1\text{ADV_TYP}_1 + b_2\text{SES}_2 + b_3\text{FG}_3 + b_4\text{HS_GPA}_4 + b_5\text{FS_GPA}_5 + b_6\text{DEV_ENR}_6 \quad (4)$$

Where b_0 is the intercept, $\text{ADV_TYP}_1 - \text{DEV_ENR}_6$ are the study's independent and predictor variables, and $b_1 - b_7$ are the slopes or regression coefficients, or the effect of $\text{ADV_TYP}_1 - \text{DEV_ENR}_6$ (Osborne, 2015). Reversing the logit transformation process to report the study's results as a conditional probability of the dependent variable - student retention - occurring, while determining the effect of the independent and predictor variables of the study, the logistic regression equation is as follows:

$$P_{SR} = \frac{\exp(b_0 + b_1\text{ADV_TYP}_1 + b_2\text{SES}_2 + b_3\text{FG}_3 + b_4\text{HS_GPA}_4 + b_5\text{FS_GPA}_5 + b_6\text{DEV_ENR}_6)}{1 + \exp(b_0 + b_1\text{ADV_TYP}_1 + b_2\text{SES}_2 + b_3\text{FG}_3 + b_4\text{HS_GPA}_4 + b_5\text{FS_GPA}_5 + b_6\text{DEV_ENR}_6)} \quad (5)$$

Logistic regression permits investigating whether variables are significant predictors of a binary or dichotomous outcome and the magnitude of the relationship between the variables and the probability of the outcome occurring. Using logistic regression to examine multiple predictors helps to determine whether one predictor is more or less important than another and, ultimately, what the *most important* predictor of the outcome is. By presenting results from logistic regression analyses in the form of conditional probabilities, the likelihood of the outcome or dependent variable occurring at a particular point of the independent variable for a particular group can be clearly and accurately communicated and graphed (Osborne, 2015). As stated by Osborne (2015), "statistical tests [calculate] the probability of obtaining the observed results (e.g. the observed correlation coefficient, F , odds ratio) if the null hypothesis were true in the population" (p. 316).

In order to understand tests of significance in logistic regression, it is important to review conceptual similarities and differences between logistic regression and ordinary least squares (OLS) or linear probability regression. Both OLS and logistic regression equip researchers with the ability to determine which variables are the strongest predictors of a particular outcome. The goal of OLS regression is to fit a straight line to the bivariate or multivariate scatter plot such that the line fits the data in the best way possible. So the *line of best fit* is used as a single descriptor of the entirety of data being analyzed (Osborne, 2015). Because the assumptions necessary for OLS or linear probability regression to accurately place the line of best fit are not met when the dependent variable is binary, logistic regression uses maximum likelihood estimation (MLE) instead of OLS estimation. These assumptions have been thoroughly discussed in previous sections. The goal of MLE regression is "to find a solution that provides intercepts and slopes for predictor variables that *maximizes* the *likelihood* of individuals having scores on the

dependent variable (Y) given their scores on the predictor variables (X_1, X_2 , etc.)” (Osborne, 2015, p. 9). Pampel (2000) stated that "maximum likelihood estimation aims to find those coefficients that have the greatest likelihood of producing the observed data" (p. 44).

As with OLS regression and according to Osborne (2015), overall fit is an important initial step in assessing the model. Logistic regression examines overall model fit in $-2 \log$ likelihood increments, which tests that all predictors' coefficients are 0.00, versus R^2 employed in OLS, which is an index of variance accounted for (Osborne, 2015). Pampel (2000) maintained that, "the model log likelihood times -2 represents the likelihood of producing the observed data with the estimated parameters for the independent variables, and corresponds to the error sum of squares in regression" (p. 49). As stated by Pampel (2000):

The multiple R in regression equals the correlation between the observed and predicted values of the dependent variable, and the R^2 equals that correlation squared. The same logic applies to logistic regression: the correlation between the observed [binary] dependent variable and the probabilities predicted by the logistic regression model measures the goodness of fit. (p. 50)

Tests of significance in logistic regression are similar to those in OLS regression. That is, if the calculated p -value - the likelihood or probability that what a researcher finds in the sample of a study would be found in the population, if the null hypothesis is true - of a variable is smaller than the determined alpha or significance level, then the effect of that variable on the outcome or dependent variable is said to be statistically significant. .05 is a commonly accepted alpha or significance level (α), which implies that, when $p < .05$, "there is less than a 5% chance that we would get the observed data from a population where the null hypothesis was true"

(Osborne, 2015, p. 318). This means that the coefficient for that variable can be considered to be non-zero. As stated by Pampel (2000):

Like in regression, the size of the coefficient relative to its standard error provides the basis for tests of significance in logistic regression...the significance of the coefficient - the likelihood that the coefficient in the sample could have occurred by chance alone when the population parameter equals 0 - is then interpreted as usual. (p. 30)

As Pampel (2000) conveyed, "the logistic regression program in SPSS calculates the Wald statistic for a (two tailed) test of a single coefficient, which equals the square of the ratio of the coefficient divided by its standard error and has a chi-square distribution" (p. 30). The Wald statistic is analogous to the t-test in linear regression and is used to determine the significance of coefficients (Osborne, 2015). The formula for calculating the Wald statistic is as follows (Osborne, 2015, p. 32):

$$Wald = \left(\frac{b}{SE_b}\right)^2 \quad (6)$$

"The resulting coefficients show the change in the logged odds of experiencing an event or having a characteristic due to a one standard deviation change in each of the independent variables" (Pampel, 2000, pp. 32-33).

Osborne (2015) maintained that tests of significance in logistic regression also examine whether the odds ratio is significantly different from 1 or whether the logit is significantly different from 0. This information is reported in outputs of the logistic regression program in SPSS. Accounting for the correlation between variables is another important aspect of significance testing in logistic regression (Osborne, 2015). SPSS outputs for logistic regression permit evaluating the unique, independent predictive effects of multiple variables (Osborne, 2015).

It is important to note that significance tests do not determine the probability that the results of the study would be replicated in a subsequent study. It is power that provides insight into the probability of replication given identical circumstances (Schmidt, 1996). Significance tests also do not tell the researcher the importance of a particular effect. As stated by Osborne (2015), "a very small effect in a very large sample can have a very small p value but be practically unimportant. Likewise, a large effect in a small sample may have a relatively large p value" (p. 318). Power calculations in logistic regression rely on the same basic ingredients as in linear regression, correlation, or analysis of variance: sample size, criterion for significance (α), and effect size, or the odds ratio in logistic regression (Osborne, 2015). Osborne (2015) conveyed that "in all regression models we have to take the number of predictors into account, and in logistic regression, power calculations also take into account the relative proportions of individuals that fall into each group in the dependent variable" (pp. 320-321).

SPSS Variable Entry and Data Analysis Procedure

All students within the study's sample, or cases of the study, were entered into IBM SPSS Statistics on unique rows, with separate columns representing the dependent, independent, and predictor variables of the study. Once data entry was complete, the binomial logistic regression function in SPSS was used to generate output tables. These output tables drove data analysis to determine how much variation in the dependent variable can be explained by the model (i.e. goodness of fit), to determine the statistical significance of the independent and predictor variables on the dependent variable, and to predict the probability of the dependent variable occurring based on a one unit change in the independent and predictor variables of the study, when all other independent and predictor variables are kept constant or controlled for. These concepts have been thoroughly described in previous sections.

Missing Data

According to Osborne (2015), every study has the potential for missing data. Osborne (2015) maintained that an important initial step in dealing with missing data is to determine why data are missing. This can range from random causes to purposeful patterns and, if the researcher can infer the data to be missing at random, then it is deemed ignorable (p. 364). For the purposes of this study, missing data could not be determined to be missing at random, so, listwise deletion of data with missing values was employed.

Limitations

The researcher has been employed as a professional academic advisor and manager of advising and other student success-related programs at the study's institution for over a decade. The researcher is a strong proponent of professional advising as an institutional strategy that supports student retention, persistence, and graduation. Based on this personal experience at the study's institution, the researcher likely has some bias toward professional advisors.

The structure of academic advising examined in the study is specific to the institution, employing a mixed approach with both centralized advising services and decentralized advising services. Other colleges and universities utilize unique advising structures that may differ from the structure in place at the institution. Further, findings from this study may be limited in their application to institutions differing in institutional type or advising structure.

Student persistence toward degree and student departure are driven by a myriad of factors. Some of these factors are within an institution's ability to control to some degree, such as available academic support on campus, but others are far beyond an institution's sphere of influence. The nature of students' decisions about whether to remain enrolled or depart their program of study is largely mysterious and any empirically-based claims of understanding the

big picture of student retention are typically based on studies that control for as many factors influencing students' decision making as possible. This study attempted to control for various student characteristics identified in seminal literature that could predictably influence student retention, but there are undoubtedly other influential factors at play that the study will not account for that could potentially affect the study's results. Some of these factors are noted below.

Student engagement on campus is considered to be one of the most influential factors on whether a student remains enrolled in a program of study or departs the institution prior to degree completion. The National Survey of Student Engagement (NSSE) is administered by Indiana University and participating campuses, including the institution examined in this study, and "collects information about first-year and senior students' participation in programs and activities that institutions provide for their learning and personal development. The results provide an estimate of how undergraduates spend their time and what they gain from attending college" (NSSE website, 2017). This study does not include information collected by the NSSE because this data set was not available for the cohort of students matriculating to the study's institution during the fall 2015 semester. Ideally, future investigations of student retention at the institution would include NSSE data in order to get a more comprehensive picture of factors influencing students' decisions on whether to remain enrolled.

Student demographic factors such as race and gender are often included in studies on student retention. This study did not include these demographic factors, but similar to student engagement on campus, future investigations would ideally include student demographic information to account for as many factors as possible that could influence the likelihood of students persisting toward degree or departing the institution prior to degree completion.

Chapter 4

RESULTS AND ANALYSIS OF DATA

This study was designed to examine the effect of academic advisor type on retention of first-year, full-time, four-year degree-seeking students at a mid-size research university in the western U.S., while controlling for several predictor variables identified in contemporary and seminal literature as having a potential impact on student retention (Astin, 1975; Bettinger, 2004; Bloom & Robbins, 2012; Braxton, Hirschy, & McClendon, 2004; Brown-Welty, & Tracz, 2010; Cabrera, Stampen, & Hansen, 1990; Frost, 1991; Habley, Ishitani, 2006; Lohfink & Paulsen, 2005; McCarron & Indelas, 2006; Seidman, 2012; Smith & Allen, 2014; St. John, 2004; Swecker, Fifolt, & Searby, 2013; Tinto, 1975; Tinto, 2012; Vuong, Pike & Kuh, 2005). Predictor variables are: (a) socioeconomic status, (b) first generation in family to attend college, (c) high school grade point average, (d) college first semester grade point average, and (e) enrollment in developmental coursework.

The null hypothesis of the study states that there is no statistically significant effect of advisor type on the retention of first-year, full-time, four-year degree-seeking students at the study's institution when holding all predictor variables constant. The alternative hypothesis states that there is a statistically significant effect of advisor type on the retention of students at the study's institution when controlling for the predictor variables, with professional advisors having a more positive effect on student retention than faculty advisors.

Using logistic regression, the study investigated whether advisor type and the additional predictor variables were significant predictors of the dependent variable, student retention, the magnitude of the relationship between the variables, and the probability of students being retained by the study's institution. When two or more variables are entered into the logistic regression equation, each variable's effect is assessed while controlling for all other variables in

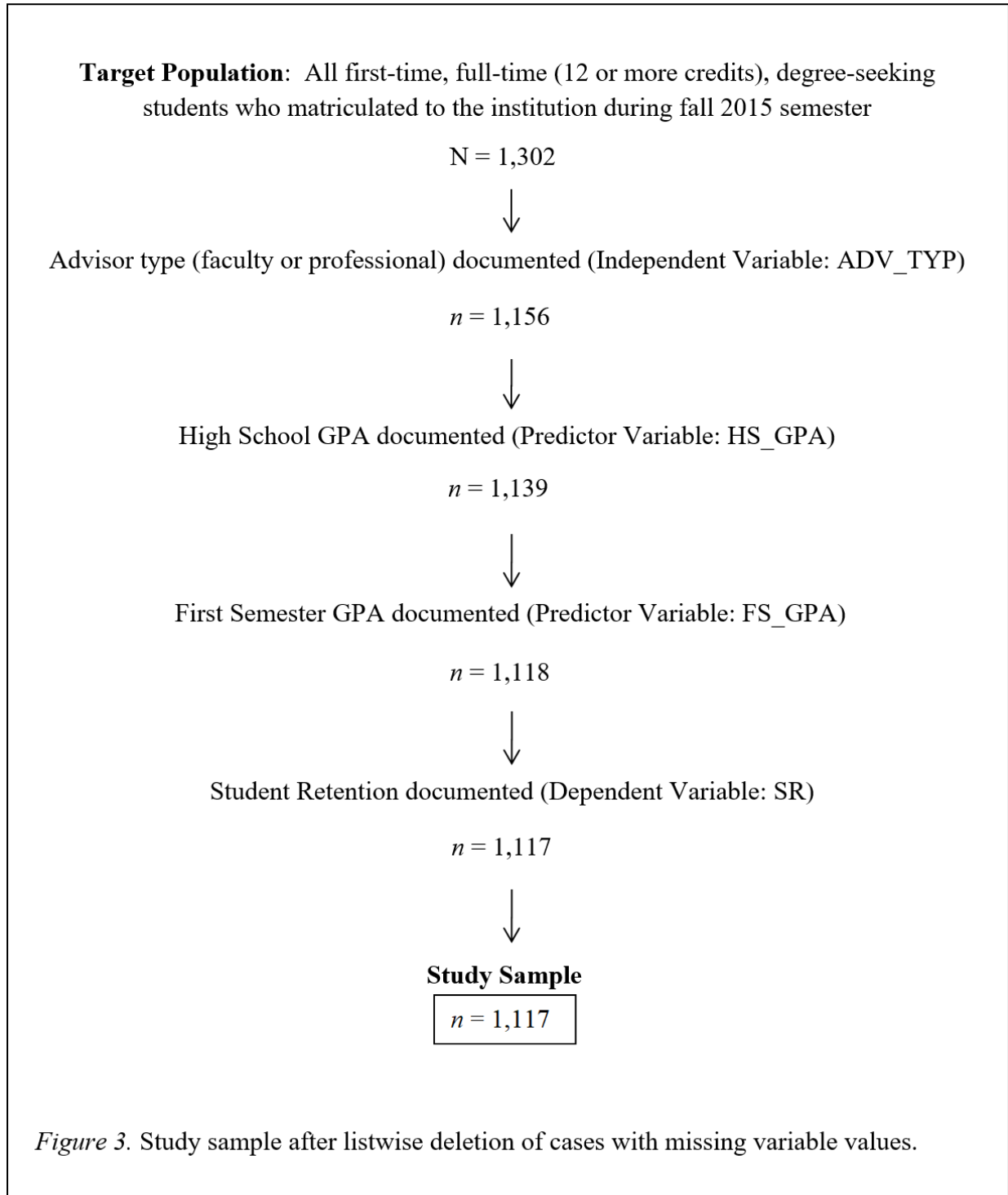
the equation. This results in an estimate of the unique effect on the dependent variable of each independent and predictor variable above and beyond the effects of all other variables.

Sample Selection

The study's target population is all first-year, full-time, four-year degree-seeking students who matriculated to the study's institution during the fall 2015 semester. This population was comprised of 1,302 total students. In preparation for analysis, the sample was selected using listwise deletion for all cases in the study with missing values for any variables (Little & Rubin, 2014). Results of listwise deletion for each variable in the study are as follows:

- Advisor type - 146 cases with missing values;
- High school grade point average - 15 additional cases with missing values and 2 cases with impossible values;
- First semester grade point average - 21 additional cases with missing values;
- Student retention - 1 additional case with a missing value.

Using listwise deletion, 185 total cases were omitted from the study, resulting in a final sample of 1,117 students. The advising sessions variable was omitted from the study entirely because too many cases had missing values for this variable. Figure 3 illustrates sample selection. All of the study's dichotomous independent and predictor variables were "dummy coded" with values of 0 and 1 in preparation for conducting a logistic regression analysis in SPSS. The variable coding and measurement scheme is provided in Appendix B.



Descriptive Statistics of Sample

Descriptive statistics of the sample provide general demographic information on the study's participants as well as the frequencies of variables within the sample occurring, as presented in Table 1.

Table 1

Demographic Characteristics of Participants (n = 1,117)

Characteristic	<i>n</i>	%
First Generation		
First Generation	474	42
Not First Generation	643	58
Socioeconomic Status		
Pell Eligible	376	34
Not Pell Eligible	741	66
High School GPA		
0-0.99	0	0
1.0-1.99	7	1
2.0-2.99	284	25
3.0-3.99	756	68
4.0+	70	6
Developmental Enrollment		
Enrolled in developmental course(s)	205	19
Not Enrolled in developmental course(s)	912	81
Advisor Type		
Faculty	193	17
Professional	924	83
First Semester GPA		
0-0.99	69	6
1.0-1.99	91	8
2.0-2.99	294	26
3.0-3.99	583	53
4.0	80	7

The study's sample is generally reflective of the institution's undergraduate student demographic. For example, first generation and federal Pell Grant-eligible students typically comprise over 30% of the institution's undergraduate student population. Over 70% of each first year class at the institution has a 3.0 or higher high school GPA. The institution admits over 90% of undergraduate students who apply and entering first year students sometimes have low academic preparedness levels, resulting in developmental coursework being necessary for these students to prepare for college-level courses (Common Data Set, 2016).

Tables 2 and 3 provide the mean values or frequencies for the study's independent and predictor variables as a function of student retention. A chi-square test of independence was performed to examine the relationship between retention for the third semester and advisor type, socioeconomic status, first generation, and developmental enrollment. There were no statistically significant relationships between any of these variables and student retention, as shown in Table 2.

Table 2

Mean Values or Frequencies for Independent and Predictor Variables as a Function of Student Retention (N = 1,117)

Variable	Retained for Third Semester (<i>n</i>)	% of Sample	Not Retained for Third Semester (<i>n</i>)	% of Sample	Mean	X^2 or t	p
First Generation						1.01	.95
First Generation	457	41	186	17			
Not First Generation	336	30	138	12			
Socioeconomic Status						.02 ^a	.90
Pell Eligible	527	47	214	19			
Not Pell Eligible	266	24	110	10			
High School GPA ^b					3.34	-2.47	.01
Developmental Enrollment						.19	.67
Enrolled in developmental course(s)	143	13	62	6			
Not Enrolled in developmental course(s)	650	58	262	23			
Advisor Type						.00 ^c	.99
Faculty	137	12	56	5			
Professional	656	59	268	24			
First Semester GPA ^b					2.93	-2.54	.01

Note. Chi-square test used for advisor type, socioeconomic status, first generation, and developmental enrollment variables; t test used for high school GPA and first semester GPA variables.

^a 0 cells (.0%) have expected count less than 5. The minimum expected count is 109.06.

^b See Table 3.

^c 0 cells (.0%) have expected count less than 5. The minimum expected count is 55.98.

As shown in Tables 2 and 3, students who were retained for the third semester had higher high school grade point averages ($M = 3.37$, $SD = .51$) compared to students who were not ($M = 3.28$, $SD = 5.3$), $t(585) = -2.47$, $p = .01$, $d = .17$. Students who were retained for the third semester also had higher first semester grade point averages ($M = 2.98$, $SD = .96$) compared to students who were not retained ($M = 2.81$, $SD = 1.82$), $t(567) = -2.54$, $p = .01$, $d = .17$.

Table 3

Mean Values for Predictor Variables as a Function of Student Retention (N = 1,117)

Variable	Retained for Third Semester		Not Retained for Third Semester		<i>df</i>	<i>t</i>	<i>p</i>	<i>Cohen's d</i>
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>				
High School GPA	3.37	.51	3.28	.53	585	-2.47	.01	.17
First Semester GPA	2.98	.96	2.81	1.02	567	-2.54	.01	.17

Note. Equal variances not assumed.

Variable Correlations

Table 4 provides information on the Pearson correlations (r) of variables in the study. This section provides an overview of the variables in the study with statistically significant correlations.

Table 4

Intercorrelations for Student Retention and Predictor Variables

Measure	1	2	3	4	5	6	7
1. First Generation	-						
2. Socioeconomic Status	.21**	-					
3. High School GPA	-.15**	-.18**	-				
4. Developmental Enrollment	.08**	.11**	-.29**	-			
5. Advisor Type	.02	-.01	.00	.00	-		
6. First Semester GPA	-.11**	-.16**	.57**	-.24**	-.08**	-	
7. Student Retention	.00	.00	.08*	-.01	.00	.08**	-

Note. First Generation coded as 1 = first generation, 0 = not first generation. Socioeconomic Status coded as 1 = Pell eligible, 0 = not Pell eligible. Developmental Enrollment coded as 1 = did not enroll in developmental course(s), 0 = enrolled in developmental course(s). Advisor Type coded as 1 = professional, 0 = faculty. Student Retention coded as 1 = retained for second year of study, 0 = not retained for second year of study.

* $p < .05$. ** $p < .01$.

Socioeconomic status and first-generation variables were positively correlated, $r = .21$, $p < .01$. This isn't surprising in that many students who are the first generation in their family to attend college also come from low socioeconomic backgrounds, and vice versa. First generation and low socioeconomic status students often have lower academic performance levels in college and tend to persist at lower levels than students who come from families with prior college enrollment or completion and higher socioeconomic status backgrounds. Tinto (1975) elaborated on this notion by conveying that students' individual characteristics - family background, individual attributes, pre-university schooling experiences, etc. - as they enter college directly influence their persistence decisions as well as their commitments to the institution and to the goal of graduation. Pascarella (1985) stated that the quality of student effort, students' background and precollege traits, and student interaction and engagement with

various aspects of institutional socialization directly influence learning and cognitive development.

In the study, the claim that low socioeconomic status and first generation students have lower academic performance levels is supported by negative correlations between: socioeconomic status and high school grade point average, $r = -.18, p < .01$, socioeconomic status and first semester grade point average, $r = -.16, p < .01$; first generation and high school grade point average, $r = -.15, p < .01$, and first generation and first semester grade point average, $r = -.11, p < .01$. Students with low socioeconomic status and students who were the first generation in their family to attend college also enrolled in developmental coursework at higher rates than students with higher socioeconomic status and students who were not the first generation in their family to attend college. This assertion is supported in the study by positive correlations between socioeconomic status and developmental enrollment, $r = .11, p < .01$, as well as first generation and developmental enrollment, $r = .08, p < .01$.

According to Porchea, Allen, Robbins, and Phelps (2010), it has been a long standing problem [in American higher education] that students entering postsecondary education are not academically prepared for college-level coursework. The primary method for assisting academically underprepared students with degree attainment is developmental instruction.² Even with the additional support enrollment in developmental courses provides, without the necessary prerequisite knowledge and skills, students who lack adequate collegiate preparation are less likely to succeed in college-level courses or to return for a second year (ACT, 2005).

This claim is supported in the study by the negative correlations between developmental

² Developmental education - also known as remedial education, basic skills education, compensatory education, preparatory education, and academic upgrading - is assigned to assist students in order to achieve expected competencies in core academic skills such as literacy and numeracy (Hoyt, 1999).

enrollment and high school grade point average, $r = -.29, p < .01$, and developmental enrollment and first semester grade point average, $r = -.24, p < .01$.

Students who perform higher academically in high school tend to perform higher in college-level coursework (Habley, Bloom, & Robbins, 2012). This claim is supported in this study by the positive correlation between high school grade point average and first semester grade point average, $r = .57, p < .01$. Tinto (1975) asserted that academic performance prior to college matriculation can influence students' integration into the academic and social systems of their postsecondary institution and, subsequently, increase the likelihood that students will persist in college. This assertion is supported in the study by the positive correlation between student retention and high school grade point average, $r = .08, p < .05$. Further, students who perform higher academically during their first semester of college tend to persist at higher levels than students who perform lower academically during their first semester, as supported in the study by the positive correlation between student retention and first semester grade point average, $r = .08, p < .01$.

The negative correlation between the study's variables of advisor type and first semester grade point average, $r = -.08, p < .01$, states that students assigned to a professional academic advisor perform lower academically during their first semester than students assigned to a faculty academic advisor. The inconsistency of advising assignments across the study's institution makes it somewhat difficult to definitively interpret this negative correlation. A contributing factor to the negative correlation between advisor type and first semester grade point average could be that larger numbers of academically underprepared students, such as those who are conditionally admitted to the institution, are always assigned to professional advisors for the first semester of study.

Model Fit

As discussed previously, dichotomous dependent variables make estimation using ordinary least squares inappropriate. Alternatively to least squares, logistic regression relies on maximum likelihood procedures to obtain estimates of coefficients. Maximum likelihood estimation identifies estimates of model parameters that are most likely to give rise to the pattern of observations in the sample data (Pampel, 2000). In other words and according to Osborne (2012), "the goal of maximum likelihood estimation is to find a solution that provides intercepts and slopes for predictor variables that *maximizes the likelihood* of individuals having scores on the dependent variable given their scores on the predictor variables" (p. 34).

In contrast to ordinary least squares regression, there is no R^2 estimate of model fit for logistic regression. There are several pseudo R^2 estimates, or R^2 analogues, in logistic regression such as -2 log likelihood, Nagelkerke R^2 , Cox & Snell R^2 , in addition to model goodness of fit chi-square estimates such as the Hosmer and Lemeshow Test, but there is no general consensus in relevant literature as to what model fit statistics to report for logistic regression and how to evaluate them (Osborne, 2012). As stated by Osborne (2012), "I tend not to report pseudo R^2 estimates as they seem to be quite volatile" (p. 51). Osborne (2012) further posits that "it might be more important to have good classification than strong R^2 analogues" (p. 258).

According to Pampel (2000) and related to Osborne's (2012) assertions mentioned above, an additional approach to model evaluation compares predicted group membership with observed group membership. In other words and according to Osborne (2012), the cases observed to be 0s should be predicted to be 0s and those observed to be 1s should be predicted to be 1s (p. 52). As stated by Pampel (2000), an accurate model would have relatively few cases falling into the cells defined by a mismatch of observed and predicted group membership. As

shown in Figure 4, although 71% of students in the study's sample were correctly predicted by the model, every student was classified into the Retained for Third Semester group, and it merely happened to be the case that 71% of students in the sample were observed to be in that group. While the study's model is not particularly strong in this respect, as Osborne (2012) conveys, "this does not mean that there was no variance in predicted probabilities, and it does not mean that we are not able to understand some things about the dependent variable" (p. 52).

Observed	Predicted		Percentage Correct
	Not Retained for Third Semester	Retained for Third Semester	
Not Retained for Third Semester	0	324	.0
Retained for Third Semester	0	793	100.0
Overall Percentage			71.0

Figure 4. Classification table of study model^a.

^a The cut value is .500.

Analysis of Research Question

The study's research question sought to examine the effect of academic advisor type on retention of first-year, full-time, four-year degree-seeking students at the study's institution while controlling for additional predictor variables. Employing binary logistic regression analysis in SPSS using the *Enter* procedure for variable selection and a 95% confidence interval and using the study's sample of first-year, full-time, degree-seeking students (n=1,117), the effects of each variable on the outcome of the dependent variable occurring were examined. To review the effects of the independent and predictor variables in the logistic regression equation, the following values for advisor type and the additional predictor variables were presented:

- beta coefficients (B);
- standard errors associated with the beta coefficients (SE);
- odds ratios (OR);
- Wald statistic chi-square values ($Wald\ statistic$)³;
- 2-tailed p-values (p).

The results of this analysis are shown in Table 5.

Table 5

Summary of Logistic Regression Analysis Predicting Student Retention

Variable	B	SE	OR	95% CI	Wald statistic	p
First Generation	.04	.14	1.04	[0.79, 1.36]	.07	.79
Socioeconomic Status	.05	.15	1.05	[0.79, 1.40]	.13	.72
High School GPA	.21	.16	1.24	[0.91, 1.69]	1.84	.18
Developmental Enrollment	.07	.18	1.08	[0.76, 1.53]	.17	.68
Advisor Type	.03	.18	1.03	[0.73, 1.45]	.02	.88
First Semester GPA	.12	.08	1.13	[0.96, 1.32]	2.26	.13

Note. CI = confidence interval for odds ratio (OR).

Results from the logistic regression analysis in Table 5 showed that academic advisor type was not statistically significant in predicting the probability of students being retained at the study's institution from the fall 2015 semester to the fall 2016 semester, while controlling for the additional predictor variables ($p = 0.88$). Thus, the study's null hypothesis stating that there is no effect of academic advisor type on the retention of first-year, full-time, four-year degree-

³ The Wald statistic is the square of the regression coefficient divided by the standard error of the regression coefficient and is used to determine statistical significance in the logistic regression equation (Osborne, 2012).

seeking students at the study's institution was not rejected. Subsequently, the study's alternative hypothesis stating that academic advisor type does have a statistically significant effect on student retention was not supported, but analysis results did show a slightly more positive effect of professional advisors than faculty advisors on student retention. The results also indicated that none of the predictor variables were statistically significant in predicting the probability of student retention.

Despite the failure to reject the study's null hypothesis based on the analysis results, and confirmation through the analysis that academic advisor type does not have a statistically significant effect on predicting the probability of student retention ($p = 0.88$), useful information on the effect of each of the study's variables on predicting student retention was provided by the analysis. The odds ratio estimates provide the most descriptive outputs for explaining the relationship between the independent and predictor variables and the dependent variable (UCLA Statistical Consulting Group, 2017). The odds ratio estimates convert the beta coefficients from log-odds units into odds ratios, which are easier to interpret and provide the change in odds of the dependent variable - student retention - occurring for every unit change of any given variable in the model.

For every unit increase in high school grade point average (HS_GPA), students had 1.24 higher odds or 24% higher likelihood ($OR = 1.24$) of being retained. For every unit increase in first semester grade point average (FS_GPA), students had 1.13 higher odds or 13% higher likelihood ($OR = 1.13$) of being retained. Students who did not enroll in one or more developmental courses (DEV_ENR) had 1.08 higher odds or 8% higher likelihood ($OR = 1.08$) of being retained than students who did enroll in one or more developmental courses. With regard to socioeconomic status (SES), students who were not eligible for Pell Grants had 1.05

higher odds or 5% higher likelihood ($OR = 1.05$) of being retained than students who were eligible for Pell Grants. Students who were not the first generation (FG) in their family to attend college had 1.04 higher odds or 4% higher likelihood ($OR = 1.04$) of being retained than first generation students. For academic advisor type (ADV_TYPE), students with a professional advisor assigned had 1.03 higher odds or 3% higher likelihood ($OR = 1.03$) of being retained at the institution for their second year than students with a faculty advisor assigned.

Conclusion

In the study, a binary logistic regression model was employed to determine whether or not academic advisor type had a statistically significant effect on the probability of students being retained for their second year of study, controlling for additional predictor variables shown through relevant literature to influence student retention in some way. The alternative hypothesis of the study stated that there is a statistically significant effect of advisor type on the retention of first-year, full-time, four-year degree seeking students at the study's institutions when controlling for the additional predictor variables, with professional advisors having a more positive effect on student retention than faculty advisors. Results from the logistic regression analysis conveyed that academic advisor type was not a statistically significant predictor of the probability of students being retained at the study's institution from the fall 2015 semester to the fall 2016 semester ($p = 0.88$), thus the results failed to reject the study's null hypothesis stating that there is no statistically significant effect of advisor type on student retention. The odds ratio value in the model for advisor type ($OR = 1.03$) indicated that students with a professional advisor assigned had 1.03 higher odds or 3% higher likelihood of being retained at the institution for their second year than students with a faculty advisor assigned.

Chapter 5

DISCUSSION AND SUGGESTIONS FOR FUTURE RESEARCH

The purpose of this study was to examine the effect of academic advisor type on retention of first-year, full-time, four-year degree-seeking students at a mid-size research university in the western U.S. while controlling for several additional predictor variables identified in relevant literature as having a potential impact on student retention. The additional predictor variables in the study are socioeconomic status, as defined by federal Pell Grant eligibility, first generation in family to attend college, high school grade point average, first semester grade point average, and enrollment in developmental coursework.

Just over one-half of all four-year college students in the U.S. earn their bachelor's degrees within six years from their initial institution (Tinto, 2012). Higher education institutions are: constantly examining the reasons for student departure; attempting to retain more students; and, ultimately, trying to facilitate students' persistence towards completion of the bachelor's degree. The problem of student departure from college prior to degree completion is complex and negatively affects individual students, higher education institutions, U.S. society and our ability as a nation to remain competitive and successful in today's global economy. Professional academic advising positions have become an area of considerable attention and investment at a substantial number of U.S. postsecondary institutions (Gordon, et al., 2008). However, despite seminal and contemporary research findings that empirically link effective advising to increased student retention rates, little research has been conducted to thoroughly examine the effect of advisor type and, specifically, of professional advisors on student retention.

This study was designed to answer the following research question: what is the effect of academic advisor type on retention of first-year, full-time, four-year degree-seeking students at a mid-size research university in the western U.S.? The null hypothesis of the study states that

there is no statistically significant effect of advisor type on the retention of first-year, full-time, four-year degree-seeking students at the study's institution when holding all predictor variables constant. The alternative hypothesis of the study posits that there is a statistically significant effect of advisor type on the retention of first-year, full-time, four-year degree-seeking students at the study's institution when controlling for the predictor variables mentioned above, with professional advisors having a more positive effect on student retention than faculty advisors.

All data pertinent to the study was extracted directly from the institution's student information system (SIS) by the institutional research (IR) unit of the study's institution. The study's target population was all first-year, full-time, four-year degree-seeking students who matriculated to the study's institution during the fall 2015 semester. This population was comprised of 1,302 total students. In preparation for analysis, the sample's data was selected using listwise deletion for all cases in the study with missing values for any variables (Little & Rubin, 2014). Using listwise deletion, 185 total cases with missing variable values were omitted from the study, resulting in a sample of 1,117 students.

Summary of Results

Using logistic regression, the study investigated whether advisor type and additional predictor variables were statistically significant predictors of students in the study's sample being retained at the study's institution for the second year. The results of the study indicated that academic advisor type did not have a statistically significant effect on the probability of students being retained at the study's institution from the fall 2015 semester to the fall 2016 semester, while controlling for additional predictor variables ($p = 0.88$).

The study's null hypothesis stating that there is no effect of academic advisor type on the retention of first-year, full-time, four-year degree-seeking students at the study's institution was

not rejected. Subsequently, the study's alternative hypothesis stating that academic advisor type does have a statistically significant effect on student retention was not supported, but analysis results did show a slightly more positive effect of professional advisors than faculty advisors on student retention. The analysis results also showed that none of the predictor variables were statistically significant predictors of student retention.

Discussion

Professional Role of the Researcher at the Study's Institution

It is important to begin a discussion of study by clarifying the professional role the researcher plays at the study's institution. The researcher has been a professional academic advisor and a manager of advising and other student success-related programs at the study's institution for over ten years. Many of the researcher's responsibilities at the institution involve advocating for the expanded presence of professional advisors in an effort to improve student retention. Considering the numerous examples of successful professional advising models and the substantial postsecondary institutional investment in professional advising positions across the country, the researcher was surprised by the study's results that showed no statistically significant effect of academic advisor type on the retention of first-year, full-time, four-year degree-seeking students at the study's institution. Further, the fact that none of the additional predictor variables of the study - socioeconomic status, first generation status, high school grade point average, first semester grade point average, and developmental enrollment - had statistically significant effects on student retention was also surprising to the researcher.

The study's institution is exploring the possibility of widely investing in professional advising positions across campus. This expansion of professional advising positions will make the institution's advising model more consistent and will allow the institution to assign all first-

year students to professional advisors. The revised advising model intends to: assist students through their transition to the institution; help students understand how to navigate complex academic and administrative policies and procedures; and ensure that students are aware of academic support and other beneficial resources on campus. After working with professional advisors through the first year of study, students would then be assigned to faculty in their program of study for program-specific advisement and mentorship. The institution believes that having all students work with professional advisors through the first year will better prepare students for more meaningful interactions with faculty and increase the likelihood that students will engage in various academic enrichment opportunities such as internships, undergraduate research, service learning, and study abroad. This potential investment in professional advising positions would require substantial financial resources and a significant amount of personnel time and effort.

Some of the discussion within the study centers on the notion that professional advisors have a positive impact on the undergraduate student experience and, subsequently, positively influence student retention in some way. Given that professional advisors are trained to provide reliable and ongoing assistance to students with curricular guidance, resource utilization, and navigation of the institution's administrative policies and procedures, among other things, it seems intuitive that professional advisors would benefit student persistence. The researcher's personal experience supports this notion, as does relevant research (Habley & McClanahan, 2004). The results of the study, however, did not support this notion as advisor type was not found to have a statistically significant effect on student retention. Considering examples of institutional improvements in student retention and completion rates as a result of widespread,

strategic investment in professional advising positions, the study's finding that advisor type has no effect on student retention should be further investigated.

Study Design

In the study, reviewing descriptive statistics of the sample and examining correlations of the study's variables provided one-dimensional views that partially informed the research question. Statistically significant differences were found between the groups of students in the study's sample who were retained and those who were not retained for the second year when comparing the groups' high school and first semester grade point averages (see Table 3). By employing logistic regression in the study, it was possible to conduct a deeper investigation of the independent and predictor variables' effect on the likelihood of the dependent variable - student retention - occurring. The study's model essentially provided a multi-dimensional view of the research question by controlling for numerous additional predictor variables supported in relevant literature as having a potential influence on student retention. This multi-dimensional approach is characteristic of the problem of student retention in that predicting human behavior and decision making is not a unilateral or straightforward concept.

Student Retention and Academic Advising

Student retention is a complex phenomenon that has been a prominent topic of discussion, research, and investment in postsecondary institutions for decades. There are numerous factors throughout students' collegiate careers that potentially influence their decisions on whether to remain enrolled in college or to leave. Some of these factors are within an institution's ability to control or influence while others are impossible to predict and resolve. Academic advising has been identified as one of the campus interventions that have the greatest impact on student persistence (Habley & McClanahan, 2004). However, the contributions of

academic advising are often underestimated, or left out altogether, in studies of student success and retention (Light, 2001). This study attempted to provide additional insight into academic advising's contributions to student success by investigating the effect of academic advisor type on student retention.

Student Retention and University Admissions Standards

It is no secret that postsecondary institutions with selective admissions policies have higher retention and completion rates than institutions committed to more open access for students (Gansemer-Topf, A.M. & Schuh, 2006). Further, students admitted to selective colleges and universities tend to understand degree requirements and how to select and sequence courses, and are more likely to stay on track to degree completion, than students with lower academic preparation levels that are admitted to postsecondary institutions with lower admissions selectivity (Habley, Bloom, & Robbins, 2012). One could postulate that, based on higher retention and graduation rates at colleges and universities with higher admissions selectivity, students at selective institutions do not need academic advising as much as lower academically prepared students attending institutions with lower admissions standards do.

One aspect of the study's institution that is important to note is its relatively low admissions standards for undergraduate students. The institution is part of a state-level university system with a strong commitment to providing access to higher education for as many students as possible. In an effort to support this commitment to access, the study's institution admits 92% of undergraduate applicants (U.S. News & World Report, 2018). Entrance requirements for traditional full-time students are: high school graduation; 2.5 cumulative grade average or score of 22 on the ACT or SAT combined score of 1120 (1540 for tests prior to

March 2016) or rank in the top half of your high school graduating class and successful completion of college preparatory program requirements. Non-traditional students and students completing the GED are exempt from these requirements. Students who do not meet admissions requirements may be admitted on a conditional or provisional basis (Common Data Set, 2016). Many students admitted to the institution are not academically prepared for the rigor of college level coursework and are sometimes required to complete developmental coursework to develop the academic skills necessary to enroll in college level courses.

One implication of broader access is that institutions that adhere to lower admissions standards will often struggle to retain high percentages of undergraduate students they admit. In an attempt to alleviate this problem, institutions often focus student retention programming as holistically as possible, trying to account for as many of the various factors that could contribute to student departure as possible. Investing in professional academic advising positions and requiring students to be assigned to professional academic advisors through the first year of study are examples of this sort of holistic programming aimed at improving student retention.

Limitations

Academic Advising Model at the Study's Institution. The advising model at the study's institution is unique. The study's institution employs several professional academic advisors across campus and has a few centralized advising units in place, but the overall model of professional advising services is inconsistent and varies by college and school and from department to department. Other colleges and universities utilize unique advising structures that may differ from the structure in place at the institution, including having more consistent professional advising models. The consistency and quality of individual advising sessions and the nature of the relationship between the advisor and the advisee vary widely across the study's

institution as well. The study's results are specific to the institution and the applicability of the study's results to other postsecondary institutions is limited.

Logistic Regression and Categorical, Dichotomous Variables. Logistic Regression is the appropriate statistical procedure to use when one wishes to study how a set of predictor or independent variables relate to a dichotomous or binary dependent variable (Harrell, Jr., 2015). All of the variables in the study other than high school and first semester grade point averages were categorical and dichotomous. Osborne (2012) encourages the use of continuous variables in logistic regression whenever possible. It is possible that organizing the study's independent and predictor variables to be continuous rather than categorical and dichotomous could produce a more precise estimation of these variables' effect on student retention.

Additional Variables that Influence Student Retention. As has been emphasized previously, student retention is complex and is driven by a myriad of factors. Some of these factors are within an institution's ability to control to some extent, while others are outside of an institution's sphere of influence. Student decisions about whether to remain enrolled in or depart from their program of study are largely mysterious and studies that attempt to examine student retention control for as many factors influencing students' decision making as possible. There are undeniably additional variables that influence student retention in some way that the study did not account for. This section will review some of these additional variables.

Student engagement on campus is considered to be one of the most influential factors on whether a student remains enrolled in a program of study or departs the institution prior to degree completion, largely based on the connection to the institution student engagement opportunities provide (Tinto, 2012). According to Kuh, Cruce, Shoup, Kinzie, and Gonyea (2008), many studies show that students who leave college prematurely are less engaged than their

counterparts who persist. The National Survey of Student Engagement (NSSE) "collects information about first-year and senior students' participation in programs and activities that institutions provide for their learning and personal development. The results provide an estimate of how undergraduates spend their time and what they gain from attending college" (NSSE website, 2017). Although the study's institution participates in the NSSE, this study does not include information collected by the NSSE as these data were not available for the target population of students investigated in the study. Ideally, future investigations of student retention at the institution would include NSSE data in order to get a more comprehensive picture of factors influencing students' decisions on whether to remain enrolled. Collecting information on students' utilization of campus resources, time management, and study skills would also help to provide more of a comprehensive picture of students' first year of study. Employing an experimental research design rather than a post hoc design by randomly selecting a sample of students within the study's target population and interviewing those students throughout their first year would likely provide additional insight into students' experiences, behaviors, and decisions throughout the first year. Employing an experimental research design would likely also facilitate a more comprehensive investigation of various factors influencing student retention that were not included in the study.

Student demographic factors such as race and gender are often included in studies on student retention. This study did not include these demographic factors, but similar to student engagement on campus, future investigations would ideally include student demographic information to account for as many factors as possible that could influence the likelihood of students persisting toward degree or departing the institution prior to degree completion.

Considering the correlation between students' academic performance and parents' educational attainment level (Tinto, 2012; Habley, Bloom, & Robbins, 2012), collecting parents' or guardians' educational attainment level as an additional variable would likely provide useful insight. Similarly, including students' scores on scholastic aptitude tests such as the ACT and SAT would provide beneficial insight. These additional variables would also supplement the study's current variables that provided information on students' pre-college-matriculation characteristics.

The study attempted to collect data on the number of advising sessions each student in the study's sample had during their first year at the institution. Too many missing values for this variable were present in the sample, thus this variable was omitted from the study. Given other studies' findings of the number of academic advising sessions being significant to students' success, it would be ideal to include number of advising sessions as an additional variable (Swecker, 2011; Smith & Allen, 2014).

Post Hoc vs. Experimental Study Design and External Validity. The study employed a post hoc research design utilizing data collected directly from the institution's student information system for all variables. By nature, post hoc or ex post facto research does not have the level of control throughout a study that experimental research does (Hoy, 2010). Experimental research involves the researcher introducing changes, noting effects, and having full control over the design of the study (Hoy, 2010).

External validity is the extent to which the results of a study can be generalized beyond the study's sample to a broader population. Threats to external validity involve claiming that study results are generalizable to broader populations when, in fact, the observed effects are limited to specific conditions or groups of people (Baldwin & Berkeljon, 2010). Considering the

post-hoc research design employed in the study and the study's specific context, sample, variables, and timeframe of investigation, the generalizability of the study's findings are limited.

Recommendations for Future Research

As previously stated, various studies have established a link between effective academic advising and increased retention rates of colleges and universities. However, the important contribution of academic advising is often underestimated, or omitted altogether, in studies of student success and retention (Light, 2001). This study attempted to provide additional insight into the contributions of academic advising to student success by investigating the effect of academic advisor type on student retention, but additional research is needed to identify aspects of academic advising that foster student success and to investigate the effect of advisor type on student retention.

The first recommendation for additional research is to replicate the study at postsecondary institutions that have more consistent models of professional advising in place than the current study's institution. Replicating the study at an institution that consistently assigns all first-year students to professional advisors might potentially yield different results and provide a different lens into the effect of advisor type on student retention. Several institutions have shown dramatic improvement in key performance indicators such as student retention and graduation rates following widespread, strategic investment in professional advising positions (Education Advisory Board, 2017). Replicating the study at such an institution would likely provide additional insight into the various contributions of advising to student success.

The second recommendation for future research is to repeat the study after changing the measurement scheme of the categorical, dichotomous predictor variables to continuous, where possible. As mentioned previously, Osborne (2012) encourages the use of continuous variables

in logistic regression whenever possible. Organizing the study's independent and predictor variables to be continuous rather than categorical and dichotomous could possibly produce different results. For example, socioeconomic status could be examined on a continuous scale by retrieving each student's expected family contribution from the Free Application for Federal Student Aid rather than simply looking at each student's federal Pell Grant eligibility. Another example could be to review how many developmental courses students in the study's sample enrolled in during their first year and investigate how they performed in these developmental courses rather than simply determining if students enrolled in a developmental course or not during their first year.

The third recommendation for additional research is to replicate this study and include several additional predictor variables that were not included. As discussed in the limitations section, controlling for variables in addition to those included in the study would provide a more comprehensive picture of the various factors influencing student persistence and could facilitate a more precise investigation of the effect of advisor type on student retention. Additional variables to consider include, but are certainly not limited to: student engagement on campus throughout the first year, student demographic information, parent or guardian educational attainment level, scholastic aptitude test scores, investigations of the advisor/advisee relationship, advisor load, and number of advising sessions during the first year. It would also be beneficial to investigate the influence of students' declared majors on student retention by organizing the sample in future studies according to students' program of study. Students with strong academic preparedness levels often gravitate toward certain majors (e.g. STEM fields) and the assignment of academic advisors at the study's institution varies by program of study.

Including students' declared majors in a future study design could provide additional insight into the research question.

The fourth recommendation for future research is to replicate the study at institutions with more selective admission standards than exist at the current study's institution. Given that postsecondary institutions with selective admissions policies have higher retention and graduation rates than institutions committed to more open access for students, such as the current study's institution, it would be informative to investigate the effect of advisor type on student retention at other institutions whose students are more academically prepared for college-level coursework.

The fifth and final recommendation for future research is to conduct a similar study to investigate the effect of advisor type on student retention while controlling for additional predictor variables using an experimental research design rather than the post-hoc, non-experimental design employed in the current study. By conducting a similar study using an experimental research design, future researchers could survey students in future studies' samples to find out important information about students' experiences throughout their first year of study and how these experiences influence student persistence. As has been emphasized throughout the study, the problem of student departure from college prior to degree completion is complex and involves various factors that potentially influence students' decisions on whether to remain enrolled in their program of study. Employing an experimental research design in a future study could provide a much more informative lens into students' situations, behaviors, and decision making throughout their first year and more deeply investigate the effect of advisor type, and the effect of advising in general, on student retention.

Conclusions and Implications for Practice

The results of this study provided a deeper awareness of the effect of academic advisor type on the retention of first-time, full-time, four-year degree-seeking students at the study's institution from the fall 2015 semester to the fall 2016 semester. The study's findings clearly showed that neither academic advisor type nor any of the study's additional predictor variables were statistically significant predictors of the retention of students in the study's sample for the second year. From a validity point of view, the study's results make sense when one considers the complexity of student retention; the study's methodology is strong.

Given the lack of statistical significance of the independent and predictor variables predicting student retention, any implications of the study for higher education practitioners are at least somewhat speculative. This being said, the results of the study seem to support the notion that student retention is complex and that no single factors or variables are sufficient predictors of whether or not a student will remain enrolled in or depart their postsecondary studies; at least none of the variables controlled for in the study. One could postulate further that no "magic bullets" exist to fix the problem of students departing postsecondary educational institutions prior to degree completion. As Tinto (2012) concluded, "despite our nation's success in increasing access to college, we have not yet been successful in translating the opportunity access provides into college completion" (p. 4).

Tinto's assertion underscores the critical importance of postsecondary institutions being as holistic and comprehensive as possible with their efforts to support student success. It is incumbent on individuals in positions of leadership within higher education institutions to constantly examine causes of student attrition, evaluate the efficacy of programs and services designed to help students' succeed, and adjust approaches in order to best meet students' needs.

One of the most important goals of thoughtful and responsive leadership in higher education is to cultivate and sustain a culture of student success on campus. Once this sort of campus culture exists, student retention, persistence, and completion will likely improve as a result.

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Appendix A: Institution's Student Population Demographic and Geographic Information

Demographic Information: approximately 53% of students at the institution are male and 47% are female. 76% of students at the institution are white, 3% are American Indian/Alaskan Native, 1% are Asian, 1% are African American, 4% are Hispanic, 4% reported two or more races, 4% are international students, 7% did not report race/ethnicity, and less than 1% are Native Hawaiian or other Pacific Islander.

Geographic distribution of undergraduate degree-seeking students: 71% in-state, 26% other U.S. states and territories, 3% other countries. 38% of all undergraduate students at the institution are considered low income (College Portrait, 2016; institutional-specific data set).

Appendix B: Variable Coding and Measurement Scheme

VARIABLE	Type	How Coded
Student Retention (SR)	Dependent variable	0 = not retained for second year of study 1 = retained for second year of study
Advisor Type (ADV_TYP)	Independent Variable	0 = Faculty 1 = Professional
Socioeconomic Status (SES)	Predictor variable	0 = Pell Eligible 1 = Not Pell Eligible
First Generation (FG)	Predictor variable	0 = First Generation 1 = Not First Generation
High School Grade Point Average (HS_GPA)	Predictor variable	0.0 to 4.0
First Semester Grade Point Average (FS_GPA)	Predictor variable	0.0 to 4.0
Developmental Enrollment (DEV_ENR)	Predictor variable	0 = did not enrolled in developmental course(s) 1 = did enroll in developmental course(s)